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The innovation in the photographic industry, from simple to adventurous:

THE GOPRO CASE

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Abstract

This thesis wants to analyse the photographic industry especially the strong impact that GoPro has in this sector.

A product apparently so common, a simple photo camera, was able to enter an exclusive market by aiming at adventurous sport driven and athletic customers.

GoPro's intentions where never to replace smartphones but on the other hand to give everyone the possibility to record, shoot and share what they love doing. GoPro provides a light, indestructible, easy to use product able to record live action footage and personal life experiences in a way that before wasn't possible.

The innovation was not only in the technology but in the idea of how to use the product.

The novelty in this case, is the ability to be submersed in an activity even while looking back at it, seeing the inside perspective.

The revolution of GoPro is that the camera is just the tool to get the content, and this content, has been the main success. It's the world's most versatile camera and the first that gives the possibility to its users to think of something, do it, and share it right away. The thesis wants to analyse how GoPro was so smart and successful in adapting to an era of self-obsessed and selfie-obsessed people, providing a product perfect for the social generation that we have become. Using the internet and social networks as its main trampoline for marketing, the analysis continues on how GoPro was successful using the user-generated content and how it presented a product created especially for it's customers and based on the strong consumer-producer relationship. Receiving constant feedback, videos and news from its users, GoPro changed the way of being adventurous and keeping memories.

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Introduction

This thesis want to analyse the great success and innovation of the GoPro company in the photographic industry. With a completely new concept of photography, Nicholas Woodman, the CEO and founder of GoPro is now a billionaire. Creating a new capture device, GoPro was born for the brave and adventurous and has become a must have camera. Easy, portable, indestructible, and quickly connected with pc's tablets and smartphones. The analysis of this thesis will be on the innovation of a new product, with literature notions acquired during the *" Entrepreneurship Innovation and Technology"* course of Professor A. Prencipe at Luiss Guido Carli University, and further references of the main economists through history, to help understand some definitions. The concept of innovation, invention and imitation will be discussed in order to make a difference during the identification of what is GoPro. The thesis will repeat the market segment chosen by Gopro during the entire layout so to emphasize the big impact it had on the company. The discussion regards how starting with a focused customer base, will help improve the product itself. The attention will be on the user- generated content, and the great success the company received thanks to customer care and feedback. The objective of this thesis is to study the effect of Internet and social media on the marketing and customers' reaction. For GoPro the importance of customers and the community that has unexpectedly formed behind this product, was key to success. During this work there will be explanations on the main factors that lead GoPro to a large success globally and a viral phenomenon on the web.

Section I will give an outline of the definition of innovation, with a look at the different types of innovation: product, process, position, service and business model innovation. A brief explanation of the productions phases of a product and the transition between the fluid phase, transition phase and specific phase. The various kinds of innovation strategy a company can adopt when entering a market: offensive, defensive, imitative, hypotactic and conservative. A great focus will be on customers

and the effect on the market, with the concepts of development based on customers, a further analysis on customer importance and customer feedback. Furthermore comments on the community of customers as internal part of the company, how the service provided will have a higher percentage of success when the product is fully entered on the customers' needs. The Discussion will pay a particular attention to the key element of user-context development. A research on the market innovation, with the analysis of various research techniques, as inquiry and empathic design and on creating a new market, will provide the knowledge necessary in order to understand the tools used to study the approach in a market.

Section II starts with the history of the market: the photographic industry. An explanation of the various transitions and improvements of the technology in this field will lead to introducing common day products and help have an idea of the matter taken into consideration. The Section is concluded with a brief analysis on the way photography has been used in communication and in the change after the introduction of the Internet and social media.

Section III will regard the description of the GoPro case study. Starting from a background on the history of GoPro, moving forward to an introduction of the companies' success and a time-line with the various products and important dates for the company. Paragraph 3 will discuss and analyse the innovation considered in the particular study. Afterwards there will be a discussion on the importance of customer and marketing, making references to the importance of the social media as a marketing tool. Lastly for this section there will be some considerations regarding GoPro's future direction, with comments on the company's strategy for the future. Finally the conclusion, were after analysing the GoPro company we can draw our final impressions on how innovation works, and how fundamental is the relationship with customers in order to create a long lasting brand. The scope of this thesis is to answer the following questions:

1. What is an innovation?
2. What are the steps when entering a new market?

3. How has the photographic industry changed after the Internet?
4. What is GoPro and why was it so successful and what will it do in the future?
5. Can customers lead the path of innovation?

Section I: Literature review

1. Fundamentals of innovation

"it is a serious mistake to treat an innovation as if it were a well defined, homogeneous thing that could be identified as entering the economy at a precise date- or becoming available at a precise point in time… the fact is that most important innovations go through drastic changes in their lifetimes- changes that may…totally transform their economic significance. The subsequent improvements in an invention after it's first introduction maybe vastly more important, economically than the initial availability of the invention in it's original form." (Kline and Rosenberg, 1986, pag. 283)

A distinction needs to be made here between an "invention" and an "innovation", even if the two are closely related. As Fagerberg (2013) stated:

"An Invention is the first occurrence of an idea for a new product or process", the idea afterwards, needs to be brought to the patent office.

"A patent is an exclusive right given by law to inventors to make use of, and exploit, their inventions for a limited period of time. By granting the inventor a temporary monopoly in exchange for a full description of how to perform the invention" [1].

When the invention is exposed to the market successfully, then it becomes an innovation.

The argument regarding innovation is very vast, it as been always present together with mankind, and through the years it has been studied with much more interest. The way an innovation is organized, as its' future economic and social effect, depends

[1] http://ipscience.thomsonreuters.com/support/patents/patinf/patentfaqs/patent/).

critically on the specific nature of the technology in question (Fagerberg 2013).

There are different types of innovation, in the following chapter there will be given some definitions.

2. Definitions[2]

2.1 Innovation

From the Latin “innovare”, to make something new.
According to Schumpeter innovation is a mix between technology and economics. Innovation is a process of turning opportunity into new ideas and of putting these into a widely used space. In particular, a product is new for the client when it can satisfy in an original manner a need already expressed or when it can solve a new need that wasn't manifested yet.

Innovation requires creativity, discovery and imagination; otherwise it is not new. It requires the combination of several types of skills, capabilities, resources and knowledge, mainly regarding marketing and economics. Already existing inputs can be organized together in order to create a new combination. Innovation is by nature a systematic phenomenon since it results from continuing interactions between different factors and organizations.

A successful innovation is:

a. Strategy based;
b. Depends on effective internal and external linkages;
c. Requires enabling mechanisms for making change happen;
d. Only happens within a supporting organizational context.

[2] The definitions in this section have been taken from notes during Professor Prencipe’s lessons in the “Entrepreneurship ,Innovation and Technology” course, academic year 2015.

2.2 Types of innovations

Innovations can further be categorized in several types.

2.2.1 Product Innovation

Product innovation is the creation and subsequent introduction of a good or service that is either new, or an improved version of previous goods or services. It is one of the simplest but, it can be considered the one with the most immediate impact. An example of this innovation is the photo camera industry. The pictures were first on film and nowadays they transitioned to digital. The main function and scope of the product has not changed, to capture a moment, but the technology has.

2.2.2 Process innovation

The implementation of a new or significantly improved production or delivery method. This in turn requires modifications in the techniques, software and equipment used to deliver products. The purpose of process innovations is to reduce production or delivery costs, or to increase the quality of the products delivered. Process innovation plays just as important a strategic role. The most known example is the car production line by FORD.

A distinction between product and process innovation is identified by the different economic ad social impact (Edquist et al 2001). In fact, *"the introduction of new products is assumed to have a clear positive effect on the growth of income and employment… process innovation on the other hand, due to the cost cutting nature may have a more ambiguous effect"* (Fagerberg 2013).

2.2.3 Service innovation

Service innovation has to do with making changes in the direction, organization and even the product line of a business in order to anticipate demand and keep the company in the forefront of an industry. In a lot of industries product and service innovation go together.

2.2.4 Position Innovation

Position innovation changes the context in which the products or the services are framed and communicated. An existing product is taken and moved in an existing new market.

2.2.5 Business Model Innovation

Combining successful models from various industries as well as finding completely new ways of doing things, represents the business model innovation. It is how companies approach the market and which profit formula they use.

2.3 Production phases

During the design and production of the product, the company faces difficulties, uncertainties and has many testing and research to conduct. There are three main and simple phases during the process of production.

The first phase is the ***fluid phase***, where the product innovation wants to maximize performance but the process is uncoordinated, and experimentation leads the way. Second we have the ***transition phase***, where a dominant design emerges, which signals an industry shake and a shift in focus on high volumes. The company now wants to maximize sales and reach low cost production due to mass production. Abernathy and Utterback articulated the notion of dominant design, stating that in most industries there would be an initial period of product design ferment. Eventually, a dominant design emerged that is not necessarily the optimal design, but it became a standard architecture, with accepted metrics for determining the way in which components and modules would interact. Lastly we have the ***specific phase***, where the product innovation rate declines, the focus is on low cost strategy, higher volumes, and production capacity.

2.4 Degree of innovation

A second dimension to change is the degree of novelty involved in the innovation.

- A radical or disruptive innovation

An innovation that has a significant impact on a market and on the economic activity of firms in that market. This concept focuses on the impact of innovations as opposed to their novelty. The innovation could, for example, change the structure of the market, create new markets or render existing products obsolete. However, it might not be apparent that an innovation is disruptive until long after it has been introduced, and the cut-off point between incremental and radical innovation might be set at different levels.

- Incremental innovation

An innovation that concerns an existing product, service, process, organization or method whose performance has been significantly enhanced or upgraded. A simple product may be improved in terms of better performance or lower cost or by partial changes in the subsystems. In Schumpeter's view "radical" innovations create major disruptive changes, whereas "incremental" innovations continuously advance the process of change.

- Continuous or discontinuous innovation

Whether the innovation affects existing ways of doing things (Tushman et al 1986), or whether it is sustaining or disruptive (Christensen et al 1997). Firms commonly find it very difficult to break away from previous technologies and ways of innovating, and managers may need to explore new ways of doing things that are destructive for existing successes.

- Change over life cycles

How the innovation relates to early emergence of an innovation, a period of ferment and uncertainty, progress to a take off period of growth, and maturity in a satiated market. (Abernathy and Utterback 1978)

- Modular or architectural innovation

This innovation occurs in components and subsystems without addressing the system of which it is a part. Modular innovation requires both someone who will study and analyse the module and its' technological context and someone that will analyse the effect of the new module inside the system. On the other hand architectural

innovation attempts systemic improvements without great attention to its component parts (Henderson 1990).

2.5 Propensity of the innovation

The propensity, or aim, of an innovation, is in a way a measure of the risk a company is willing to take. Innovation is by definition a risky phenomenon that demands investments and resources and the success of the innovation is directly correlated with the level of riskiness (Baglieri 2003).

2.6 Innovation strategy

In the strategy domain there is no simple recipe for success, but the capacity to learn from experiences and analysis is essential. Three points to consider, and always fundamental when deciding a strategy, according to Tidd, Bessant and Pavitt (2001) are:

1. The position of the firm, in term of products, processes and technologies and the national innovation system in which it's embedded, as mentioned above.
2. The technological paths open to the firm given its accumulated competencies. Firms follow technological trajectories, each of which has a distinct sources and directions of technological change and which define key tasks for strategy.
3. The organizational processes followed by the firm in order to integrate strategic learning across functional and divisional boundaries.

Keeping in mind the above consideration and using Freeman and Soete's (1997) classification on the various strategies for innovation we can identify five categories.

2.6.1 Offensive strategy

When this strategy is adopted, the innovator not only wants to create a radical innovation but, it wants to present to the market a new product before any other competitor. This strategy requires a consistent amount of investment in R&D, marketing and technology. It is the strategy with the most risk to it. Research may be uncertain and not always lead to a success. In fact, it is argued that at the beginning of

the process, one may simply not know what the most relevant resources are, or what are the best options to pursue. When undertaking this type of strategy and initializing the research, it is crucial not to get trapped in a single path. One needs to remain open to different ideas or solutions. This is essential for innovations especially in the early phase.

2.6.2 Defensive strategy

This strategy consists mainly in waiting, in the readiness to follow and catch up with the first mover. There is an important competitor analysis and a huge monitoring of what the leader does. These steps are crucial in order to understand any signal, either of improvement or of failure of the first mover, to direct the follower's moves in the research programs.

2.6.3 Imitative strategy

A further distinction needs to be made according to Facerberg (2013) between an *innovation* and an *imitation*.

An Imitation is the replica of an innovation, and it is of great importance actually, because without it, the social impact of innovation would not matter as much. When an imitation sets foot on the market, it symbolizes a threat for the leader company, but also a sort of achievement, signing the success of the idea. Adopting the imitative strategy, an imitator follows the leader from the back. The imitator simply waits. When the product of the leader company is affirmed in the market, the imitator using various standards, both technological and aesthetics, copies and creates the stereotype product (Baglieri 2003).

The imitator, after studying the already existing competitor, uses any advantage possible to him, like the reduction of cost of materials and location of production site to make its' move and enter the market.

With both the definition of imitation and innovation in mind, we have the question of how to take different contexts into account (Fagerberg 2013). According to the

situation, it may become difficult to name who is an imitator and who an innovator:

"If A for the first time introduces a particular innovation in one context while B later does exactly the same in another, would we recognize both as innovators?" (Fagerberg 2003).

This is a matter of convention. A widely used practice based on Schumpeter's work, is to reserve the term innovator for A and characterize B as imitator. But if we follow Schumpeter's own definition about innovation, we could consider B an innovator as well (Hobday 2000), since B is introducing the innovation for the first time in a new context, creating a new combination. Nonetheless, both positions are arguable because one might object that there is a qualitative difference between: commercializing something for the first time, and copying something and introducing it in a different context. As already mentioned, the quantity of risk and effort put in an innovation is quite different from an imitation. But the hypothesis that an imitation will later become an innovation is not to be excluded. However, Schumpeter argued that imitators are more likely to succeed in their aims if they improved on the innovation, becoming innovators themselves. Innovation tends to facilitate other innovations in the same, or related field. In this way the diffusion of innovation becomes a creative process, where one important innovation is an example for subsequent innovations. As Kline and Rosenberg (1986) further pointed out, many significant innovations occur while a product or process is diffusing. Introducing a product in a new context requires great adaption and organizational changes that may give to the product an increased productivity and competitiveness. To conclude, the production of imitations signals the start of the erosion of the first mover's advantage.

2.6.4 Hypotactic strategy

This strategy consists in executing the innovation only after the customers have made specific requests. This does not preclude the future creation of a radical innovation, but it assumes that the innovator minimizes the risks in the market of the innovative

product deciding to develop a new product only if there is a clear dedication from the customers. This strategy implies the existence of a leader company to follow of course.

2.6.5 Conservative strategy

This is a more traditional strategy, typical of companies that do not introduce technological content in their product but instead focalize more on the capacity of re-combining the key components of the products, to find new winning combinations. This implies a low rate of investment in R&D and in re-design of the product or of the production chain. The starting point is always something already known.
This connotation fits hardly the definition of "strategy" and in fact best explains the type of innovation pursued.

3. Customers and the effect on the market

A customer, by definition, is someone who receives or consumes a product or service and has the ability to choose between different products and different suppliers. There are three categories of customers: current customers, which are the ones who generate profit, customer who will generate sales growth and customers who allow accumulation of invisible assets. Marketing focuses on the needs of the customer, it attempts to create value by providing products and services that satisfy those needs. Customers wield extraordinary power in directing a company's investments. Investments are usually aligned with the needs of their customers. But what happens when customers reject a new technology, product concept or way of doing business because it does not address their needs as effectively as the company's current approach.

Customer Relationship Management (CRM) is an element necessary to avoid mistakes, the closer to your customers, the better. For Example, for Apple, when it wants to add functionalities to the iPhone it is easier to decide which functionalities to add when there is high awareness of the customer. The issue in some companies however, is that they are too close to their customers and this can have a bad effect on the

survival of the company.

3.1 Development based on customers

Market knowledge is fundamental in order to succeed. The market is composed of customers, and these customers are the heart of a company. Based on what the customer needs, wants, imagines or desires, the company can design the perfect product. Here will follow five most important developments based of the maturity of the technology designed and the customer base.

3.1.1 User-driven enhancement

An improved solution to a known need. This is the comfort zone. The technology and the customers are known. Competition or explicit demands often drive technological improvements along known performance parameters for current products. Developers know that lower costs, more features, or better quality are likely to win in the marketplace. The developers establish user needs in reactive mode: the competition defined the meaningful parameters on which the development team then attempted to achieve parity if not superiority. The challenge lay in identifying the right set of users to interview.

3.1.2 Developer-driven development

A new solution to a known need. Potential users' ability to translate their felt needs into a request for a particular solution decreases from bottom to top because the relationship between their needs and the potential for a given technology to satisfy them becomes increasingly obscure. Users may have a need for which they cannot imagine a solution if they don't know about a particular technological advance. Users cannot see their world through the eyes of the technologists and therefore cannot know which solutions, functions, enhanced features, or capabilities the technology may offer. The developers may know the users' work practices so well they can anticipate an unspoken need. Customer forums and site visits to observe user practices helped developers identify critical features. As expected, the product

was highly successful, not only in its traditional market but, because of its lower cost, in new application areas. It reached the current customer set but also extended into a new one.

3.1.3 User-context development

A new solution to an unexpressed need. The user needs' may exist for years before a technological solution is presented, of course. But users have little ability to communicate a need in a form that can guide product development since they don't know what can be done. Before a technical system exists, people have a hard time imagining either its form or its function. When developers immerse themselves in a user environment, the possibilities inherent in the user context push product development forward.

3.1.4 Technology market co-evolution

An evolving solution to an uncertain need. At times technologists run far ahead of consumers by developing an application for which they initially target the wrong market. Technology always offers more possibilities that can be recognized and commercialized. This solution is the most difficult. You know very little of the technology and the market. It's called co- evolution because you don't know what the consumer needs you need to satisfy are and what technology you need to use to device the product to satisfy the needs. Sometimes need and solution evolve together. In this situation there is a strong element of serendipity. Technological potential and market need have to coincide in both time and place for the necessary synergy to occur.

3.1.5 New Applications of technologies

A novel solution to an identified need. In this situation, developers take an application of technology that is mature and well understood in one domain and apply it to an entirely different one for a totally new set of users. Technology potential rather than market demand drives product development. You use an old technology for a new

problem. An example to this is Sonar technology for military purposes, it would tell the ships/submarines where other submarines were located. The novelty was when this technology was applied in the civil market to identify the location of fish underwater.

The following chart summarizes the customer developments mentioned above.

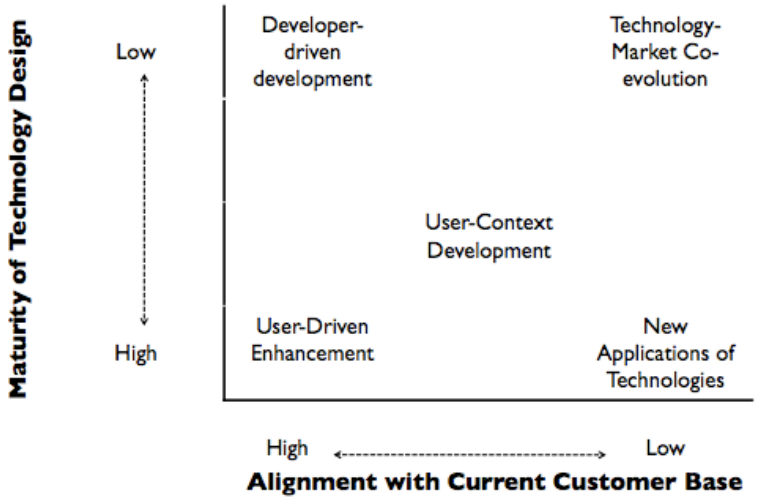

Fig 1. Customer driven development. On the x-axis we have the customer base and on the y-axis the maturity of the technology design. From Professor Prencipe's slides, lesson 10 market innovation, "Entrepreneurship, Innovation and Technology" course A.Y 2015

3.2 Further analysis on Customer importance

A business can never place too much emphasis on its customers. The customer is the foundation of any business' success. One of the primary goals of any marketing strategy should be to identify and meet the needs of the consumer. Considering customer importance at all stages helps the company to ensure greater customer satisfaction and increase its long-term goal of repeat business.

The psychological makeup of consumers plays a crucial role in developing a product and a marketing campaign that identifies and addresses consumer needs. According to Lars Perner, assistant professor of clinical marketing at the University of Southern

California, some of these considerations include how consumers "think, feel, reason and select between different alternatives." These considerations can be influenced by environment, such as culture, family and media. The purpose of marketing research is to identify these variables and to incorporate them into the campaign.

Some of the considerations to take into account when marketing to your customers are honesty, integrity and clarity. Keeping consumer needs in mind is also an integral part of effective marketing. Sneaky advertising campaigns can generate quick sales, but those sales will falter as consumers realize they've been duped. Selling a good product marketed with integrity brings back customers. To do this, a company needs to build customer confidence in its product over time. Customer confidence is what brings consumers back to your product and ensures long-term success.

Underestimating the power of customer word of mouth is detrimental to your success. Consumers like to talk, whether they are talking about a product they enjoyed or a product that left them wanting. Word of mouth has a snowball effect, particularly in an age when fast worldwide communication is common.

Considering customer needs during the development and promotion of a product is not the only way to emphasize customer needs. Customer considerations after the product has been marketed are important as well. Customer service and interaction with the consumer after the product has been sold not only build strong relationships with the consumer but offer companies valuable information that will help to design more effective marketing efforts in the future.

3.3 Importance of Customer feedback[3]

Companies use marketing research surveys to garner many types of information from consumers and business customers. Businesses gather some of this information prior to introducing products, but they acquire the majority of customer data after they have introduced products. Whatever the case, customer feedback is important for a

[3] Paragraph written on the basis of the article: “The Importance of Customer Feedback” by Rick Suttle, Demand Medi. http://smallbusiness.chron.com/importance-customer-feedback-2089.html

number of reasons. Customer feedback is paramount when determining a customer's needs and tastes, particularly when a business introduces new products. Companies conduct focus groups, in-person research or customer phone surveys to determine the product features, flavours or styles that consumers want. Customer feedback helps companies determine what's important to their customers. Identification

Customer feedback also allows companies to better understand how customers rate and use their products versus competitive products. It is vital in determining where a company's products and services excel or fall short compared to alternatives on the market.

Customer feedback can manifest itself in evaluating how company employees treat customers. Customer service satisfaction surveys are a common type of marketing research. Companies can determine through surveys whether customers are getting their questions answered and problems resolved.

Customer feedback also is important in detecting certain technological trends among consumers. For example, a new competitor in the market may introduce new and improved technology that potentially threatens the older technology a company sells. If customers indicate they would prefer and buy this technology, the company will need to consider switching to the new technology.

In the following paragraph we analyse some of the common marketing research techniques.

4. Market research techniques

When one has to enter a new market, market research techniques that can be used in order to have a clearer view of the path to take. In our interest are:

- Inquiry
- Empathic design

Knowledge regarding the market is based on techniques when launching a new product and techniques in relation to the degree of novelty of innovation.

4.1 Market Research Techniques: Inquiry

When the “current customers” are targeted for an extension, for a well-established product line, the major activity is inquiry. Traditional market research tools, especially surveys, focus groups and lead users are used for inquiry.

- Surveys, Focus Groups, and Mall studies.

When customers can refer to a known product, they can answer most questions about their preferences, and their responses are reasonably reliable guides to a new-product development, thus surveys and focus groups can yield useful information. The so called mall study, where a new product or prototype is taken to a shopping mall for testing and soliciting shoppers’ reactions, exemplifies a more ambitious but widely used technique. Despite the sophistication of interviewing techniques, they can only uncover those needs and desires about which informants are aware and can articulate. The relative ability of the users to guide product specification is greater when a product category already exists.

- Lead users

They can carry developers a step further into the future. They have general needs earlier than others and they are positioned to benefit significantly by obtaining a solution to those needs. They are sough out by companies because they can spot where customers are going and there is also an alignment between the lead user and the company. Of course, at least a first generation of the product must already exist, they make their suggestions based on their experience.

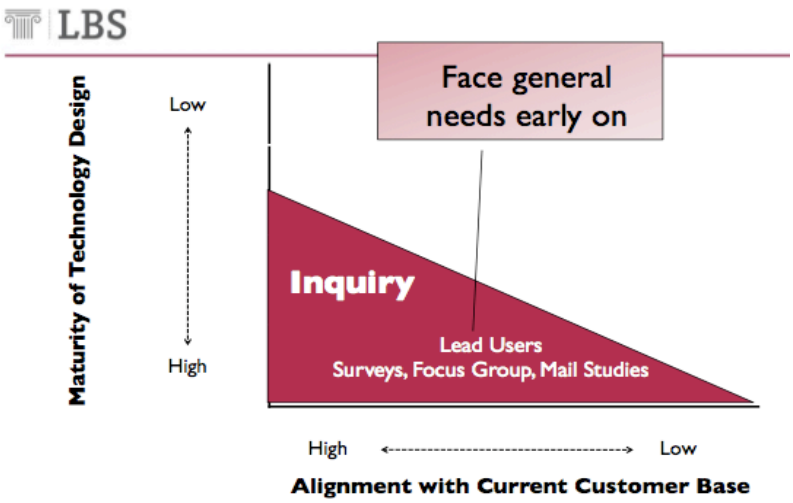

Fig 2. Market research technique: Inquiry. Professor Prencipe's slides, lesson 10 market innovation, "Entrepreneurship, Innovation and Technology" course A.Y 2015

4.2 Market Research Techniques: Empathic Design

Empathic design is the creation of a product or service concepts, based on a deep understanding of an unarticulated user need. In this case, it's necessary to use techniques that allow a company to elicit customer needs that would otherwise be unarticulated. We cannot use traditional market techniques such as the ones mentioned above because, being a product based on unarticulated need, not even the users are able to express something they do not recognize. Developer-driven/user-context development and new applications of technology, require techniques not usually taught in marketing courses. Often described as "technology push", they result in unacceptable products, these situations offer the greatest opportunity to exploit existing technological knowledge in novel ways. Empathic design can be deployed to increase the development of product enhancements, but the major opportunities lie in those situations in which a technology can be shaped to meet an unarticulated but observable need. Empathic design is less applicable when either the target market is very well known; better to use inquiry in this case; or the user population is not yet identified.

There are 3 techniques:

1. Developer's intuition:

Technologists who have developed a fine intuition for what the market wants now and will need in the future are responsible for some of our most successful businesses today. User developer technologists, who happen to be potential customers of the products, can integrate technological potential with user needs in a single head. Industry experts on the other hand, when the market shifts or the company moves into a market not represented by its development community, suggest in including former users to represent potential customers. The issue with this introduction maybe that the former users could become wrapped up in daily business and lose touch with cutting edge environment they came from, making their expertise tacit and undocumented.

2. Anthropological expeditions:

The most unusual, and perhaps most promising option for creating the deep understanding of the user world necessary for empathic design is for developers to immerse themselves in the user environment. Next to converting users into developers, it's the most powerful aid to empathic design. Product concepts derived through this process, presents users with functionality, ease of use, and other benefits for which they themselves would not have thought to ask. In these expeditions users' practices are observed, to store the images of the behaviour, the practice is also captured on film, so it can be played numerous times to explore, study and verify the characteristics. Role playing is also set in practice, were observations are mixed with assumptions of the future, to 'scene' future behaviour.

3. Market matching:

Market matching is the concept of identifying applications for which users have a need but for which they could be incapable of imagining a solution because they do not

know the technological potential exists. Technology transfers are used. A Technology transfer is the process of transferring scientific findings from one organization to another for the purpose of further development and commercialization. Partnering with customers is also used for marketing purposes. In fact some companies have pursued a policy of commercializing their basic technologies through partnerships with customers. The key element both in the innovation phase and in the marketing phase is the customer. The customer set's the goals of the company, and it's always that customer that can direct, help and innovate a product.

4.3 Combining Empathic Design and Traditional Market Research

Once a concept has been identified, potential customer feedback is important. Once empathic design techniques have identified possibilities that the users themselves would not have requested, more traditional techniques are employed to refine and test the concept. Prototypes are essential in the process since the concepts may be so novel as to have not parallel in the current market.

4.4 Market Research Techniques: Creating a New Market

Where neither technologies nor customers are certain, inquiry and user observation are impossible. Thus information from the market must be sought through extrapolating from today to imagine a possible future or else seeking information through trial, error and success. By exploring societal, technological, environmental, economic or political trends, developers attempt to foresee what users in a current market will need in the future when those trends mature. Timing, however, is often extremely unclear and trends usually interact.

Section II: History of the market

1.The Photographic Industry

"I suddenly understood that a photograph could fix eternity in an instant."

Henri Cartier-Bresson, French photographer.

Photography. An art form invented in 1830s today is the largest growing hobby in the world with the hardware alone creating a multi-billion dollar industry.Before photography was created, people already knew the principles of how it eventually got to work. They could process the image on the wall or piece of paper, however no printing was possible at the time as preserving light turned out to be a lot harder task than projecting it. The instrument that people used for processing pictures was called the Camera Obscura (which is Latin for the Dark Room) and it was around for a few centuries before photography came along. Camera Obscura is essentially a dark, closed space in the shape of a box with a hole on one side of it. The way it works is that due to optical laws, the light coming through a tiny hole transforms and creates an image on the surface that it meets, i.e. the wall of the box. The image however was mirrored upside down. Basically everything that makes today's analogue camera's principles different to the Camera Obscura, are the mirrors and the film which is used to capture and preserve the image created by the light.

Photography, the way it was developing, was always believed to be the killer of the fine art. However, it is believed that the photo principles were widely used by Renaissance artists like Leonardo, Michelangelo and others. In the mid 16th century, Giovanni Battista, an Italian scholar, wrote an essay on how to use Camera Obscura in aid of making the drawing process easier. Today we can state that Camera Obscura was a prototype of the modern photo camera. Even though it seems useless today, many people still find it amusing and use it for artistic reasons or simply for fun. Installing film and permanently capturing an image was a logical progression. The

evolution continued with daguerreotype cameras, invented by Louis-Jaques-Mandé Daguerre and introduced worldwide in 1839. These cameras produced the photo on a silver or a silver-covered copper plate that exposed to iodine vapour transformed into positives. The first cameras were made of wood, and had a rectangular shape, with an objective in the front, and in the inside a mirror to straighten the image. The first photo picture - as we know it - was taken in 1825 by a French inventor Joseph Niepce. It depicts a view from the window at Le Gras. There is little merit in this picture other than the fact that it is the first photograph taken and preserved.

By that time people already knew how to project pictures, they just didn't know how to preserve and "save" light. Niepce came up with the idea of using a petroleum derivative called "Bitumen of Judea". Bitumen hardens with exposure to light so the unhardened material was then washed away. The metal plate, which was the media used by Niepce, was then polished rendering a negative image, which then was coated with ink producing a print. One of the numerous problems with this method was that the metal plate was heavy, expensive to produce, and took a lot of time to polish.

In 1839 Sir John Herschel came up with a way of making the first glass negative as opposed to metal. The same year he coined the term Photography deriving from the Greek "fos" meaning light and "grafo" - to write. Even though the process became easier and the result was better, it was still a long time until photography was publicly recognized.

The next technique was the calotype cameras. Introduced in 1841 by William Henry Fox Talbot, he used paper coated with silver iodide. The term calotype come from the Greek *καλός* 'kalos', beautiful, and *τύπος* 'tupos', impression.

In 1871, Richard L. Maddox, an English photographer and physician, invented the lightweight gelatine negative plates for photography, commonly known as 'dry plate' or 'gelatine process'. His discovery was that in heat-ripening a gelatine emulsion the sensitivity of the emulsion used would be increased making instantaneous pictures practical. It was so successful that by 1879 the first factory opened and photographers had the possibility, with this new technique, to expand their horizons.

For the first time, a tripod or any other support was no longer necessary. With daylight and a fast plate or film, cameras became more practical, and could be hand held while taking pictures. More amateur photographers entered in the photography world and camera design started to get creative. From simple box cameras, to single or twin lens reflexes to even detective cameras disguised in objects.

At first photography was either used as an aid in the work of an artist or followed the same principles the artists followed. The first publicly recognized portraits were usually portraits of either one person or family portraits to preserve the memories. Finally, after decades of refinements and improvements, the mass use of cameras began in 1888 with Eastman's Kodak film cameras.

Kodak followed the “Gilette model” or razor and blade strategy, a business model where one item is sold at a lower price, or given for free, to increase sales of a complementary good. Kodak decided to sell inexpensive cameras and making large margins from consumables like film, chemicals and paper. It went on to the market in 1888 with the slogan "You press the button, we do the rest". Thus was launched the era of mass-market photography.

In 1901 the Kodak Brownie was introduced, becoming the first commercial camera in the market available for middle class. The camera took black and white shots only, but still was very popular due to its efficiency and ease of use. Colour photography, despite being explored throughout the 19th century, did not become commercially valuable until the middle of the 20th century.

The scientists in the beginning of the century could not preserve colour for long enough, as they were lost with time passing due to their chemical formulas. Finally the first practical colour plate reached the market in 1907. The method it used was based on a screen of filters. The technology, even though slightly altered, is the one that is still used in the processing. A new era in colour photography began with the introduction of Kodachrome film, available for 16 mm home movies in 1935 and 35 mm slides in 1936. It captured the red, green and blue colour components in three layers of emulsion. Maxwell's method of taking three separate filtered black-and-white photographs continued to serve special purposes into the 1950s and beyond. Few

colour print and slide films still being made in 2015 all use the multilayer emulsion approach pioneered by Kodachrome.

Continual improvement over the years established the 35-mm camera, especially in its single-lens reflex form, as the dominant camera for both professionals and serious amateurs. In 1930 the highly dangerous flash-powder was largely supplanted by flashbulbs.

Even though the invention of the photography led to new scientific achievements and development of the industrial world, photography also became a part of day-to-day life and an art movement. While conventional cameras were becoming more refined and sophisticated, an entirely new type of camera appeared on the market in 1948. Edwin Land invented the Polaroid Model 95, the first instant picture camera in the world.

The Model 95 used a patent chemical process to produce finished print from the exposed negatives in under a minute

Land's camera caught on despite it's relative high price. The Polaroid lineup expanded to dozens of models by the 1960's. The first Polaroid camera aimed at the popular market, Model 20 Swinger, in 1965 had a very large success, and remained one of the top selling cameras of all time.

In 1975 a Kodak researcher, Steven Sasson was working on a revolutionary invention: the first digital photo camera. The idea came simply talking with his supervisor that asked him if it was possible to create a photographic device with something similar to the CCD technology (Charge Coupled Device).

His first prototype had resolution equal to 0,01 megapixel and captured the first black and white photo in twenty-three seconds, afterwards it recorded data on a tape.

1978 was the year of the first patent.

The first digital photo camera, available in the market, was on august 1981 and Sony had the privilege with the Mavica FD5. This camera used a floppy disk to support main memory. Being set out in a period where electronics was becoming more and more diffused, the digital cameras from the beginning were of contained size and very automatic. But they were certainly not for all pockets, in fact the prices were quite

high, for some models even 20,000$.

The real revolution of digital photography was in the possibility to see immediately the photos on the screen of the camera and later the download on a pc, avoiding the costs of film and the time it took to be developed. The user, with a digital camera can have a greater number of images with zero cost.

Acceptance of this device from the professional photographers wasn't immediate. In fact the first cameras did not have greater refined mechanisms and optical characteristics than those present in the past. There was no interchangeable eye, few manual regulations and a display that needed to be kept at a certain distance from the human eye. The scepticism towards digital photography grew constantly among professional photographers due to the new technologies that reduced the exclusivity of their profession. In fact thanks to new software, like Photoshop, developed in the 1990's, amateurs where able to do a professional's work.

The next device was the digital reflex, where the users could have a greater expressivity thanks to avant-garde lenses.

1991 was the year where Kodak introduced its first reflex, called DCS-100. A year later it introduced the second model: DSC-200 with an incorporated hard disk. In 1995 the first digital reflex dedicated to professionals, and the Apple "QuickTake" for the bigger public entered the market. In 1996 Kodak DC20 is launched, and it's the first of a series of pocketsize cameras in the industry. In 1999 Nikon, the Japanese corporation founded in 1917, presented the reflex D1, the first single-lens reflex (SLR) camera thought as an SLR camera and not as a re-elaboration of a camera with photographic film. But it's only in 2003 thanks to the Canon 300D that the reflex technology became more accessible to a wider range of customers with a price of 1000 euro.

1.1 Photography in communication [4]

Since its invention in 1839, photography's unique powers of visual description have been used to record, report, and inform. People prefer to see things with their own eyes, but when this is impossible the camera can often serve the same purpose almost

[4] Paragraph written on the base of: http://scphoto.com/html/history.html

as well. It is not true that photographs never lie--they can be falsified and manipulated. Nevertheless, a photograph can carry a strong measure of authenticity and conviction. As a nonverbal means of communication, photography can surmount the barriers of language and communicate through universal visual symbols. Photographs are well suited for use in the mass media. Today they are reproduced by the billions, and they can be found everywhere: in the pages of newspapers, magazines, books, catalogs, and brochures; on display in billboards, shop windows, and posters; broadcast over television; and organized into slide shows and film strips.

In photography's early days some of its most eagerly sought images were those brought back by explorers and travellers. That same kind of curiosity exists today. Photographs in the mass-communication media have made the faces of political leaders, popular entertainers, and other celebrities familiar to the public.

Photography is also essential to the advertising industry. In efforts to sell a product, attractive photographs of the item are used. Photography is also widely used in education and training within the academic world, industry, and the armed services.

2. After the Internet and social media

"One of the defining symbols of the early twenty-first century environment for innovation is the Internet. Born out of informal exchanges and a desire amongst scientists to share ad collaborate more effectively, this has grown into a framework for change which bears comparison with the advent of the railways in the 19th century" (Tidd et al. pag.27).

With the invention of the Internet, life simply changed. With a click of a mouse everyone had more choice and could access activities even at a lower cost. For example, booking flights, hotels, vacations, sharing life experiences is much easier and at everyone's reach. What technology allowed men to do, since the beginning, is to tell stories that were never been told. Our current society is a product of the digital revolution and some major sociocultural changes. Society has become "network centred" as social networks like Facebook and twitter are visited daily and constantly by users. These platforms are preferred for any kind of activities; both personal and

professional; dramatically increasing sociability, but a more virtual one and not completely realistic. The Internet had a strong impact not only in our social lives but also on how we decide to share content. The advent of digital photography and the web has changed the way we take pictures. Now-a-days cameras are available at incredibly low prices and the combination with the “cyber-space” has made people obsessed by photography and receiving comments on it. The Internet improved how to share photographs, but this does not mean it increased sales of photo cameras. Smartphones and their quick connection with the world are in everyone’s hands and pose a big threat. Professional photographers are divided between those that feel threatened by smartphones, defining the photo camera not having the best lens. And those, on the other hand, that appreciate this new way of taking pictures and videos explaining that capturing a moment doesn’t need to be completely perfect. Social networks like Instagram and Faceboook; used for over 60 billion upload a year; can actually be used to increase a photographers’ popularity. It’s clear that the world is moving towards technological developments even more aggressive that the present ones, and in the future we will see elements that seem obsolete now. After these considerations we can conclude that both photography and photographers can be relieved that their place in the world is still pretty stable. But, on the other hand, where does the sale performance of professional cameras stand? One thing is certain, paparazzi, press reporters and those “seeking the scoop” will always prefer using a digital SLR camera and a huge 600mm less than an iPhone. Companies producing digital cameras and professional photographic gear have used the Internet as the main portal to sponsor, share and market their products. Being the fastest and easiest way to reach users and potential customers, Internet, has opened a new opportunity for everyone.

Section III: Description of the case

1. GoPro's History

As the youngest of four children, Nicholas Woodman from Menlo Park, California had always been a schemer. He grew up in Silicon Valley's prosperous Atherton and he was, as his teachers recall, a "supremely confident" boy who wasn't afraid to challenge those in charge. Woodman focused more on sports than books. After his high school graduation in 1993 he eventually became wave-obsessed, attending the University of San Diego because of its proximity to sunshine and salt water. He earned a Bachelor of Arts degree in visual arts and a minor in creative writing in 1997. After school, Woodman founded two start-ups, The first was a website called EmpowerAll.com, which attempted to sell electronic goods for no more than a $2 mark-up, and the second was Funbug, a gaming and marketing platform that gave users the chance to win cash prizes.

To recover from the bad entrepreneurial experience of Funbug, where he lost 3.9 million of investor's money, in 2002 at the age of 26, he decided to do what he loved, a surfing trip through Australia and Indonesia.

Woodman wanted to capture his experience while he was surfing; he wanted to remember the excitement and adventure he felt, seen through his own eyes. He wanted to capture, meaningful life experience, in an engaging and immersive way. But this wasn't possible using any other object available in the market. There was no camera that was waterproof, small, portable, light, indestructible, and attachable.

That was the year where he developed a simple idea, using already existing components, but that had never been used together.

With a waterproof 35-mm film camera from a surf shop, and a wrist wrap, he had created the first GoPro. As he recently stated " ideas come from being outside, being creative doesn't come from staring at a desk". He immediately understood what he had just done. He had found his new project simply by trying to capture his passion.

During an interview, after his success, he explained that in early videos or pictures of a vacation or event, there is always someone behind the camera, always someone left

out of the moment. His idea was to eliminate this problem. When using GoPro your prospective is what matters. And the interesting part is that you don't need to stop doing what you love just to take a picture. The first camera Woodman created was still designed for photo enthusiasts to take a photo of someone else while in action. If you wanted to be recorded or captured during motion or an activity, you needed a camera and a person behind it to do the work. Furthermore, if we wanted the footage to be any good, this person had to be good with the camera. So in 2007, the idea to take the camera off the wrist and to create accessories to mount the camera, allowing people to document themselves, have footage of something they personally were doing, helping them see their own life as they had never seen it before, made GoPro the capture camera for excellence.

The technology existed already, an adaption to what the founder needed, not quite.

The need for an innovation opens the mind and experiments on new projects come to life. This is exactly what happened. Woodman was enthusiastic to return home from the trip and to develop this new concept. He had just created the perfect product for the most adventurous people, he had thought of a perfect device for surfers who wanted to use the camera to improve their skills, and share with friends their day.

Next, everyone who loved sports and adventure wanted a Gopro, and from a niche brand it moved to being a household name. With GoPro anyone can be a star. In a context were everyone is self-obsessed and "selfie-obsessed" GoPro's success was certain. Gopro BE A HERO.

Their slogan, and their focus during their entire journey.

2. An introduction to GoPro's success

As we discussed in section I, an innovation is not always something new or with a new technology. If we considered only this definition of innovation, we would underestimate the markets' reaction to a more sensible solution offered, than to the originality of the technology. Some may argue the role of Gopro and whether it can be defined as an actual innovation. Here we need to remember the difference between the concept of invention and innovation as introduced in Section I paragraph

1: an invention is the first occurrence of an idea for a new product or process. Afterwards the idea needs to be brought to the patent office and when it enters the market successfully we can define it as an innovation. The single components of the initial GoPro were not born from Woodman's mind, but as we will see in the following paragraphthe ownership of a patent, the assembly of the various components together, the placement of the product in a new context created a mix that brought GoPro to a great success and to be defined as an innovation. We have defined a "winning" innovation by its original context, but also by its capacity to present novelty to the market and to match demand with supply. A company needs to have technological capacities but most of all marketing capacity. As will be discussed below, the ability to transmit to the customers what the product is all about and what is behind a simple object is a key concept for GoPro's success. GoPro's path started with the focus on the innovative product, creating a prototype, and afterwards a working commercial version. Through the years the focus moved to the processor and the technological characteristics in the product; like graphics, size, interaction on the web and the look. But let's go through some steps.

3. GoPro: Time-line

From March 2002 and August 2002 Woodman travels to Australia and Indonesia.
There, he tests his wrist strap with different cameras, later realizing that he also has to sell the camera and a waterproof housing. With his early prototypes and a series of 35-mm film cameras, Woodman takes surfing photos and develops the first GoPro "prototype."

Fig 3. Founder Woodman with the first GoPro prototype. From Google images.

A couple of months later, in October Woodman founds Woodman Labs.

After writing the patents and legal documents from his 1971 Volkswagen Van, Woodman creates Woodman Labs, the parent company for what we know today as GoPro.

In September 2004, GoPro develops and sells its first camera, the 35-mm HERO. Long before GoPro has HD video capacity, the company starts by selling Chinese-manufactured 35-mm cameras. Reusable and purchased from the manufacturer for $3.05 each, the cameras originally sell for about $30.

Fig 4. Advertisement for the first commercial version of the GoPro. From Google images.

Fig 5. The First GoPro. From Google images.

In 2005 he sells about $350,000 worth of cameras. Woodman hits this goal by selling

to surf shops and specialty sports boutiques as well as appearing on QVC.

During this interview and marketing pitch he states " you don't need an expensive camera to take photos, you just have to have the camera on hand when something exiting is happening".

In 2006, after being convinced by his friends Woodman decides to take GoPro digital and takes it's first try at video. The Digital Hero is introduced, the camera shoots VGA video (Video Graphics Array) in 10 second burst and has no audio recording ability yet.

Fig 6. The digital Hero. From Google images.

In 2007 GoPro improves video. The first GoPro with sound, the Digital Hero 3, captures activities with unlimited video and audio. Bradford Schmidt, GoPro's creative director was one of the first to test the camera shooting while he was surfing in Hawaii.

In 2008, GoPro makes two distinct changes with its Digital Hero 5. First, the company installs wide-angle lenses on its newest cameras, giving users that distinct panorama shot that is now one of GoPro's signatures. The company also begins marketing mountable devices, allowing people to now film themselves by attaching their cameras to ski poles, car frames and surfboards.

In June 2009 a great marketing event happens. Apple debuts the first iPhone with video. The iPhone 3GS, is the first phone with video capacity. With the ability to capture 3-megapixel video in VGA quality, the iPhone becomes a direct competitor to traditional camcorders and video cameras, which decline in sales as more users

employ their smartphones to record activities. Woodman's "guru" Steve Job, might have become his enemy.

On January 25th, 2010 High-definition is brought to the market.

The jump to high definition with the Hero HD (1080 P video at 127° wide-angle) opens up new markets for GoPro, which is fast becoming the name-brand camera for unique point-of-view perspective videos. The company ends 2010 with revenues of $64 million, more than tripling sales from the year before. Says Neil Dana, one of the company's first hires: "When we started getting into HD that's when we realized that this could be absolutely massive."

MAY 5th, 2011, a big event for the company happens. GoPro announces outside investment with series "A" funding round.

The company has taken a strategic investment from five venture capital firms including Riverwood Capital, a globally-focused private equity firm that invests in high- growth businesses in the technology and services industries; and Steamboat Ventures, Disney's venture investment arm. The total investment is pegged at about $88 million.

On October 24th, 2011 GoPro refreshes the product line with Hero2. A year after launching its first HD camera, GoPro introduces an improved version with an 11-megapixel camera, improved low-light capability and 1080P video at 30 frames per second. The company ends the year with revenues of $234 million.

Fig 7. Hero 2 camera. From Google images.

Almost a year later, on October 17th 2012 the company introduces HD Hero3, and

records $500 million in revenue.

GoPro continues its yearly product refresh with the smaller, lighter GoPro Hero3. With three different camera types, the latest line features the $400 “black edition” which now has 12-megapixel photo capability and 1080p video at 60 frames per second. The company ends the year with sales of $521 million.

Fig 8. Hero 3 camera. From Google images.

Before Christmas 2012, Woodman becomes a billionaire.

Chinese electronics manufacturer Hon Hai Precision Industry Co., better known as Foxconn, makes a $200 million investment for 8.88% of the San Mateo, California camera firm. Valuing the company at $2.25 billion. According to speculations, Nicholas Woodman owns a majority of the company; at a minimum 51% ownership, he now has a net worth of at least $1.15 billion.

“GoPro and Foxconn share a vision of the future where content capture, creation and sharing will become an increasingly important form of communication,” Woodman said to FORBES magazine.

Known as the manufacturer of Apple iPhones, Sony PlayStation and other popular electronic devices, Foxconn will also take a seat on the GoPro board.

Since selling its first camera in 2004, GoPro has expanded at a vast pace and now has a 32% share of the pocket camcorder market according to Chris Chute, an analyst at IDC (International Data Corporation). In 2013 GoPro won an Emmy, the most important

television award at an international level, for “Enabling new prospective at incredibly low cost”.

In June 2014 CEO and Founder, Nick Woodman rang the bell on the trading floor. GoPro went public, selling shares at 24$ each on the first day as a listed company on NASDAQ exchange, thus achieving another huge milestone.

4. GoPro: The Innovation

Why can we consider GoPro’s cameras as being an innovative product?

GoPro introduced to the market a new good and also a new service for its users. The innovation is behind almost everything that GoPro designed. The improvement in already given materials, the creativity and originality of the product follow directly under the definition of “innovation”. Analysing the products, the result is that GoPro made both a product evolution a design evolution as well as a technological evolution. As we can see from the timeline above, during the years Gopro improved its original product, creating a line of cameras and afterwards a line of accessories.

The first phase of experimentation for GoPro was done mainly by it’s CEO Nick Woodman and his closest staff. In this “Fluid phase”, as we can recall from Section I under “Production Phase”, the first model of the GoPro was very simple. It used a 35mm film and could be wrapped around the wrist. It was a light camera that had immediate success, with discrete photo resolution and great underwater performance. Testing continued and the ambition of the Gopro team brought the company into the “Transition Phase” where it emerged a dominant design for the company. The cameras became much more smaller and even lighter than it’s previous 7.2 ounces, with the signature square shape design and an evident logo in the front. The great transition for GoPro, was certainly the switch to Digital cameras, which allowed to create a united compact camera and opened the doors to the internet and social media community.

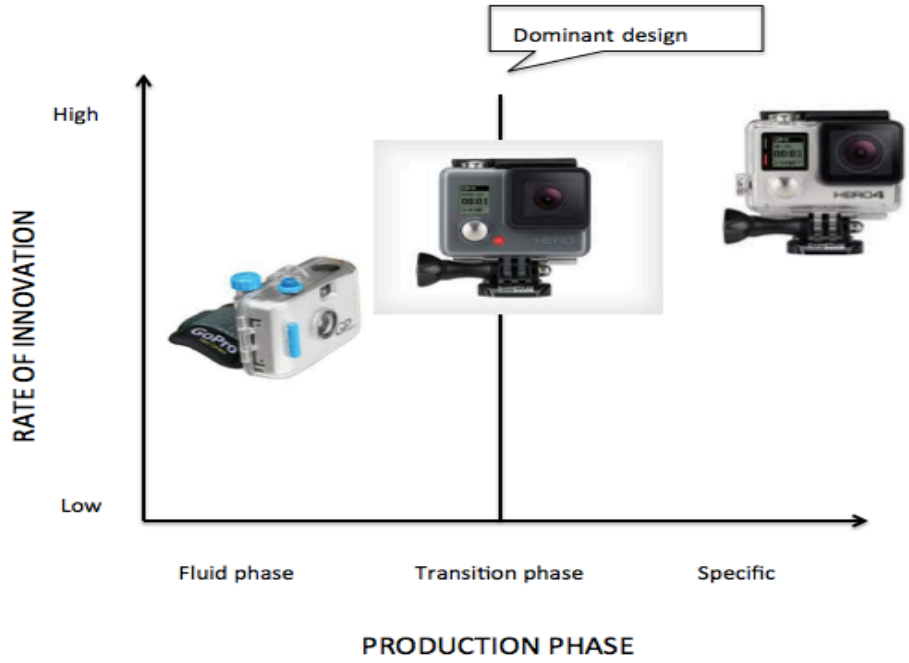

Fig 9. On the x-axis the production phase of Gopro and on the y-axis the rate of innovation comparing the different product evolution. Personal elaboration.

As Mark Burnett, a film and TV producer, stated during one of GoPro's promotion videos: *"This tiny box, which is called a Gopro, delivers images comparable to highly expensive digital cameras. GoPro can actually put you in the action, eliminating the distance".*

The implementation of GoPro's product moves us forward to the process, service and position innovation this company established.

In the beginning of their history, GoPro had great "first-mover" advantage. Their constant improvements, kept customers always on the edge of their seats. GoPro's new concept and idea of taking pictures, of re-living a moment, of being a real hero, played a great role in it's success. This ability, of producing something no one else can, brought great advantage. The idea of the new product brought great revenue, while the process innovation, with the specific software for the cameras, brought Gopro to engage with great participants for investment deals. But their new way of "serving" customers is the main winning card. GoPro's first aimed customers were surfers, adventurous climbers, skydivers, scuba divers and snow borders, afterwards

all types of athletes. This is fundamental in understanding the position GoPro initially decided to take. Its target was to succeed in a niche market, those of risk-lovers, that needed a GoPro, to remember beautiful moments while still practicing an extreme sport. Thanks to this focus, GoPro was able to always have focused milestones for improvement and gave a complete new twist to the use of camera and changed the context in which a photo camera had been framed.

The technological elements used by GoPro, go hand in hand with the discoveries of the time. From film to digital, from digital to video. With the introduction of this new technology for their cameras GoPro's mission becomes to eliminate the pain points associated with the CAPTURE-MANAGE-SHARE-ENJOY of compelling content. To fix this problem, a unique feature never seen before for a camera company, and for this analysis a crucial discovery to GoPro's success, was the introduction of the GoProApp, placing GoPro in a new innovative position. Available for smartphone, IPhone and tablet; this application uses the phone as a digital remote to command the GoPro in any circumstance. After capturing a moment, you can play back, copy content from your mobile device and share. Using a Wifi connection the step between filming or capturing something, and being able to see it on a personal computer or TV is the fastest ever. The novelty stands in these entire characteristics behind an object designed for extreme photography. Furthermore GoPro, born as a camera company, was one of the first to use at such a high level the internet. GoPro's camera, even if may be seen as an "under-dog" by the professional photo industry, is actually capable of producing video at 4k technology; which is the highest resolution standard now available. Put to the test in extreme conditions they do not even under-perform. In fact when mounted on race cars, motorcycles and even on airplanes, they are able to give the same performance. It's clear to say that GoPro can get the job done in critical conditions where other normal cameras, or smartphones can't even compete. The radicalism of this innovation is measured by the significant impact on the market by the company. The GoPro brand has created a new sort of market for the photo industry: from simple to adventurous. However, we may also consider GoPro as an incremental innovation due to the improvement of an already present service, a

capturing device. Being the “hottest” camera company in the market it was easy to reach an incredible amount of sales instantly. With 3.8 billion products sold in 2014, GoPro can make about 70’000 units a day, and in peek moments it can reach even 100’000 units produced. GoPro’s business model is based on proximity of suppliers to manufacturing, they are certain this effects efficiency in production. In south of China, most suppliers are located at maximum 3-hour drive from contract manufacturer. This allows the company to be more nimble when it comes to production. The sophisticated supply chain, complemented by world wide logistic centres located in North America, Europe and Asia, where inventory is stored, allows GoPro to quickly and efficiently reach distributors and customers, applying a successful “service innovation” model. The first camera was originally manufactured in China, but over the last years Gopro changed the production approach. The transition away from original design manufacturing (ODM), where an external company is assigned the production and development, allowed GoPro to innovate more quickly and to have control of the quality and performance of their products. This was made possible by boosting the engineering department, which went from three members to two hundred. Quickness is a great advantage, especially for a company that implements an offensive strategy. As mention in the paragraph of “ Strategy of Innovation” in Section I, in this case, the radical innovation needs to be implemented before anyone else. The R&D expenditures and marketing will be beneficial for the great outcome of the product. We couldn’t see this anywhere better than in GoPro’s case. To be so competitive and offensive, the entire team dedicated a lot of personal time, especially in the beginning of the company, to test the products themselves. Timing is, as already mentioned, crucial. In order to grasp the first mover advantage, anticipating moves, needs to take as little time as possible. Design, development and launch of the product need to be established as quickly as possible. As Woodman himself states in one of the promotional videos on the official GoPro site, success is created analysing two aspects: making and doing. What GoPro wants to make, is the number one world most versatile capture device; what it wants to do, is enable some of the most engaging content.

We will see below, in the marketing and customer section, how and why GoPro was so

avant-garde and meticulous during this process.

5. GoPro: Marketing and Customers, the perfect combination

Great content marketing requires a marriage between a company's products and services, and the content that describes it. GoPro is a company that manages to successfully marry the two all while delighting and exciting the consumers.

The user context development, explained in Section I, under 'Development based on customers, is a new solution to an unexpressed need by definition. The users needs' may exist while before there is any solution to them. In our case, with GoPro this is exactly what happened. Although a novelty does exist, both the problem and the solution came from one person: the founder. From his personal experience and desire he developed and entire brand. Most importantly and unconsciously, he created an entire community.

The users may have a hard time explaining to the inventor the form and functions of the product or what they want from the final concept. But thanks to the great ability of the creators, in providing a design and a technology right-on since the beginning, the establishment of a customer-producer relationship for GoPro was easy.

In fact for GoPro, marketing and customers go hand in hand. Customers are essential both for feedback and for show casing their cameras. GoPro's success can be embodied by a simple concept: user-generated context.

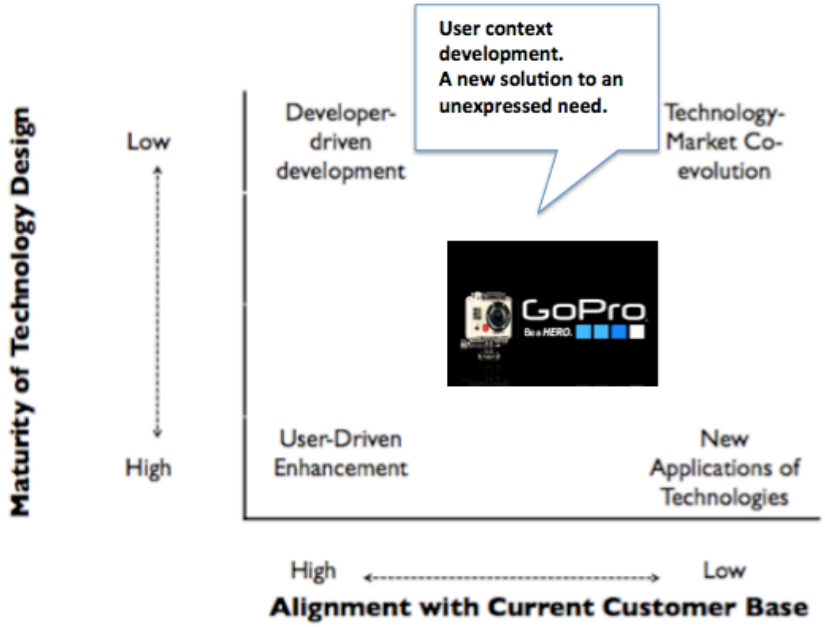

Fig 10. Development based on customers, plotting GoPro. Graph taken form Professor Prencipe's course on" Entrepreneurship, Innovation and Technology", A.Y. 2015 with a personal re-elaboration.

Thanks to the constant videos uploaded on the web by the users of GoPro, in 2014 Youtube calculated almost 6'000 uploads daily for a total content under the 'GoPro' name of 2.8 years of total videos, engineers are inspired and understand better what the customer wants and needs. The process of inventing something new, becomes even easier for the company since the users practically tell personally where they would like to mount their Gopro, how they would like the mount to be, what are the bugs in the software, what they need improved.

Many brands tried to communicate with their customers on YouTube and other social media, but GoPro built their entire brand on top of this community. Creating also monthly contests for "best photo" or "best videos", GoPro wants to inspire buyers to share their experience, making the collaboration even more fun and the bond between users and customers less informal. The user-generated content shows the power of the GoPro camera and the superior quality of its high definition video. Embracing this

context, the community with its creativity became the official way of expression. Marketing in fact has never been easier for a company.

The GoPro marketing strategy team searches the web for the best and coolest videos shot with their cameras. They actively seek out emotional and impactful content that they can share with the rest of their fan base, whether it's 'extreme' and unique content or simply the beauty of everyday life. The brand is the perfect platform for the customers to share their content, which through the years has regarded not only athletes but also fathers recording their child's first walk.

This customer centred marketing strategy, focused on the "GoPro community", has created a viscous cycle.

Everything starts with the GoPro logo: GOPRO BE A HERO.

Fig 11. The GoPro logo. From Google images.

As soon as people see this logo on any screen they are interested right away, their attention is caught. People are engaged because they are certain they will see something new, interesting, and powerful. Again, they are aware of the content. GoPro can now be found in all types of retailers, from small, to specialized, to large stores. To make the new potential customers interested and care about the product, GoPro has its personal stand. The key is a small TV located at the top of this stand.

This is all tactics, because as CEO and Founder stated during an interview, to make people care about the brand even if they are not interested in the product, you need to give them a free product that you are certain they will love. This "free product" is the videos, both professional and amateur, that are shown on the screen. This capture device is a viral hardware, it's a marketers' dream to have a product that needs so little effort to be under the spotlight. In the commercials, the camera itself isn't even shown, the audience already knows what they have in front of them, and they know these videos are authentic, real. They are life. After GoPro has entered the hearts and the interest, the cycle stars turning. And GoPro's community keeps on growing. Everything moves around the most important people, the customers. The users are part of the company and are fully supported. The company keeps on "snow-balling" and growing and having such a great success do to the lifestyle that GoPro has created. It has become a new status; to own a GoPro; it has become a signature to adventure, to the love for photography. There is no error in stating that the real innovation here and what makes this company so strong, is the community behind the product and the user generated context.

Fig 12. The GoPro stand inside shops. From Google images.

5. Competitor analysis

Whenever there is a market and there are profits, it's inevitable for there to be competitors. Even if GoPro has a security in its position there are other companies that

create a similar product. GoPro's success has given an input for other companies to implement an imitative strategy in order to catch up with the leader company.

The first to mention is the noted brand Sony. Always present in the video camera and photo camera industry, strange to think of Sony as a follower. With the Sony HDR_AS100V we have a cheaper version of action camera, costing only 200 $. It has image quality that almost rivals GoPro's, noticeably-better audio quality, and a longer battery life. It does have some significant faults, such as a surf mount that will not stay on your board and a case that's only waterproof to 16 feet, paltry when compared to the GoPro's 131 feet. Dynamic range isn't as good, either, and there's some significant lens distortion, but at $200 it's been considered a potential good substitute. Sony's sales have never reached the high levels of GoPro. And it's well known name wasn't enough for swiping out the dominant producer. Another company worth mentioning is Nilox. This Italian company was created in 2005, around the same period of GoPro's take off. Nilox is part of the Gruppo Esprinet, the first distributor for info systems and electronics in Italy, in the top three in Spain, and fifth in Europe. This company's determination in R&D and product marketing abled it to grow during the last years till becoming the first Italian brand for action cameras in the world. Nilox's products are very similar both in cost and in performance to GoPro. It is easy to see their products next to GoPro's in shops with the same features of the stand that were previously mentioned. Nilox was able to enter the market in the sports department as well, having a close relationship with the racing champions, like the MotoGP driver Marc Marquex. Nilox is distributed in Italy, Spain, Germany, Czech Republic, France, England, Slovakia and the Middle East. Only in 2015 it started it's journey through the American market. This last point, is seen as essential for understanding why Nilox, having the same cameras, same performance, same prices as GoPro, isn't as well know as the Californian company. GoPro had the possibility of developing in a different geographical environment, with a wide band of customers interested in capturing their favourite sports. Their position in the market has been constantly re-ensured do to the great social impact. It is difficult for outside companies to enter a market where there is already a "best-company". As discussed in Section I under "Strategy of Innovation",

the first mover advantage is of great importance to be recognized as the first brand. There are also some other minor companies that provide action cameras to the public but they are much more difficult to find in store world wide, and a specific research on these products is necessary in order to find some substitutes to GoPro.

But why all these competitors are not able to reach the same market level as Gopro?

As mentioned and highlighted earlier the unique features of the GoPro company are the great community and the high social media content which cannot be substituted only by an equally or even lower performing camera.

Also the fact that most professional extreme athletes prefer to use the GoPro over other action cameras has influenced a lot the customers' reaction to competitors. Technology is not all there is to it. The brand is now a well-renounced name and is something more than a simple innovation.

Being the first to have had such a great success on the action camera field, people trust the brand name and are willing to spend a greater amount for purchase just to be part of the community.

6. GoPro: Future Direction

After a certain point even the most innovative and great company experiences a period of crisis. The "boom" of the initial period, may be accompanied by periods of unsuccessful sales, frustration and lack of innovation. The main concern for a company is to understand what to do after their body of users is terminated. For GoPro, one of the main aims is to continue innovating products and to provide easier to use action cameras. Their future plans include scaling everything that has made GoPro the company that it is today, providing a better working app and an even better YouTube channel. In 2013 the project with "General things", a web and software engineering consultancy, dedicated to helping businesses solve problems by making better use of technology and design, kicked off the GoPro templates studio. This is entirely dedicated for amateur video makers that want to share their videos in the best way possible. The studio provides already made videos by GoPro, that can be used, through guidelines, as an example and cue. GoPro is investing a lot in this project. Their goal is to become a media company all around. Implementing the

YouTube channel, Facebook pages and forums. To avoid what some are saying about GoPro and its risk of creating future products that don't meet the standards, like the journalist Barron in "La Stampa", GoPro has planned in 2016 the launch of drones. With this new and avant-garde product GoPro wants to give a completely new experience to its customers and expand even further it's horizon. Already used by military forces, fire fighters, aviation and documentaries the GoPro product line will have another "toy" that will certainly interest the categories of users just mentioned. Starting from the original product, the most versatile camera in the world, GoPro expanded its business in several directions: from new products that use the GoPro camera, like drones, to new software applications only compatible with the GoPro original camera. Having reached a solid number of "current customers" GoPro is insuring its future by differentiating their market.

Conclusion

When starting the analysis on the GoPro case, the first thing that came to mind, was a new product, with a never seen before concept of “versatile” camera and a brand new vision of photography. The shadings behind the success weren’t so obvious at all, yes GoPro provides a fun, easy to use, quick, portable and light camera, but GoPro has now become a social media innovation, not only a capturing device.

Through the analysis we have come to the knowledge that furthermore to having a great idea, the product needs to be implemented to the customers in an efficient manner and the best way to deliver a successful product, is to consider the customer. In an era were the internet is the main ally in everyone’s life, the best thing to do is to use this portal to reach people all around the world and to share content. GoPro created the relationship with customers, thanks to the social media and world wide web, creating a key element for the company and making it so successful. Furthermore, in this thesis we have come to know that thanks to this characteristic it has created an entire new horizon for the company. Making the future a real and bright prospective ahead with the differentiation of the market based on an actual and current customer volume.

Understanding the many aspects behind an innovation may not be easy. But we have learned that not only technology can influence a companies’ performance. The mix that includes both technology and user-generated content has been proven to work marvellously. We can state that its customers create GoPro’s products, and the first customer was nonetheless its founder. During the discussion of this work it has been discovered that the ambition of a team, the creativeness and passion of its leader and the real life interest in an idea, can really bring it to life. In a competitive industry like the photographic one, where many famous names have been threatened by the crisis and have lost its stability, GoPro can be fearless of its competitors.

The company has become a social media phenomenon, a world known name, a powerful and influential status in society, all characteristics that are not simply replaceable. The only problem that GoPro may face is the one of market saturation but as we said, the future based on improving already existing services and differentiating

complement products to the original device, will keep GoPro on the edge. At the end of this thesis we may conclude that all the questions in the introduction and even more have been answered.

With Gopro anyone can be a hero, anyone can be a star using the worlds' most versatile camera, and being able to share the most amazing content.

Think it. See it. Do it.

GoPro, an innovation at 360°.

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