ABSTRACT
There are different kinds of luxury brands, some launching conspicuous products, or others focused in products triggering emotions and meanings, for example. The second type of luxury brands are concerned with maintaining their history, of keeping a same "personal trait" when creating new products. Luxury brands with these characteristics have artistic directors who have the role of defining the new products design and how to do product innovation, in the condition of always following the brand artistic DNA, and propelling the brand image over the products. Therefore, we can say that luxury companies establish users' expectations; in an intuitive way they create their future clients' needs. Thus, they do not take into account the users perceptions of products to make design and innovation decisions.

Innovation in luxury product is held by the application of technological solutions that responds to the brand artistic directors' exigencies. Hence, products from this sector are characterized as being art applied on functional objects, which means that it is imagined by the brand artistic director, and developed by the design team members, who are in charge of materializing his vision of the end product. [1, 2]

The role of the design team is then to provide technological options to the artistic directors of the brand, so they can make their decision about what innovative solution to apply on a new product.

Enabling those companies of reaching users' inputs, without striking their artistic essence in discrediting the brand's codes, we can offer an ideal solution for optimizing product innovation. By providing users information as a persuasion device, we can integrate both the design criteria of luxury companies, and the customers' perceptions regarding new products; and respond to the need of the product innovation teams, of generating technological solutions that will be better adopted by the brand artistic directors.

KEYWORDS: PRODUCT INNOVATION, INNOVATION ADOPTION, USER INTEGRATION, LUXURY.

INTRODUCTION
This paper presents a theoretical background based on innovation adoption in the conceptual design process; the luxury sector and its specificities in regard to its clients' exigencies, and product innovation; and user's feedback integration into the new product design process. As a result of the state of the art, we propose an innovation approach to bring users'

Transforming users into a persuasion device for innovation adoption
inputs into the early stages of new product design to respond to the need of finding a persuasion device capable of optimizing innovation adoption and anticipating innovative solution success for the luxury sector, with the concern of respecting the specificities from this specific industrial field.

LUXURY
Luxury products always comprise functional and symbolic traits that can be perceived. Art is one of the main features that contribute to the luxurious character of products, as it is the aesthetic and social guarantor of it. The key word when it comes to luxury is dream, due to the fact that those products offer quality, emotion and rarity. They are loaded with meaning, to which users become attached to; it is mostly an experiencing product, rather than a utilitarian one. Consequently, it enables the consumers to satisfy psychological and functional needs. [3,4]

It was seen that there are three motivational factors for consuming luxury goods:
- Functional motivations: are the tangible attributes of the product, as high quality;
- Experiential motivations: the pleasure and hedonism evoked by a particular product design, for example;
- Symbolic interaction motivations: the feeling of belonging to a group or of possessing a social status. [5]

Therefore, we can see that luxury is a concept based on personal perception, regarding users' expectations.

Hazaee & al. [6] described the main factors that people takes into account to found their opinions of luxury products.

When not based on rare components, luxury products "sense of scarcity" has, in many cases, been a matter of continuous investment in innovative product features. It means that technology contributes to creating a world beyond all constraints. Therefore, in this particular context, a technological solution is adopted for conceiving the product as imagined by the brand artistic director. The product innovation team of luxury brands has the role of searching for the better technology which will enable them to respond to the artistic creator exigencies. [3, 4]

In the luxury sector, we can figure the commitment, the implication and decision power of stakeholders, more precisely, from the artistic brand's creator. It is justified by the fact that in this domain, the brands must differentiate themselves from concurrency by establishing their own codes; by integrating their personality, the company’s history and their artistic DNA on the products. They are the guardians of the consistency and the respect of the brand image, during the launch of a new product. [2]

An example of an iconic luxury product is the CHANEL Nº 5 perfume, where we can distinguish the creator's personality and the brand's DNA. The symbolism of CHANEL's codes is highly perceptible by the clients, through the products; the logo; the artistic guidelines; the image from the company, which have not changed since it was created by Coco Chanel. [7, 8]

Therefore, we can find two different essential parameters concerning the new product design, which are the intrinsic complexities from the product derived from the technology applied and users' perception; and managerial complexity regarding the brand strategy. [9]

However, this strong DNA directs the luxury sector into a dogmatic strategy. Even the customers are willing to innovation, as long as it respects the brand products' traditions. The consequence of it is that it brings limitations for innovation opportunities, as they are confined in the precepts of their founders and exigencies of their clients. [2]
INNOVATION
Nowadays, companies' reactivity concerning the cadence of market evolution and the clients' demands is very important. They have to deliver innovative products to maintain their market share. One way to respond to market and user needs is by developing new products adapted to the target. The innovation capability and the adoption of new product concepts by firms will establish their continuous success. Innovation is the major source to maintain market success, which is becoming more competitive. [10 – 11 – 12 – 13 – 14]

Damanpour & Gopalakrishnan [15] and Reid [16], highlight that the most critical steps from the new product design process are the idea generation and the solution adoption.

Pahl & Beitz [17] introduced a global product development process with four main steps, starting from the definition of tasks, to the communication of the final solution. In Figure 2 we can see the full design process and the activities held onto each step.

Figure 2: Pahl & Beitz product development process. [17]

The conceptual design is the stage where the design team analyzes the problem and begins the search of suitable and novel technological solutions to define the product design specifications. [17]

Innovation comes to organizations in two ways: they may be generated inside or outside the company to then be adopted. Generation includes idea creation and problem solving for product or process solutions. For adoption, it includes the awareness of innovation, attitude formation, evaluation, decision to adopt and sustained implementation. At a firms' level, innovation is usually defined as the adoption of an idea or behavior, pertaining to a product, service, device, system, policy, or program that is new to the organization.

The environment of the organization has a strong impact on its ability to adapt and innovate. [15-17-18]

Innovation that fit a company's environment have the best chance of being adopted. Consequently, the strategy of the firm will influence the probability of innovation adoption. [19]

Bouchard & Auussat [20] declare that the conceptual design stage has also some steps to follow, and is either constituted of four phases that are the information gathering, the idea generation, the decision making and the solution communication. Figure 3 presents the conceptual design process with its four stages.

Figure 3: The conceptual design process. [20]

Once the technological solutions are found, they are communicated to the stakeholders and manufacturing engineers who will be in charge of deciding which one is the best solution to adopt, and will adapt it to the large scale production. [21 – 20 - 22]

Adoption can be seen as a difficult step to reach in product innovation, as when developing a new product it is required to different actors with different backgrounds to combine each expertise and find an innovative solution. Hence, each actor has its own point of view regarding the end product, and often, its own vocabulary to communicate. Ineffective communication can lead to misunderstanding and affect the progress of an innovative project. Information gathering regarding a project leads to the formation of perceptions about the innovation. It is according with these perceptions that a decision about adopting or rejecting the innovative solution is made. Therefore, it is important to find a common language, understandable by each actor, and mainly by stakeholders, to optimize the exchanges between the project collaborators and the perception of the innovation advantages for the company, to achieve the solution adoption. [9-24-25]

Good internal and external communication has been identified as being associated with the successful development of new products. Key
opportunities for innovation are also recognized as arising from proximity with outer sources such as scientific and technical institutions, as well as end users. [26]

Product innovation requires that firms assimilate users’ need patterns, design, and manufacturing of the product. It requests moving to a new place in technology, in application, or in end users' settings. [27- 28 -29]

In these days, users' feedback has become a key factor for product innovation. An important element in user integration is the need for information. Potential users of new products can provide a valuable input to product innovation, allowing the project team to assess their target. The ability to look outside the firm is a necessary complement to effective internal collaboration, as it gives companies extra information which will guide to better decisions, and will provide substantial argumentation regarding the innovative solution developed. [30, 26]

There are different approaches that have been developed for integrating external knowledge based on the interaction with end users. The most frequently applied comes from qualitative research methods, such as interviews, in depth observations of behavior, or focus groups, for example. It is suitable for inductive and exploratory research, as it leads to the understanding of phenomena and theory generation, particularly where human behavior and function, and non-quantitative variables are present. It is a rich data in terms of understanding the context and background of the users; and this approach will help to analyze, compare and contrast the main findings, directions, and shortcomings about the analysis of the interaction between a user and a product. However, these techniques focus only on a limited number of users because of the amount of time needed to gain this rich user input. End users' subjective and qualitative perceptions such as affection, aesthetic appearance and ease of use can be critical to the ultimate acceptance of a new product. [31-32-16-30]

**RESEARCH QUESTION**
The state of the art exposed in this paper provides a background on product innovation adoption; the luxury sector and its specificities in regard to product innovation and their clients; and user analysis to provide new product design feedback.

In this study, we apply the term "user" rather than customer, as the aim is to analyze their perception and behavior while interacting with the product (or prototype). Users are described as being individuals that expect to benefit from using a product, and each individual can have different relationships to different products or innovations. [33, 34]

Concerning the constraints of luxury brands of not being open to explore users' needs and exigencies aiming to maintain their status of being the ones who create them; the main difficulties encountered to apply innovation and sustain its relevance within multidisciplinary teams; the research question sustained in this case study is:

*How to optimize the adoption of an innovation, by providing an external point of view that will correspond to luxury brand exigencies and help to anticipate product success?*

The hypothesis raised to respond to the research question is: by basing the communication of an innovative solution on users' feedback, the persons implicated into the project have an external and relevant source of persuasion that will also afford an anticipated feedback regarding user perceptions of the innovative solution. The suggestion tested in this study was to integrate user analysis into the innovation process of luxury brands, at the solution communication step, to obtain extra information that will be useful to persuade the artistic directors of the benefits of the solution proposed.

**EXPERIMENTATION**
This experiment aims to generate the argumentation for solution communication and adoption, based on users feedbacks of mechanisms applied on small containers for a cosmetic product. The user input will be taken into account at the communication phase, where the company has already functional prototypes (technological solutions), closer to the final product.
The user profile targeted in this experiment is elder women, between 60 and 80 years old. This users' profile is part of a new market segment that the brand intends to offer new products. These end users are very interesting to luxury companies as they are the most accustomed ones of buying luxury goods. They were the ones who fuelled the explosion of luxury markets in the 90s, and so their taste for luxury goods is even more pronounced than younger people.[35] The intention of generating an argumentation based on users' feedbacks is for being able to offer complementary information about users that will help to make decisions, which will be relevant to the end users as well as to the brand identity. They are focused on usability principles to analyze the dexterity and behavior of the users toward different mechanisms of opening and closing small containers. The usability study will assist the design team to better understand the subjective needs and expectations of this new user profile, which they are not currently aware of their habits and behaviors of use. [36, 37] For a reason of confidentiality of the project (that is not yet in the market) it will not be possible to provide information regarding the final prototypes, but it will be presented information about the objects that were the sources of inspiration for the mechanisms developed. This will give common information about users' feedbacks used at the final argumentation for the innovation adoption. The preparation of the experiment starts by the selection of the inspirational objects (used to generate the concepts of the mechanisms applied in the final prototypes) of the brand designers, which were used as samples to be tested. With the use of inspirational sources, the principles of

the design process of luxury companies is respected, as these objects were selected by the design team, and so the fuel of new ideas is still coming from the inside of the company (they keep their status of creators of new products). Figure 10 shows some examples of the samples of small containers used on the tests. There is two lip balms with different opening / closing mechanisms (one by screwing it, another by pressing it), a mini jam jar (with a same mechanisms of screwing the lid which is in metal in this case), and two candy boxes (with a pressing mechanism, with the difference of having one with a hinge).
explain what she felt about using this product, and takes notes about everything she says. After each explanation from the user, the animator asks her to explain why she said what he noted. The animator takes notes about her argumentations regarding the product’ aspects that were underlined.

b) In the case she does not understands how to use it, the animator intervene, and explains how to do it. Then, after that, he takes notes about if she were be able to do it by her own, and if she needed time to understand by herself how to use it. The next step is the same as before, he asks the user to talk about how she felt when she used the product, and he takes notes and asks to the woman to give more details about what she said.

c) The questionnaire is filled by the animator; he reads each question to the user, and each option of response, then he notes her answers.

There were questions about the context of use for a small cosmetic product, such as the place where the user would store it, or what characteristics of this kind of product are mostly important for them, for example.

3- At the end of the tests, all the samples are shown to the user, and she is asked to place them from the most easy to use to the less easy to use. Again, we ask them to explain their decisions.

4- At the data treatment, we combine the responses from the questionnaires with the images recorded during the tests. We make a correlation between what they answered at the questionnaires, with what they said and have done during the tests.

The final results enabled the research team to create an argumentation for persuasion about the benefits of each technological solution (in this case, each mechanism tested), and the designers could make a first selection of the best options of mechanisms to apply on a product of the brand.

In a radar diagram, the final results based only in the scores attributed by the panel at the questionnaire, the positioning of each inspirational source will be as following:

From this graphic we can see that the most appreciated mechanism was the one of the candy box with a hinge, although it was perceived as not having a very tight sealing function. It was also stated from the behavioral observations (during the tests and double-checked with the images recorded), that because of the small size of the containers they all had difficulties to manipulate them, and it was seen that the hinge was perceived as being the most practical to use because it assisted the users with the gesture of use and the positioning of the lid to open and close the container. Another important information reported was about the containers with a small grip surface (width of the lid and of the jar), as they were the ones which the users had more issues to manipulate.

A lot of information related to the end users and their interaction with the mechanisms were gathered and used to help the design team and the stakeholders to better understand this new profile of end users, but also to guide the decisions in regard to each technological solution proposed.

DISCUSSIONS

The test held in this study treats a paradox in the luxury sector, the one of introducing users into the new product design process of luxury companies. With their strict guidelines for product design and innovation it was frequently seen as a bad thing or even inappropriate thing to do in this sector. [4, 2]
The study enabled us to prove the contrary, as it was appreciated by the stakeholders of the luxury company because it helped them to better understand the clients' expectations, and gave them complementary information that was understandable by every stakeholder from the company, as it was presented on a universal language, the one used by the end users.

By showing to the artistic directors of the brand the final responses of the users, with the images of the most spontaneous reactions of the clients towards the different mechanisms developed, the design team provided to the stakeholders substantial information that reflected on the adoption of a technological solution.

The tests proved that there is a possible way of integrating users into the design process of new products in this sector; not by defining design guidelines, neither by evaluating and letting the end users select and define the final design, but by integrating the users as an informative content to help stakeholders to make their own decisions.

CONCLUSION

The luxury market presents an important growth of launch of new brands and so, the expansion of concurrency. Nowadays, taking users into account is found to be one main action to do, to ensure product success. Instead of imposing product to users, we start by understanding their expectations about the product to be designed. This sector has some constraints to do innovation, and it is important to find optimal solutions to respond to its exigencies, when innovation is requested.

Taking users into account to gather information regarding their perceptions of different innovative solutions has been shown to be a good option to guarantee the solution adoption. As it is no longer a personnel point of view about the appreciation of the solution, but findings coming from the analysis of users interacting with the innovative solution. Is helps too to communicate about the solution, as users are not experts from a particular product design service; they use an ordinary vocabulary, understandable by everyone.

REFERENCES


