



**THE USER EXPERIENCE: A TECHNICAL AND EMOTIONAL
METHODOLOGY FOR OPTIMISING JOURNEYS ON A WEBSITE**

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Master's thesis

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Examiner(s): Professor Olli Kuivalainen and Peter Spier

ABSTRACT

The general subject of the thesis is related to the user experience on a website. What I would like to highlight in this paper, is the fact that the user experience on an interface should be assessed thanks to technical tools. But not only ! It should also take into consideration users feelings and perception, which could appear, very subjective. An E-commerce website has to be built for the user, a potential customer. As a matter of fact, the users need has to be clearly defined before creating a website, or in case of changes are made on an existing website. Thus, the approach should be user-centric

As part of my internship in a consulting firm, I worked for the company Royal Canin on user experience subjects. The company wanted to redesign the website's top navigation and asked for help. I tried to assess the user experience of the Royal Canin's top nav, by taking into consideration technical aspects and the users feelings. To do so, I conducted this analyze using four methods. The first was a quantitative survey about the user satisfaction concerning the topnav, including a user test. The second was a card sorting, a test in which I ask to respondents to sort categories and subcategories of the Royal Canin's topnav in the most logical way possible, according to them. The third method was an Attrakdiff, which is a quantitative method, to measure the User Experience of a website or a part of a website, post-utilization. The test is composed of 28 items pairs of opposite meanings. The user will evaluate the system, based on the given items and its previous experience on the website, on a Likert scale. Finally, I based myself on UX heuristics. Heuristics are a qualitative inspection method to conduct wire-frame pre-test, an audit, or a benchmark of a website. UX Designers generally used heuristics before conducting users testing.

For the same sample, I mostly received different precious insight from one method to another. Consequently, in my opinion, the assessment of the user experience of a website cannot only be based on quantitative data and the combination of heuristics, users testing, quantitative survey and attrakdiff are very useful tools to catch the users' insight about their experience on a website.

I warmly thank all the people who helped me in the development of this thesis.

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I would like to thank the B.D.C company and my colleagues for entrusting me, helping me to develop my skills and allowing me to work on the Royal Canin business case.

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Introduction

Between 2010 and 2020, digital technology has spread and is now omnipresent in our daily lives, whether in our personal or professional lives.

In 2010, online sales were worth € 30 billion in France (it increased by 24 % compared to 2009). There was a total of 27,3 millions of online buyers. 12 transactions were realized, in average, for one online buyer per year, for a total amount estimated at 1100 € per year. Even as the years go by the end of this decade, the e-commerce trend is still growing, since it increased by 8,5 % compared to 2019. (*Source: Bilan e-commerce Fevad (2020)*). In 2020, the online sales represented € 112 billion, and the number of online buyers amounted to 38,8 million for the year. The number and the amount of the transactions realized has also deeply increased, since it was, since one online buyer per year, realized, in average 39 transactions, for a total amount of 2420 €. The past decade has thus been characterised by massive digital adoption. If 2020 brought a lot of uncertainty and unexpected events, the pandemic, and its consequences on the lifestyle of people has drastically accelerated the digital transformation of companies around the world. According to Aamer Baig, in only three months, the brands have experienced the equivalent of ten years of digital transformation. (McKinsey, May 14, 2020). Almost two years after the beginning of the pandemic, the world is still suffering from a very particular context. More than ever, consumers count on the digital to satisfy their needs and the brands need to propose fluid and online experiences. It is the role of the companies to understand the consumer's way of thinking and to try to respond as best as possible to meet their needs. Google has categorized 4 key moments that drive the internet users to perform an internet search which led them to a website. You can find them below:

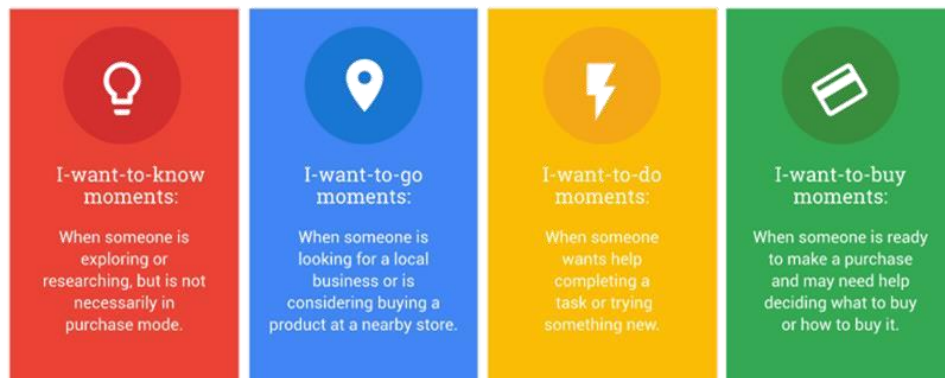


Figure 1. The basics of micro moments (ThinkWithGoogle, May 2016)

Concerning these 4 moments, rather broads, e-commerce companies have to be prepared to offer the best experience possible to the users.

In my opinion, it is important to understand that today's consumers are not exclusively digital, they still enjoy going to physical stores to make a purchase. Beyond being multichannel, they are juggling with these different channels. Indeed, they can research for a product information online, perform a benchmark of this product on other websites, discuss for some opinions on social networks and then make the purchase in a physical store. This purchasing process is called "ROPO" ("Research Online, Purchase Offline). Thus, today's consumers are now omni-channel, and they need their online experience to be as fluid and easy as possible, as it could be in a physical store. Which bring us to the subject of User Experience on a website.

We interact, in our daily lives, with a lot of applications or websites, that make our life easier. Or, sometimes, even more complicated! We are, at times, agreeably surprised about how easy and fluid it was, to make some online administrative procedures. In these moments, you know where you are going on the website, the different steps are clearly explained and, at any point of the process, you know how much time it will take until the final step of the process. When it is done, you turn off your computer or you leave the app on your cellphone, and you have this feeling of satisfaction. As a user, you had a great experience.

On the contrary, the next weekend, you can spend hours on a nice Sunday afternoon, on a website, which seems clearly out of date, it does not react in the way you expect, and the information that you need...are they missing or are they VERY HARD to find...? You had

to download a file and you made sure you had the right file format and that your document is correct. So how is it possible that it is rejected by the website, for the third time, without an explanation or an error message? Anyway, after 2-hours of struggling with the interface, you finally find the information you needed to complete the administrative procedure. You angrily shut down your computer and you swear to yourself: you will never return to this website again.

I think I do not take too many risks if I say that, these both situations above, happened to all of us, at least once in our life.

But what we tend to forget, is the fact that, at the beginning, there was a human being behind the interface we are using. There is, someone to be thankful of... or someone to blame, for the bad experience we just had on a particular website.

The UX describes the overall user experience when using an interface, digital device or more broadly interacting with any device or service. The expression «The User Experience" is more commonly used in reference to a digital environment, but UX means any experience lived in interaction with a device, whether it is digital or not. Jesse James Garret said that "Every product that is used by someone creates a user experience: books, Ketchup bottles, reclining armchairs, cardigan sweaters". (Garrett, 2011).

Because the user experience is omnipresent in our daily lives, more and more expertise, hitherto rather unknown, try to explain the user experience, from different domains and different aspects. We can be easily confused between terms such as "UX Design", "UI Design", "Service Design" and "Design Thinking".

In his book “The elements of user experience”, Jesse James Garret designs the UX according to 5 essential plans to design a good interface. These 5 levels are:

- **The Strategy, to define the users' needs**
- **The Scope of the app or the system**
- **The Structure, the sequencing of the screens**
- **The Skeleton, to create a clear interface**
- **The Surface, to make the interface attractive**

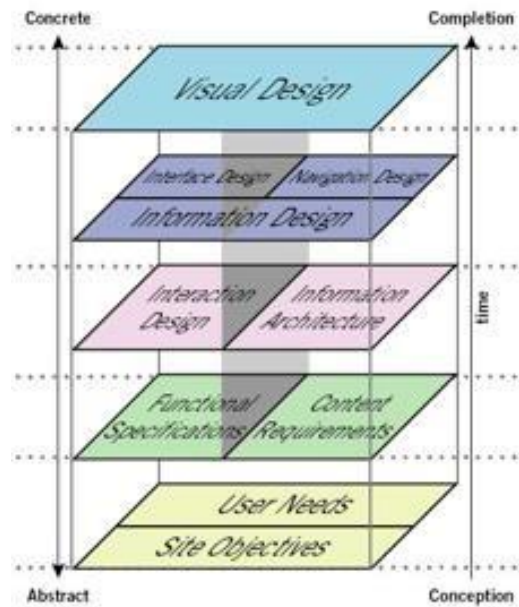


Figure 2. The Elements of User Experience, Jesse James Garret (UX Collection)

The 5 levels will be explained in much more detailed in the literature review.

Jeffery Callender and Peter Morville (2010) wanted to highlight the fact that UX Design requires a lot of different expertises, it is a long process with several steps. They built a "Treasure Map" to help people finding the best ideas for UX Design and explore a lot of possibilities.



Figure 3. The User Experience Treasure Map (Morville, P. and Callender,J; 2010)

Now that we are, I hope, a little bit more familiar with the concept of User Experience, let's get to another point:

Why it is important for companies to be “good” in the UX domain?

Let's take the example of the company's website, because it is what we will be mostly interested in, until the end of this paper. We mentioned at the beginning of the introduction, that nowadays, with the boom of digitalization, companies barely have the choice to sell their products online (if they are “Products’ companies”), in addition, or not, of selling them in physical store. What will happen if the customers' online experience is not going well? Think about the two situations with the administrative procedures we talked about earlier. If the content of the website is not clear, the customer might even not find out the purpose of the company and what kind of product or services, it is selling. If the interface is very difficult to use the user might not succeed in choosing the product he could be interested in and he will not go to the cart payment. If he does not find the interface pleasant, pleasant to look at or to navigate on, he could as well, quickly abandon his journey on it. One more potential customer who did not go to online check-out. It can also impair the image of the company in front of investors or potential prospects. They could easily conclude that, if a company website is difficult to understand and to work with, the company probably is as well. In a more general way, if a user has had a bad experience on a company's website, he will not repeat the experience. And if even he was not unsatisfied by the experience of the website, but had a better one with a competitor's interface, he will surely be more loyal in the future to the other company. (Remember the situation we talked about in the first pages, where the angry guy told himself “I will never use this website again”). Thus, companies have to be careful about the user experience they are providing, in order to attract and keep customers. Besides, if the users' journey leads to positive outcomes, such as satisfaction to navigate on the website, it would lead to higher purchase intentions (Richard, 2005; Zviran et al., 2006). Besides, since many companies are facing increased competition in several sectors, today's consumers feel like they have the choice, and THEY ARE the decisionmakers. And I think they are indeed, and that they can afford themselves to be more and more demanding. I had once listened a podcast in which Ken Hughes developed a theory that he invented: “The Blue dot theory”. (Available here: [/podcast-ken-hughes](#)). In a few minutes, he explained, that, back then (but not so long ago) people used roadmap to locate themselves and go from a

point A to point B. They had to rely on themselves. However, nowadays most of them just need to open the Google map application on their mobile, and here they are, this big blue dot in the center of the screen. They can zoom out as much as they want, they will always be placed at the center. I found this comparison amusing and that it illustrates well the way the consumers can feel about themselves: Companies need to adapt to the consumers, and not the opposite

They have to keep in mind that the reason User Experience should be very important to taking care of, is simply because it matters to their customers.

Context:

I am currently doing an internship in a consulting firm, specialized in Strategy and Marketing.

The company ROYAL CANIN turned to my company and UX designers (an external firm), to analyze the way their customers are interacting with the website RoyalCanin.fr, giving insights of improvement and redesigning some parts of their website. They wanted to focus on the Home Page, the Product Page and the Top navigation bar.

This mission was divided in 3 distinct phases:

Step 1: The realization of a UX analysis about their actual e-commerce website. (To be realized by my firm).

Step 2: The creation of a prototype of their potential new website, including the recommendations and improvement. (To be realized by my company and the UX Designers)

Step 3: The redesign of the website and its deployment. (To be realized by the UX Designers)

They considered my recent arrival into the company as an opportunity for entrusting me a part of this mission in order to give a fresh outlook on this website. I was working on the Phase 1, for the Top navigation menu, in pairs with a colleague.

Consequently, we will focus on the Top Navigation Bar on this thesis. In order to give a scope to this UX Analysis, in this paper, we will focus on *The Structure* of the interface, and *The Skeleton*. (“The elements of user experience”, *Jesse James Garret*). In other terms, we will be interested in the way the information is organized and prioritized on the interface, as

well as the visual form of the interface. Thus, no insights will be given about the aesthetic aspect of the website nor its functionalities.

At the very beginning, they did not tell me any guidelines or concepts. They just asked me to think. Then, to conduct some research on my own of what we could do. And then, to think again. This was exciting but kind of scary too.

When I had a first look at the website, I had a lot of insights to give in order to improve it, even if I had no experience in the UX domain. These recommendations I wanted to give, applied to various subjects: the aestheticism, the content of the text, or some improvement to make the website more intuitive and user-friendly for the customers. These are all subjective notions. How could it be otherwise than relying on my personal opinion?

I did not know where to begin and at first, I struggled ordering my ideas. I was lingering on the Uncertainty phase of the Design Conception. You will find the schema of the Design conception below:

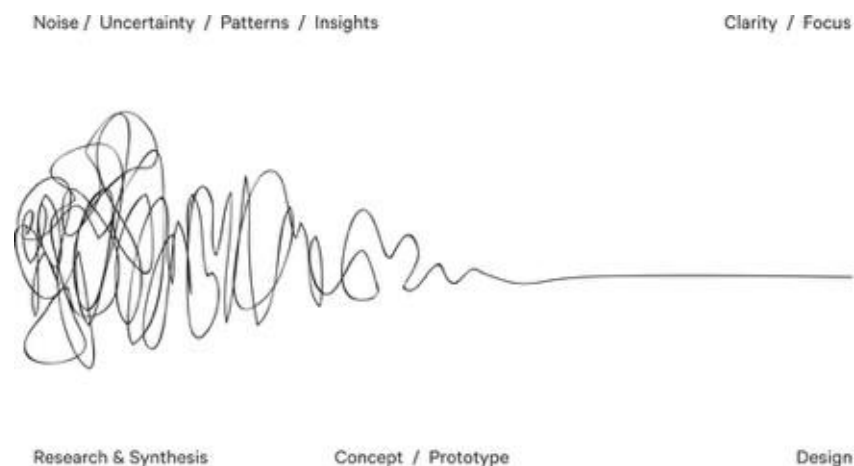


Figure 4. The Design Squiggle, Damien Newman.

Thus, I was stuck in this first phase, writing down my ideas in disorder. I realized the need to build a strategy, based on existing concepts and methodology. Also, I needed to equip myself with the appropriate tools. I needed concepts and data.

Preliminary Literature Review

I researched the reference on the UX domain. I turned myself to colleagues and ask them if they knew a reference point in the field. In parallel, I began my research by searching for academic paper in the UX domain.

I quickly found Jakob Nielsen, who co-founded Nielsen Norman Group, a consulting and research company, in the field of UX. He is also the author of the book "10 Usability Heuristics for User Interface Design", published in 1995. These heuristic criteria are rules to respect in interface design and are composed of 10 criteria. We will go into more details in the next pages. I choose to focus on his work since he was one of the main pioneers in the UX Design analysis.

Then I was searching for other heuristics' authors in order to compare it with Nielsen's work. The aim was to find a global consistence between their conclusions, in order to based myself on it. This is when I discovered the work of Christian Bastien & Dominique Scapin, in which we will also be interested in, through this paper. They are researchers in ergonomic psychology and in cognitive ergonomics, in the UX domain. Their work was published in 1993 in the article "Critères Ergonomiques pour l'Evaluation d'Interface Utilisateurs". (Bastien and Scapin, 1993) These heuristics are composed of several criteria divided in 8 thematic, which we will compare to Nielsen's heuristics.

After that, the objective was to search for authors and UX experts more contemporaries, in order to compare Nielsen's and Bastien & Scapin's work with more recent research. Thus, the last UX Design's heuristics that will be discussed in this paper are those of Colombo and Pasch, in the article "10 Heuristics for an Optimal User Experience" (Colombo, L. and Pasch, M. (2012)).

As we briefly mention, we will also be interested by the work of Jesse James Garret, an information architect well known for his paper: "The Elements of User Experience" (Garrett, 2011).

Thus, in this paper we will see how improving the user experience relies on theory, technical tools and by taking into consideration the users' feelings and characteristics.

Which brings us to our research question:

To what extent the User Experience is both a technical and emotional methodology for optimising journey on a website?

2. Literature Review

In this chapter, we are going to describe and analyse in more details what has already been written in the UX domain, concerning the Heuristics. We will focus on the work of J. Nielsen, C. Bastien, D. Scapin, L. Colombo and M. Pasch.

When I made my research about the UX heuristics, I found other authors, such as Leena Arhipainen, who wrote “Ten user experience heuristics” (2013). Nevertheless, since it was similar in many aspects to the UX Heuristics we will develop in this paper, I thought it would be redundant to add another author in this analyse, and I preferred focused myself on the work of Nielsen, Bastien & Scapin and Colombo & Pasch.

I also dismissed in this paper who did not write academic papers to focus on authors who have been peer-reviewed.

In the second part, we will be interested in the work of Jesse James Garret, author of the book: “The Elements of User Experience” (Garrett, 2011). His 5 layers in order to design a good interface has been re-used in the UX domain, and I found his explanations very clear in order to have a “big picture” of how to design a good interface in order to improve the user experience.

2.1 Heuristics

Heuristics are used to assess the degree of usability of an HMI (Human-Machine-Interface). It is a qualitative inspection method to conduct wire-frame pre-test, an audit, or a benchmark of a website. UX Designers generally used heuristics before conducting users testing.

“On the Web, usability is a necessary condition for survival. If a website is difficult to use, people leave. If the homepage fails to clearly state what a company offers and what users can do on the site, people leave. If users get lost on a website, they leave. If a website’s information is hard to read or doesn’t answer users’ key questions, they leave. Note a pattern here?” Nielsen.J (2012). Usability 101: Introduction to Usability, 3 (January).

2.1.1 Nielsen's Heuristics

Here are the heuristic criteria (rules to respect in interface design) published by Nielsen in his book "10 Usability Heuristics for User Interface Design" and are composed of 10 criteria.

The first one is the System Status visibility. It means that the system, in other words, the interface, must inform the user of what is going on and where he is located on the website. For example, adding a progress bar at the top of each page on a website will allow the user to know where he is located compared to the end of the page. Or, in signing-up process (to a customer account for example) on a website, the next steps are sometimes clearly displayed. This is, one way (but there are many others) of implementing Nielsen's first heuristic. Let's take another concrete example. With our smartphone we are used to see the level of battery on the top-right corner. Since that, nowadays, the cellphone is almost indispensable in our daily lives and that sometimes, our battery does not hold well all day long, we can imagine how frustrated it would be if we had no idea about the level of our battery. This is another way of improving the user experience. Jakob Nielsen also states that the user should not be wondering if the action requested has been realized or not, he must be properly notified. For example, if a user clicked on a Call-to-action button (CTA), he expects to something to happen. It could appear in a different color than the other CTAs or it could be underlined, for example.

The second criteria is the fact that the system should match with the real world. According to Nielsen, it means that the interface should not force the user to comply with its own logic. On the contrary, it should rather follow the real world's conventions, not the digital world's conventions. The interface should use concepts that the user is familiar to. For example, a cart in the real world and on a website have the same meaning: collect items in order to purchase them. To take another example, it is easy for the user to understand that, to delete a file, he must throw it in the trash, visible on his desktop. It is a case on MacBook desktop as you can see on the picture below.



Figure 5. MacBook trash

The third criterion is that the user should have a feeling of control over the system, and he is free from his interactions. More precisely, it must be assumed that the user has the right to be wrong and to click on the wrong button. He also has the right to change his mind after undertaking an action. Thus, if the user choose a function by mistake, he should be able, according to Nielsen, to easily cancel it and to do it again. Solutions should be proposed to enable the users to exercise this right to error.

The fourth criterion among Nielsen's heuristics is that the system should be consistent and respect standards. "Consistency is one of the most powerful usability principles: when things always behave the same, users don't have to worry about what will happen." (Nielsen.) It means that similar information is consistent and homogeneous. Functions are organized in logical group and easy distinguishable. J. Nielsen insists on the fact to follow the conventions implemented on most of the websites. It will facilitate the user understanding. For example, a Call-to-action is often a color box. Another example is that the search bar is always on top of the website, and this is where the user will look first if he wants to use it.

The fifth criterion is that the system should avoid mistakes. The system should recognize and avoid the mistakes that the user could possibly do. This way, it will reduce the risk of getting the user angry or to waste his time. It could disable or hide functionalities which are not compatible with the choices the user has made. Or, for example, the system could anticipate the users' spelling mistakes when they are searching for a product in the search bar. Hermes product finder is a good example as we can see on the screenshot, I took on their US website below:

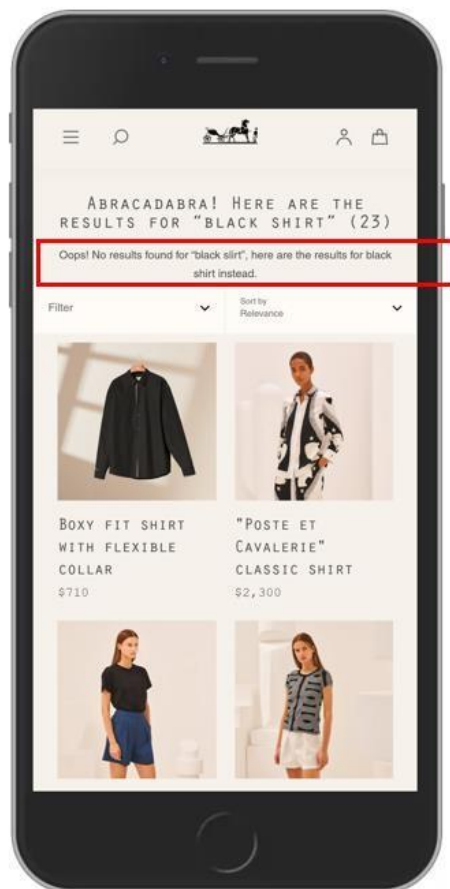


Figure 6. Screenshot /Hermes.uk (11.08.2021)

Here, even the user writes “Slirt” instead of “Shirt”, he will find proposals of skirts product anyway.

The sixth criterion is that the system should make the user recognize rather than recall. Here, J. Nielsen means that the user does not have to recall an information from one part of the interface to another. Actions and options must be visible and instructions to use the system must be explicit and available.

The seventh criterion is that the system must be flexible. If the user is experienced or used to navigate through a particular website, he should be allowed to use shortcuts, to speed up interactions. Nevertheless, the system should also suit to a non-experienced user. Besides, the system recalls actions and information that the user already gave. It does not ask him to realize it or to enter it several times. If he is using the system recurrently, it could be customized according to his preferences.

The eighth criterion corresponds to the fact that the system should be aesthetic and minimalist. What J. Nielsen states in this heuristic is that every extra information competes with the relevant information and diminishes their visibility. For example, the use of specific color should have a meaning. The red color is often used to signify an error or a “bad news”. Indeed, it makes sense to write in red that a product is out of stock on a website. It does not make a lot a sense for the user to write this information, in purple or in green. The density of information displayed as a text is also limited and must be relevant to the user.

The ninth criterion is the fact that the system should facilitate the errors identification and the way to handle them. Errors message must be clear and precisely highlight the problem. For example, it should not have to be displayed in code form, since most of the time, the user does not understand this language. To go further, as in real life it is possible to report error in a creative and humoristic way, such as a funny 404 page. The error message should also give insights to the user to solve the problem himself. This way, frustration can be turned into self-satisfaction. To illustrate Nielsen’s heuristic, you will find below a screenshot of Burger King 404 page of their French website, that I took. It is in my opinion a great example to illustrate Nielsen’s ninth heuristic.



Figure 7. Screenshot 404 page. BurgerKing.fr (11.08.2021)

“OOOOPS! Cette page a été dévorée” means “OOOOPS! This page has been eaten ». By clicking on “Retour a l’accueil” which is translated “Go back to the Home Page” give the possibility to the user to return automatically to a page which is operational. It reduces the risk for the user to exit the website.

Finally, the tenth criterion corresponds to the fact that the system should give the opportunity to the user to obtain some help if he needs it or if he wants to. As we saw before in the seventh criteria, a good interface should address to a large group of people, with different abilities in terms of website navigation. Thus, help and documentation content should be easy to search and focused on the user's task. It should not be too long and should enumerates concrete steps to follow. It could take the form of a FAQ for example, or even How To video. You will find below a screenshot of the Help section of Asos.uk

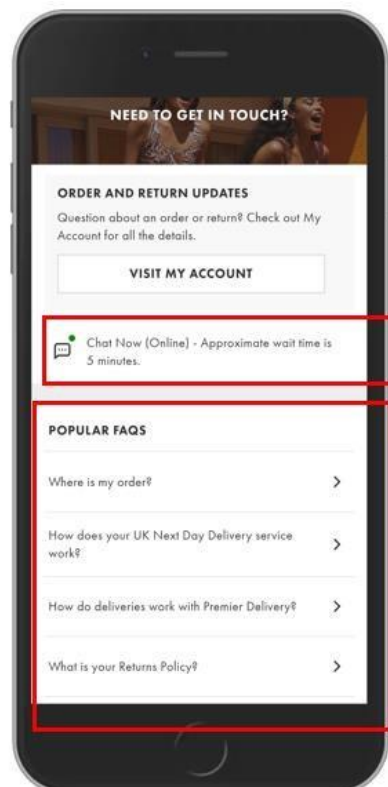


Figure 8. Screenshot FAQ. Asos.uk (11.08.2021)

We can see that the brand makes visible the most frequent questions asked by the users.

Besides, if they can not find the help they need in the FAQs, they have the possibility to send a Chat to discuss with the customer service.

2.1.2 Bastien & Scapin's heuristics

The following criteria we are about to see are the results of a study conducted by Dominique Scapin and Christian Bastien in 1997. They produced a synthesis of approximately 900 recommendations in the field of ergonomics to finally create 18 criteria, divided into 8 sections. Here are the 8 thematic referring to Bastien & Scapin's heuristics:

The first thematic is called the guidance. It corresponds to all the means implemented to advise, orient, and inform the user. These can be alert messages or labels, for example. The guidance is composed of 5 sub-criteria:

- The incitation: The system should accompany the user in his actions and incites him to undertake specific tasks. The context in which the user is must always be explicit.
- Grouping items by localization: It is the visual organization between information. They must be separated or grouping in different categories, if not related to each other.
- Grouping items by format: It is also the visual organization between information, but it is this time, more about the graphical features (format, color) that will indicate to the user whether the items are belonging to the same category or not.
- Immediate feedback: The system should inform instantly about what will happen because of his actions. Besides, the user knows if his actions has been considering.
- The readability: The lexical characteristics of the information must facilitate the reading for the user.

A simple example of what could be the guidance in a specific context, is when the user received a confirmation message when a product has been added in his cart. Or when there is an error in a form, there is a pop-up message indicating him what was wrong and how the user could make it work.

If we compare with Nielsen work, the Incitation is a new concept. Even if it presents some similar aspects (ex: explicit context), the notion is completely new. The concept of grouping items by localization or format is also a new input on Nielsen theory.

The second heuristic is called “The workload”. It concerns all the elements of the interface implemented to reduce the perceptive workload of the users. The workload is composed of 2 sub-criteria:

- The shortness: The system should limit as possible the stages through which the user has to go to find an information or to undertake an action. It should be intuitive, and the functionalities must be consistent.
- The information density: The system should not be encumbered with useless information. It corresponds to the Nielsen’s criterion n°8 with the notion of minimalist design.

The third heuristic is about the user control over his actions. It means that the system should react in function of the actions realized by the user. It is divided in 2 categories:

- Explicit actions. That is to say that every action realized by the user must be clear and explicit. For example, the system should require the validation of the user ("OK" or "VALIDATE") to take an action.
- The user control. In my opinion, these two concepts can be easily confused.

Nevertheless, the sub-category "User control" has a subtlety: It is about the user control over on-going actions. The user should decide to stop a process at any time or go back to previous page. If it is not possible, he must be informed about it in advance. Bastien & Scapin also insisted on the fact that the system should make the possible changes visible and easily available. For example, if a user buys a product, but changes his mind concerning the delivery location and wants to change it, he should be able to do it, via a link in a confirmation mail. He is not supposed to have to go back to the website.

In their fourth heuristic, Bastien & Scapin highlight the importance of the system’s adaptability. It means, among other things, that the user should be able to personalize the system according to its needs. This thematic is divided into 2 sub-categories: The flexibility of the system and the consideration of UX. It means that the system should make available customization elements to the users concerning principal functionalities. Nielsen has highlighted this aspect in the Criteria n°7: Flexibility of the System

The fifth criterion of Bastien & Scapin is about Error handling. They are 3 sub-criteria:

- Error protection

The system should detect potential errors and warn the user.

- The quality of the error message

The error message must be clear and visible. The user should understand the nature of the error and knowing the steps to undertake in order to correct them.

- **Error correction**

The system should provide means to the user, to enable him to correct his mistake.

Nielsen has mentioned these criteria, too. (Criteria 5: The system should avoid mistakes).

The sixth heuristic is about the consistency of the system and is closely linked with Nielsen's Criterion N°4_(Consistency and Standards). Bastien & Scapin highlight the fact that the system should be aligned with the graphical codes et visuals applied to all the pages.

The seventh criterion is entitled "Codes and names' signification". The user should understand the terms used by the system. The system fits with the user's logic, and not the other way around. It corresponds to Nielsen's Criteria 2, referring to the consistency between the system and the mental model of the user.

The eighth heuristic of Bastien & Scapin is linked to the similarities between user's perceptions and tasks or actions of the system. It is also about the similarity degree between different systems. In other it means that the interface should be adapted to the users' characteristics. Even if it is a bit different than Nielsen's heuristic, we can make the parallel with his Criteria n°4. In his criteria, Nielsen does not point out the importance of similarities, but it is more about consistency. Indeed, he highlights the fact that the user should not be misled by some terms or actions which seem to have the same signification for him.

Thus, some heuristics overlap between Nielsen and Bastien & Scapin. Especially on how to manage mistakes and on the importance of the user control over the system. On the contrary, the provision of documentation for helping the user seems crucial for Nielsen, but this point is barely mentioned by Bastien & Scapin.

2.1.3 Colombo and Pasch's Heuristics

Concerning the heuristics of Colombo and Pasch, they are based on the "Flow Theory".

Developed in 1970's by Mihaly Csikszentmihaly « Flow Theory » is a psychological theory which was not aimed to be applied in the UX domain. The "State of flow" is defined by a state of satisfaction when we are fully committed to an action or a task. It characterizes, according to Mihaly Csikszentmihaly, an "optimal experience". The term of "flow" derived from interviews conducted by Csikszentmihaly in which the respondents has described some of their experience as "carried by the river's current".

Now we can look further into Colombo and Pasch's heuristics, in the number of 10:

The first heuristic is about the fact that the system must have a clear objective. It must satisfy, (and even go beyond) the users' expectations. For example, providing additional functionalities, different than the one provided at the base. It should explicitly inform the users of its use and be functional.

Secondly, Colombo and Pasch highlight the system's necessity to provide a regular and quick feedback to the user. It should not be invasive and should not interfere with the user experience. We can make the parallel with the first heuristic of Bastien & Scapin : "The Guidance", and more accurately the sub-criterion : "Immediate feedback". It is also linked to Nielsen's first heuristic: "The Visibility of the System status", in which he claims the importance for the system to provide a quick and immediate feedback.

In their third heuristic, the authors point out the importance for the system to be easy and intuitive to use. It must facilitate the user's concentration on his current task. In order to succeed, the system should provide relevant feedback, and avoid every distraction for the user (that is to say, every stimuli that are not relevant for the user's task). In my opinion it is closely linked with Bastien&Scapin's second heuristic: The workload. Indeed, both Bastien&Scapin and Colombo and Pasch insisted on the necessity to not overload the interface with useless information. And, as we notice before Nielsen's eight heuristic concerning the notion of minimalist design approaches this idea too.

The fourth thematic is named “Ergonomic transparency” and highlights the fact that the system should almost disappear while in use, in order to allow the users to be focused on their current task and to be committed to the experience in general. The system should be ergonomic and must be adapted to the users’ skills and goals. The system’s behaviour must be easily predictable and consistent. The system must be conceived in an “aesthetic integrity”. It means that it must be attractive and that the common principles of design must be respected.

The fifth heuristic is about technology appropriation. According to the authors, the users should be able to customize the system according to their preferences. For an optimal experience, the system should be customizable, both in its functionalities and its appearance. The customization process must be predictable and easily accessible. The system should give to the user the possibility to undertake the same action, but with different ways. In other words, the user would have several choices to interact with the system. Here, we can make the parallel with Nielsen’s Criterion n°7 (“Flexibility of the System) and the fourth heuristic of Bastien & Scapin (“The adaptability of the System”) concerning the possibility for the user to personalize the system.

The sixth heuristic mainly concerns the fact that the system should be conceived accordingly to the user. That is to say that it should be usable for both unexperimented and experimented users. For the unexperimented users, the system should provide a “steep learning curve”, but also provide advanced functionalities to the more experimented users. It should encourage the users to discover the different functionalities of the interface by themselves. Its role is to make the “exploration part” of the system easier and attractive. This heuristic too could be linked with Nielsen’s Criterion n°7 and Bastien & Scapin Criterion n°4. This time, it is more about giving the possibility to use shortcuts for example or learning to navigate through the interface at the users’ own pace.

In the seventh heuristic, Colombo and Pasch claimed that the system should have the impression of having full control of its experience on the interface. The system should give the possibility, as often as possible to “undo” an action undertaken by the user. He should not feel “trapped” or interact with the system under coercion. The user has to be allowed to active the aid process at any time of his journey on the interface. This heuristic is following on from Nielsen’s third heuristic about users’ control and freedom.

The eighth heuristic is mainly about the fact that the experience should not be stopped, in any way whatsoever by the system itself. However, Colombo and Pasch insisted on the fact that the user should be given the possibility to interrupt the experience, or to suspend it for a while. In this case, the user should have the possibility to pick up where he left off on the interface. They also should be able to speed up or slow down the pace of their experience. It is similar to Bastien & Scapin's third heuristic too, concerning the users' control over their actions. All of the authors give a lot of importance on giving the possibility to the user to undo an action.

The ninth heuristic, "Know the users' motivation" supposes that the UX designers should learn to know the future users of this interface, before developing it. The users should be observed and the activity they seek to accomplish must be clear. But Colombo and Pasch mentioned the fact that it is very difficult, or even impossible to perfectly know all of the users. Consequently, the system should be flexible enough and suitable for various users. It is similar to the third heuristic of Bastien&Scapin: "The user control over his actions".

The last heuristic told us that the system should be a "Conservative Innovation". It means that there must be a good balance between innovation and consumers habits. In other words, the system should respect norms and standards already in place and accepted by the users but also bring novelty to the users. Here we can make the comparison with a part of Nielsen's fourth heuristic concerning consistency and standards. However, Nielsen do not explicitly write about innovation in his heuristic.

2.2 The elements of user experience (Jesse James Garrett)

In his book "The elements of user experience", Jesse James Garret designs the UX according to 5 essential plans to design a good interface: *The Strategy*, *The Scope*, *The Structure*, *The Skeleton* and *The Surface*. We will define each of them and go deeper about The Structure and The Skeleton, since it is the scope for this thesis.

“The practice of creating engaging, efficient user experiences is called usercentered design. The concept of user-centered design is very simple: Take the user into account every step of the way as you develop your product. The implications of this simple concept, however, are surprisingly complex.

Everything the user experiences should be the result of a conscious decision on your part.” (Garrett, J., 2011. *The elements of user experience*)

2.2.1 The Strategy, to define the users’ needs

In the Strategy plan, the goal is to define the users’ needs. The question must therefore be raised of the purpose of the interface, the targeted people to use it, and the reason they will use it.

2.2.2 The Scope of this app or the system

In this phase should be discussed and explained the features of the application or interface. We distinguish the functional requirements from the content requirements.

Functional requirements concern the features of the interface, and how they will be interacting with each other.

Content requirements are the information needed to provide the value of the interface. For example, what kind of text, images, audio, videos, etc.

In his [blog](#), the software engineer Omar Elgabry explains the differences between both requirement thanks to a contextual example: “The feature is having a media player for songs, while the content is the audio files for these songs”.

2.2.3 The Structure

The structure defines and prioritize the interaction between the interface and the user.

Garret distinguishes the Interaction Design given the functional requirements and the Information Architecture given the content requirements.

The Interaction Design describes the way a user will interact with the interface, and how the system will behave accordingly.

According to Garret, what describes a “good Interaction design” is the ability of the system to help the users accomplish the actions they have taken and to give consistent feedback to him. It will also prevent errors or mistakes.

We can remark here, the similarities between Garret insights and the heuristics seen previously.

But in order to better understand what Interaction Design is, or even “picturing it” in our heads, Garret describes this concept, as a metaphor of “*a dance between the interface and the user*”. The user moves the system (He takes an action on the interface), and the system moves accordingly (It responds to his request on the interface). And, as every dance duo, one has to expect the next step of his partner. For this behavior to be predictable, the user has to perfectly understand how the system works. According to Garret, one way of being understood by users, is to use conceptual models on the interface, so the user can refer to something he knows. (*Here, we can make the parallel with the Heuristics seen previously*). For an e-commerce website, we can use the conceptual models of Retail. For example, the “cart” on the website is drawn as a real cart, in a supermarket. It is consistent with what the user knows about shopping.

Also, since it is already the case in most of actual e-commerce website, we can call it a “convention”. The company does not take any risk since the user is used to see it and will recognize it effortlessly.

Another important point raised by Garret is, if the way conceptual models are chosen is important, it is equally important to use them consistently in the whole system. Otherwise, there is a chance that the user will be lost, rather than helped in his understanding of the interface.

As we have seen in Garret’s Definition of Interaction Design, it also deals with “Error’s preventing and handling”. It is the role of the system to prevent errors or at least minimize them. And when errors happen, it is its role to correct them. In its way of correcting error, the system should not be irritating. Let’s take an example: Microsoft Word tends to correct

grammar errors in its own way, but sometimes we take even more time correcting the correction of our so-called errors.

The Information Architecture given the content requirements defines the way the content elements are organized in the interface in the most understandable way possible for its user. In Garret's opinion, a good Information Architecture can categorize and prioritize the information according to the user's goal. It is also built in a such way that it is easy to make amendments in the future if we want to update it.

Information Architecture supposes categorization schemes that will corresponds to the website's objectives and meet the users' needs.

There are two approaches to build an Information Architecture:

The Top-down approach relates on the *Strategy* layer, it is based on the system's objective and the users' needs. According to these two aspects, categories and then, sub-categories will be created. Whereas the Bottom-Up relates on the *Scope* of the system and will take into account the system's features and functionalities. Categories and sub-categories will also be created. In other words, we start from the resources we have concerning system's functionalities, and after that, we will consider the website's objectives and the users' needs.

According to Garret, none of these two approaches is better than the other to build the Information Architecture of the system.

To understand the architectural approach, we have to understand what a node is, which is basically any piece or group of information in the system. It can be a price, or a product's name. In a hierarchical structure, nodes have "children", which are smaller concepts of the node and "parents" which correspond to the larger category the node is belonging.

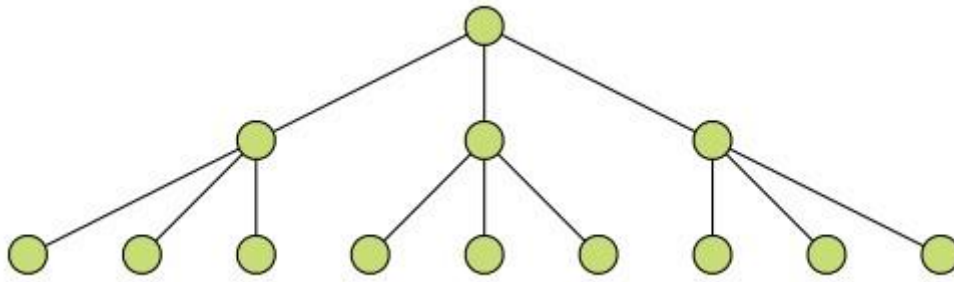


Figure 9. Hierarchical structure - The elements of User Experience (Garrett, 2011).

These nodes are placed on the website according to “Organizing Principle”. Most of the time, the nodes that will be placed on top on the website and highly visible are the one closely linked to the objectives of the system and the users’ needs. For example, the category “Product” on an e-commerce website.

According to Garret, these Organizing principles will vary according to the purpose of the website (Content website would likely organize the information thanks to a timeline, whereas it would make sense if an international website choose to organize the information by country). It can also vary according to the place the information is situated on the website.

2.2.4 The Skeleton, to create a clear interface

Garret describes the Skeleton as the visual form of the interface. It means, in which manner the different elements are displayed on the screen. Once again, the aim is to make it as clear as possible when the user will interact with the system. This phase is not about aesthetic arrangement (such as the colors, the font etc), I understand it as the visual aspect of the “different blocks” of the system.

When talking about the *Skeleton*, they are three sub-phases which are highly correlated to each other:

The first one is the **Interface design**, which, as its name implies, presents the arrangement of the different components of the interface. We have to choose the right elements and make the most important of them for the user as visible as possible to him. It is not only the case for specific elements: We would also have to take into consideration the “path”

on the website that the users are the most likely to take and make them appear most visible than the other paths, according to the users' eyes. It does not always mean that the most important button of the interface should be the bigger one. To facilitate a user path that we know "important", we can, for example, automatically select default options on the interface if we know that the user's goal is most likely to go on this "path" of the website.

We can choose among various Interface conventions for the interface, according to what is best for a specific information or elements. Good examples of interface conventions that are discussed during the Skeleton phase, are the options given to the user when we give him a choice to make, among several options. There are the checkboxes which allow users to select several options, Radio buttons so the user can only click on one option, text fields, dropdown lists, list boxes, action buttons, etc.

The second one is the Navigation design, which is related to the way the users will navigate through the various elements of the website, the interactions between the different blocks, or different pages. As we discussed with the Interface Design, there are different "path" possible for the users to browse the website. Basically, the Navigation design is the setting up of links that will allow the users to go from a page to another. According to Garret it has to be thought through, every page should not link to all the pages of the website. It has to be consistent with the logical paths of the users on a specific page. It is important that on every single page the users find themselves, they know exactly

"where they are", ie., the purpose of the page, and where they can go after (what is the next logical step).

In this phase, it is also primordial to keep in mind that the user will not always land on the website on the Home Page. Indeed, due to the Google referencing, and depending on the keywords employed by the users, they can land "everywhere" on the website. The aim is to facilitate their journey on the website and their navigation, regardless which page they see at the first place.

There are various type of Navigation systems. We count, for example, the global navigation, which gives access to the whole site. It does not mean that the users can find the link of all the pages of the website on one page, but more that he could find persistent linkable elements which will redirect him on the main "blocks" of the website

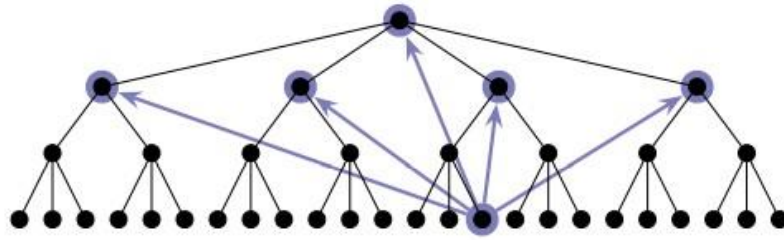


Figure 10. Global Navigation The elements of User Experience (Garrett, 2011).

To give another example, there is also the local navigation, which is mainly composed of link of pages which are “closed” to each other. “Closed” in terms of content provided on the page, or pages that are next to each other (which is often both the case), the parents’ page or the children’s page.

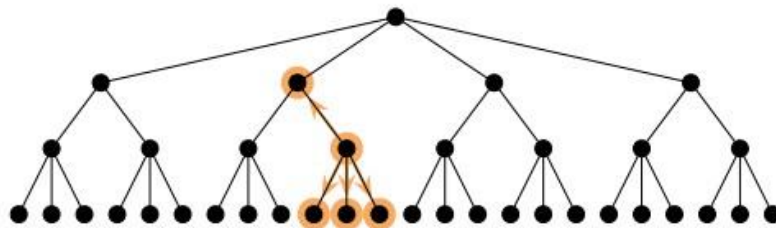


Figure 11. Local Navigation - The elements of User Experience (Garrett, 2011).

Finally, Garrets names the Information design. This last one describes the way the information is presented in the application or the interface, and to which extent it is clear and understandable for the user. For example, we can use “*way-findings*” on the website with color-coding so the user can understand almost instantly in which section he is, or some icons that will help the users finding their way around the website.

2.2.5 The Skeleton, to create a clear interface

The surface concerns the visual appearance of the element’s content of the interface. Only here, we are dealing with the colours displayed, the text font, the layout of the pages, etc.

The decisions taken in this final phase encompasses all the decisions taken in the previous one.

2.2.6 The importance of the 5 phases as a whole

These five plans represent a conceptual framework for User Experience.

We have to start from the bottom (*The Strategy*) to the highest layer (*The Surface*). During the Strategy we only focus on the users' need, we do not have any interest for now about the ascetic aspect of the final website. When we come to the highest layer, we care about any little details concerning the appearance of the website.

Each plan has its own concerns, and layer by layer, the whole project becomes a little more concrete.

In his book, Jesse James Garret insists on the fact that each phase are interdependent with each other. The *Surface* relies on the *Skeleton*, which relies on the *Structure*, and so on until the bottom phase, the *Strategy*. If the users' needs have not been clearly defined during the Strategy phase, or that a crucial element has been omitted during the Scope phase, it will have an impact on the whole project.

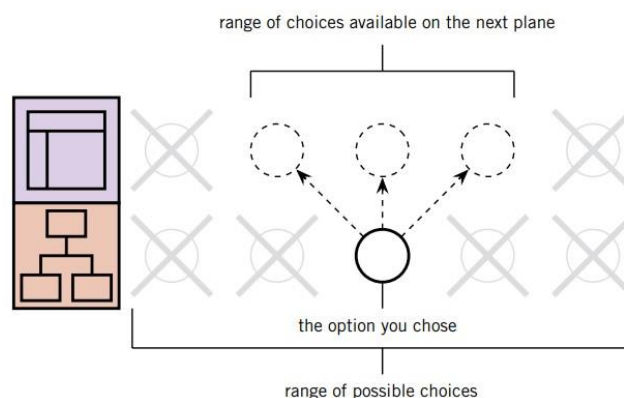


Figure 12. The elements of User Experience, Jesse James Garret

It means that decisions taken during the Strategy phase will have a “ripple effect” during the whole project. But, on the contrary, we are also restrained in our decisions for the next plans, with respect to the one we took on the previous plans.

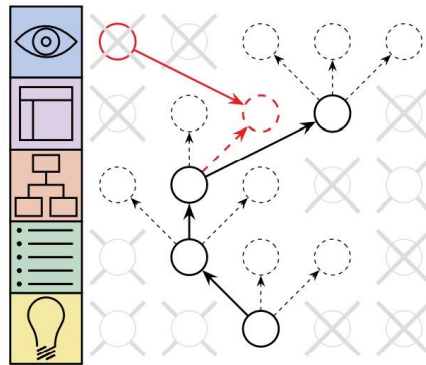


Figure 13: The elements of User Experience, Jesse James Garret

However, plans may change, and good ideas can come later. It is important to be open to make change during the process, and not staying stuck on one idea.

In most of baseline plan, we encounter unforeseen events, or we think about improvement we did not come up to, at the early point. Because I strongly believe that ideas lead to more ideas.

I reckon that the schema below illustrates these changes, that are likely to happen during a conception process.

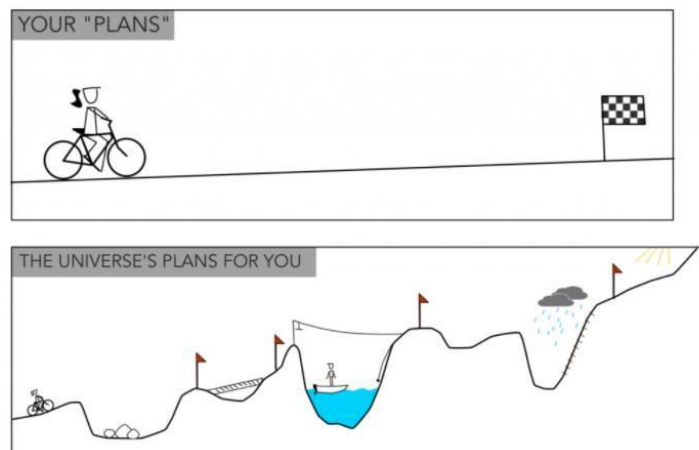


Figure 14. Plans vs Reality. (Available here: mashable.com)

In order that the management of unexpected changes can go ahead properly, Garrets insists on the importance of not being afraid to go back to another phase and to modify them. For example, if we are in the surface phase of the interface conception and that we want to add or improve a functionality, he recommends going back to the *Structure* phase. And potentially to go back to the *Scope*, and finally the *Strategy*.

3. Research Design and Findings

In this chapter you will firstly find a brief description of the Royal Canin company, the context of the analysis and its objective for the company. Then I will go deeper in the analysis method by explaining the different tools I used: A survey, an Attrakdiff and a Card Sorting, by using the software Testapic. To close this chapter, I will present the results obtained and their analysis.

3.1 Research context and Case Description

In this first paragraph, you will find the description of the Royal Canin company. Then I will address the objective of the top navigation menu analysis and its framework. Finally, you will see the current situation of the top navigation menu on the French market. Please note that the analysis has been conducted on the French website, but in order to make it understandable for the non-French speakers, I also attached the English version of the top navigation bar, that I found on the UK website.

3.1.1 The company

Royal Canin is a French manufacturer and global supplier of cat's and dog's food. Royal Canin was created in 1968 by Jean Cathary, veterinarian in the South of France. The small French company has experienced a high economic growth and has been taken over by Mars Corporation in 2002.

The company sells its products to both retailers and professionals such as veterinarians and breeders. There is a range of products composed of food adapted to the breed, weight and size of healthy cats and dogs. Besides, Royal Canin also created its range "Vet Products" dedicated to cats and dogs to which health issues have been diagnosed by the veterinarian. The customers have the opportunity to buy Royal Canin products online, via their website

or also via other online partners stores. The products can also be bought in physical stores, such as hypermarkets or supermarkets.

Each country is composed of one E-commerce Director who is, among other responsibilities, the guarantor of the user experience of their website's country. However, they have to follow some global guidelines given by the Global E-commerce Business Lead. Thus, some UX improvements can not be applied because of the need to have a global homogeneity between countries, despite the national specificities. This framework has not been given to me for confidentiality reasons.

3.1.2 The objective

The navigation bar of a website is a key element in UX. Indeed, this is what will guide the users in their navigation and will be crucial in terms of how easy it is for the user to get the information he needs. Thus, nothing must be neglected, and we have to take into account various aspects. However, last year the company conducted a NPS (Net Promoter Score) analysis concerning the global satisfaction of the users in the RoyalCanin website. It turned out that the NPS of the top navigation menu was low (The score has not been given to me).

For this reason, the company decided to conduct a deeper analysis to find out which modifications could be made on the Topnav in order to improve the user experience.

See below the elements we wanted to evaluate in the current Topnav:

- The clarity of naming of the categories and sub-categories. The biggest interrogation of the company was the name of the sub-categories "Retail Products" and "Vet Products". Indeed, on the E-commerce team was wondering if the French translation "Gamme Nutrition Santé" ("Health food products range") and ("Vet food products range") was clear enough in the users' mind.
- The number of categories and sub-categories. The company wanted to be sure that the users are not overwhelmed by too many choices of category.
- The ease of use

- The categorization. Here, we are interested in the way subcategories are grouped in one category, and its relevance. We also want to know if this actual organization is consistent for the users and to which extent it follows their own logic.
- The prioritization of the information. The company was interested in knowing if the actual hierarchy of information was in accordance with the users' needs and priorities. Here, there are two elements to look at. The first one is the horizontal hierarchy of the information on the Topnav. So, knowing which element has to be first (far left), which element has to be in the middle, etc. The second one is the vertical hierarchy of the information inside a category. So, which subcategory has to be placed first, for example.

3.1.3 The current situation of the company's Topnav

To begin my analyse, I will present the current situation of the company's top navigation bar. The navigation bar is represented in the following way on a desktop device :



Figure 15. French top navigation menu (Source: Royalcanin.fr)

English below:

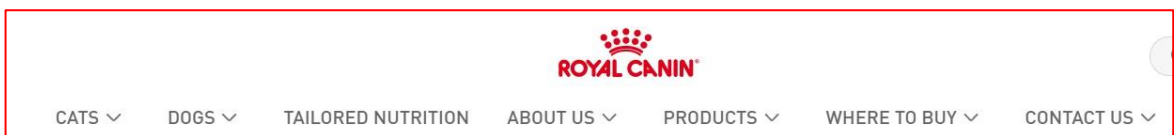


Figure 16. UK top navigation menu (Source: Royalcanin.uk)

As well, the navigation bar is currently composed of 7 distinct main categories. Note that the category "Tailored nutrition" redirects the users to a questionnaire in order to find the most suitable food product for their pets. Consequently, there are no drop-down menu composed of subcategories.

In all the other categories seen above, are organized 31 sub-categories, distributed as follows:

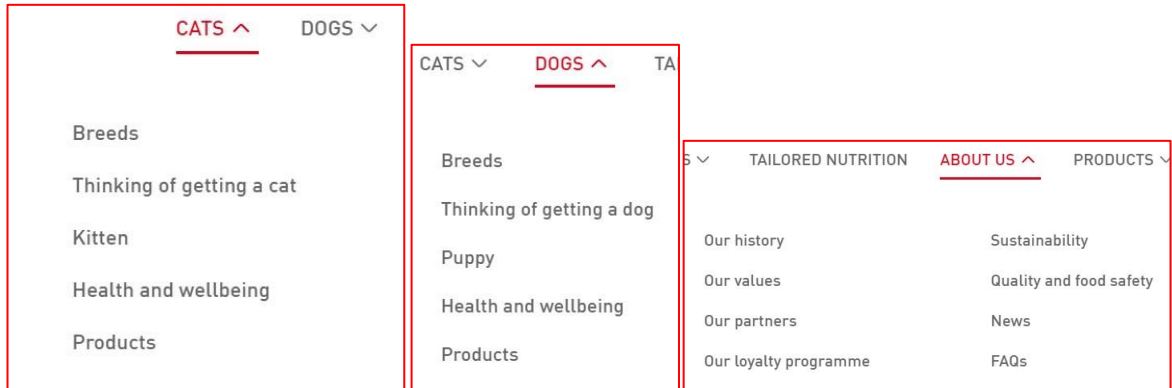


Figure 17. Cats;Dogs;About us top navigation menu. Source :Royalcanin.uk

The French version is available in the Appendix (Appendix1)

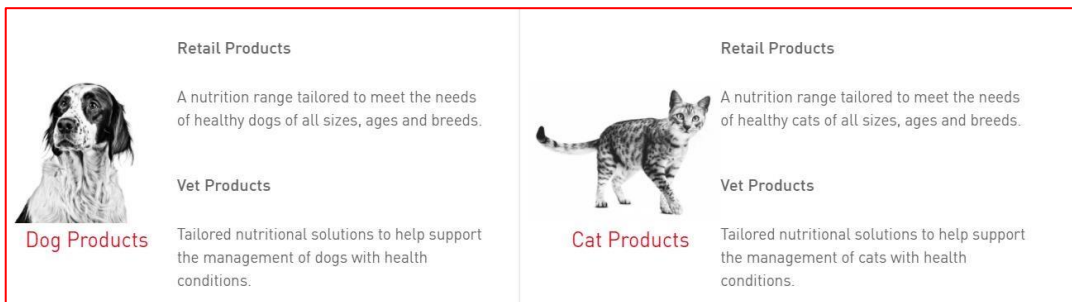


Figure 18. Products top navigation menu. Source :Royalcanin.uk

The French version is available in the Appendix (Appendix2)

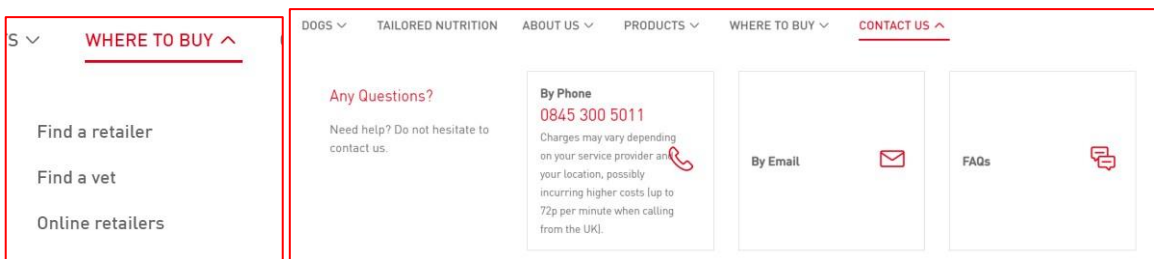


Figure 19. Wheretobuy;Contactus top navigation menu. Source :Royalcanin.uk

The French version is available in the Appendix (Appendix3)

3.2 Research Design and Data Collection method

In this section, I will detail the three tools used for the analysis, the survey, the card sorting and the Attrakdiff. The three of them could have been performed thanks to the software Testapic. For each of them, I will explain what it involved, what was the survey population and what were the specificities about the company case.

3.2.1. Online survey

With the online survey, we are trying to measure the user's feeling about the way the navigation menu is ordered and the naming of the categories and sub-categories. We wanted to collect quantitative data, through closed questions. By using TestApic's platform, we sent 6 questions to the users. The population sample was 104 cat or dog's owners. You will find below the instruction given to users, translated in English. Please note that there is a question N°7, which corresponds to the Attrakdiff analyse. We will detail this part in the next section.

- **N°1 – RETROSPECTIVE OF FIRST USE: Finding food for my pet**
You have a Labrador Retriever puppy. You would like to buy pet food online adapted to your dog.

Would you think that finding this information has been:

(Single-choice answer) Very easily / Rather easily / Rather difficult / Very difficult

- **N°2 RETROSPECTIVE OF FIRST USE**
Browse the site using the menu, try to find the way to:
 - **Contact Royal Canin by mail.**
 - **Learn more about Royal Canin,**
 - **Find a shop.**

2.a - After browsing this menu, you would say that it seemed Easy to use?

(Single-choice answer) Completely agree / Rather agree / Neither agree nor disagree / Rather disagree / Completely disagree

2.b - After browsing this menu, you would say that it seemed Quick to use?

(Single-choice answer) Completely agree / Rather agree / Neither agree nor disagree / Rather disagree / Completely disagree

2.c - After browsing this menu, you would say that it seemed Logic?

(Single-choice answer) Completely agree / Rather agree / Neither agree nor disagree / Rather disagree / Completely disagree

2.d - After browsing this menu, you would say that it seemed Clear?

(Single-choice answer) Completely agree / Rather agree / Neither agree nor disagree / Rather disagree / Completely disagree

- **N°3: CATEGORIES AND SUB-CATEGORIES NAME**

In general, the words used to name the different categories and sub-categories were:

(Single-choice answer) Perfectly clear / Rather clear / Rather not clear / Not clear at all

- **N°4: CATEGORIES' NUMBER**

In your opinion, the number of categories on the main menu is :

(Single-choice answer) Perfectly correct / Rather correct / Rather incorrect / Not correct at all / Other

- **N°5 : GLOBAL EVALUATION OF THE TOPNAV**

Is the TopNav complete according to you?

(Single-choice answer) Completely agree / Rather agree / Rather disagree / Completely disagree

- **N°6: IMPORTANCE OF THE TOPNAV**

On a website, does the TopNav matter according to you?

Single-choice answer: Completely agree / Rather agree / Rather disagree / Completely disagree

- **N°7: Attrakdiff.**

Finally, we would like to assess your impressions of the overall experience you have had on our site, in the different activities you have just completed.

This questionnaire is in the form of word pairs to assist you in evaluating the system. Each pair represents contrasts. The scales between the two ends allow you to describe the intensity of the chosen quality.

3.2.2 Attrakdiff

AttrakDiff is a system evaluation test created by Marc Hassenzahl, Professor at the Folkwang University (Essen, Germany) and its co-workers Burmester et Koller. This test is a quantitative method, to measure the User Experience of a website or a part of a website, post-utilization. Since it was only available in a German version, Carine Lallemand has validated and created a French version of the AttrakDiff in 2014. The test is composed of 28 items pairs of opposite meanings. The user will evaluate the system, based on the given items and its previous experience on the website, on a Likert scale (sometimes called “satisfaction scale”).

These 28 items, split into 4 dimensions:

Pragmatic Quality (PQ), measuring the product’s usability. In other words, this dimension will evaluate the system’s ability to help the user achieving his goal on the website / application. It is focused on the criteria of clarity and flexibility.

- **Hedonic Quality Stimulation (HQS)**, measuring the stimulation generated by the system. Unlike the Pragmatic dimension, the HQS will focus more on the user than

on the system. It will evaluate the user's stimulation relative to the system and its functionalities. What the AttrakDiff defines as a "Stimulating product" is based on criteria such as the creativity and the originality of the website / application.

- **Hedonic Quality Identification (HQI)**, measuring the user identification to the system. Not to be confused with the HQ Stimulation, if the HQ Identification also focus on the user' stimulation given by the product this dimension also evaluates to what extent the system is aligned to the user's identity. The purpose of the Hedonic Quality Dimension is to ensure that the system responds to the user's personal needs and expectations.
- **Overall appeal or Attraction (ATT)**, measuring system's global value based on the hedonic and pragmatic qualities

For your understanding, I have created a tab with the different items in French version (Carine Lallemand) and its translation. You will find this tab below:

PQ.1	Humain	Technique	Human	Technical
PQ.2	Simple	Complicé	Simple	Complicated
PQ.3	Pratique	Pas pratique	Practical	Impractical
PQ.4	Fastidieux	Efficace	Cumbersome	Straightforward
PQ.5	Prévisible	Imprévisible	Predictable	Unpredictable
PQ.6	Confus	Clair	Confusing	Clearly structured
PQ.7	Incontrôlable	Maîtrisable	Unruly	Manageable
ATT.1	Plaisant	Déplaisant	Pleasant	Unpleasant
ATT.2	Laid	Beau	Ugly	Attractive
ATT.3	Agréable	Désagréable	Likeable	Disagreeable
ATT.4	Rebutant	Attirant	Rejecting	Inviting
ATT.5	Bon	Mauvais	Good	Bad
ATT.6	Repoussant	Attrayant	Repelling	Appealing
ATT.7	Motivant	Décourageant	Motivating	Discouraging
HQI.1	M'isole	Me sociabilise	Isolating	Connective
HQI.2	Professionnel	Amateur	Professional	Unprofessional
HQI.3	De bon goût	De mauvais goût	Stylish	Tacky
HQI.4	Bas de gamme	Haut de gamme	Cheap	Premium
HQI.5	M'exclut	M'intègre	Alienating	Integrating
HQI.6	Me rapproche des autres	Me sépare des autres	Brings me closer to people	Separates me from people
HQI.7	Non présentable	Présentable	Unpresentable	Presentable
HQS.1	Original	Conventionnel	Inventive	Conventional
HQS.2	Sans imagination	Créatif	Unimaginative	Creative
HQS.3	Audacieux	Prudent	Bold	Cautious
HQS.4	Novateur	Conservateur	Innovative	Conservative
HQS.5	Ennuyeux	Captivant	Dull	Captivating
HQS.6	Peu exigeant	Challenging	Undemanding	Challenging
HQS.7	Nouveau	Commun	Novel	Ordinary

Table 1. Attrakdiff Items translation

Prior to launch a new top navigation bar, Royal Canin wants to measure the “Attrakdiff” of the current navigation bar behaviour. The test will measure the current User Experience of the navigation of the website through the navigation bar, and it will give insights on user’s feelings about the website. There are 105 respondents for the survey, composed of 51.4 % of men and 48.6 % of women. The age group concerned is situated between 21 and 65 years old and the average age of the population studied is 41 years old. 49.5 % used a desktop to participate to the survey and 50.5 % experienced the questions with their mobile phone. The last condition to participate to the survey is to be a cat or a dog owner.

3.2.3 Card Sorting

Card sorting is the method used to build the information architecture by directly involving the end users.

We present to the user 31 cards. Each card represents a sub-category (e.g “*How to find a vet*” or “*FAQ*”), already existing on RoyalCanin.fr. We ask to the user to sort and group the cards (according to information or items that should logically be grouped together, according to himself). Then, he is asked to group them into a category which will be created by the user himself. (e.g He will group the existing items “Our e-mail” and “Our address” into a category created, such as “Contact us” or “How to contact Royal Canin?”). Besides it may help the company to arbitrate in case of internal disagreements. Indeed, in order to choose between different views, on subjective questions, it might be easier to follow the user’s opinion if a great number of opinions converged together.

The first purpose here is to understand the mental models of the users and their organisational logic. Another objective here is to identify potential irritant in the navigation menu. For instance, if some information is difficult to find for the user. And identifying the cause of this irritant: is it because the information is situated at a place which is illogical for the user? Is it because the appellation is unclear for the user? Finally, the headings suggested and

created by the users can help Royal Canin for the potential creation of the new navigation bar, by receiving a fresh look, from people outside of the company but deeply concerned by Dogs and Cats alimentation products.

The population sample is the same than for the survey.

3.3 Findings

In this section, you will find the data collected from the survey, the attrakdiff and the card sorting.

3.3.1 Online Survey

You will find below the users' responses to the online survey:

N°1 – RETROSPECTIVE OF FIRST USE – Finding the right food for my pet

You have a Labrador Retriever puppy. Using the menu, you would like to buy pet food online adapted to your dog.

Would you think that finding this information has been:

(Single-choice answer) Very easily / Rather easily / Neither agree nor difficult / Rather difficult / Very difficult

- 57 % of the respondents claimed that they completely agree.
- 24 % of the respondents rather agree.
- 13 % of the respondents neither agree nor disagree.
- 6 % of the respondents rather disagree.

• N°2 RETROSPECTIVE OF FIRST USE

Browse the site using the menu, try to find the way to:

- Contact Royal Canin by mail. - Learn more about Royal

Canin,

- Find a shop.

2.a - After browsing this menu, you would say that it seemed Easy to use?

(Single-choice answer) Completely agree / Rather agree / Neither agree nor disagree / Rather disagree / Completely disagree

Here are the results for this question:

- 59 % of the respondents claimed that they completely agree.
- 33 % of the respondents rather agree.
- 4 % of the respondents neither agree nor disagree.
- 4 % of the respondents rather disagree.

2.b - After browsing this menu, you would say that it seemed Quick to use?

(Single-choice answer) Completely agree / Rather agree / Neither agree nor disagree / Rather disagree / Completely disagree

- 49 % of the interviewees completely agree
- 40 % of them rather agree
- 7 % of them neither agree nor disagree 4 % of them rather disagree

2.c - After browsing this menu, you would say that it seemed Logic?

(Single-choice answer) Completely agree / Rather agree / Neither agree nor disagree / Rather disagree / Completely disagree

- 48 % of the respondents completely agree
- 42 % of the respondents rather agree
- 8 % of the respondents neither agree nor disagree
- 2 % of the respondents rather disagree

2.d - After browsing this menu, you would say that it seemed Clear?

(Single-choice answer) Completely agree / Rather agree / Neither agree nor disagree /

Rather disagree / Completely disagree

- 55 % of the interviewees completely agree
- 34 % of them rather agree
- 7 % of them neither agree nor disagree ○ 3 % of them rather disagree

Since the responses were mostly positive, I have made the observation that there were no huge, shared friction points or generalized problems concerning the ease of navigation on the TopNav.

• **N°3: CATEGORIES AND SUB-CATEGORIES NAME**

In general, the words used to name the different categories and sub-categories were:

Single-choice answer: Perfectly clear / Rather clear / Rather not clear / Not clear at all You

will find below the results for this question:

- 63 % of the respondents think that the categories and sub-categories name are perfectly clear
- 32 % of them think that they are rather clear
- 4 % of them that they are rather not clear
- 1 % of them think that they are not clear at all

Once again, I did not notice a warning concerning the choice of categories and subcategories' names.

• **N° 4: CATEGORIES AND SUB-CATEGORIES' NUMBER**

In your opinion, the number of categories on the main menu is :

(Single-choice answer) Perfectly correct / Rather correct / Rather incorrect / Not correct at all

- 58 % of the respondents think that the number of categories in the Menu is perfectly correct.
- 35 % think that the number of categories displayed is rather correct

- 5 % think that the number of categories on the main menu is rather incorrect
- 2 % think that the number of categories on the main menu is not correct at all

• **N°5: ESSENTIAL ELEMENTS ON THE TOPNAV**

Is the TopNav complete according to you?

Single-choice answer: Completely agree / Rather agree / Rather disagree / Completely disagree

- 68% of the interviewees completely agree
- 31% of them rather agree
- 1% of them rather disagree

According to the users, it seems that there is no lack of essential elements on the TopNav.

• **N°6: IMPORTANCE OF THE TOPNAV**

On a website, does the TopNav matter according to you?

Single-choice answer: Completely agree / Rather agree / Rather disagree / Completely disagree

- 85% of the interviewees completely agree
- 11% of them rather agree
- 4% of them rather disagree

3.3.2 Attrakdiff

Now, let's go deeper on this analysis thanks to the Attrakdiff results.

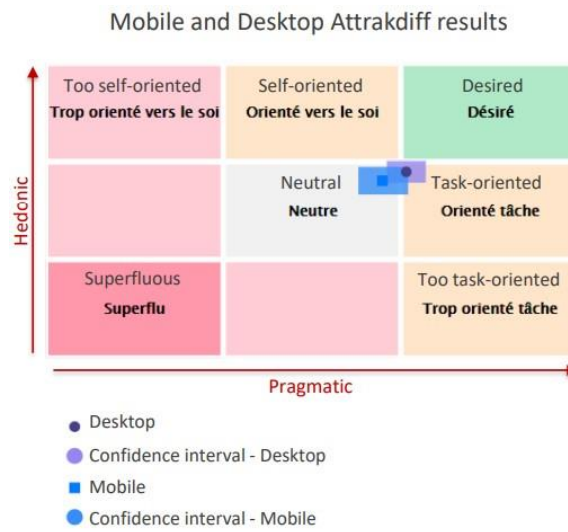


Figure 20. Attrakdiff Results 1.

Y axes relates to the feelings of the user rather than the task itself whereas the X axes is more task oriented, meaning the capability of the user to succeed in his task. Overall, the score shows us that the website is quite pragmatic and hedonic. Indeed, they are both higher than the average. This tells us that the users succeeded in their different tasks they have been asking to complete, and that the majority would qualify the website as creative, daring, and innovative.

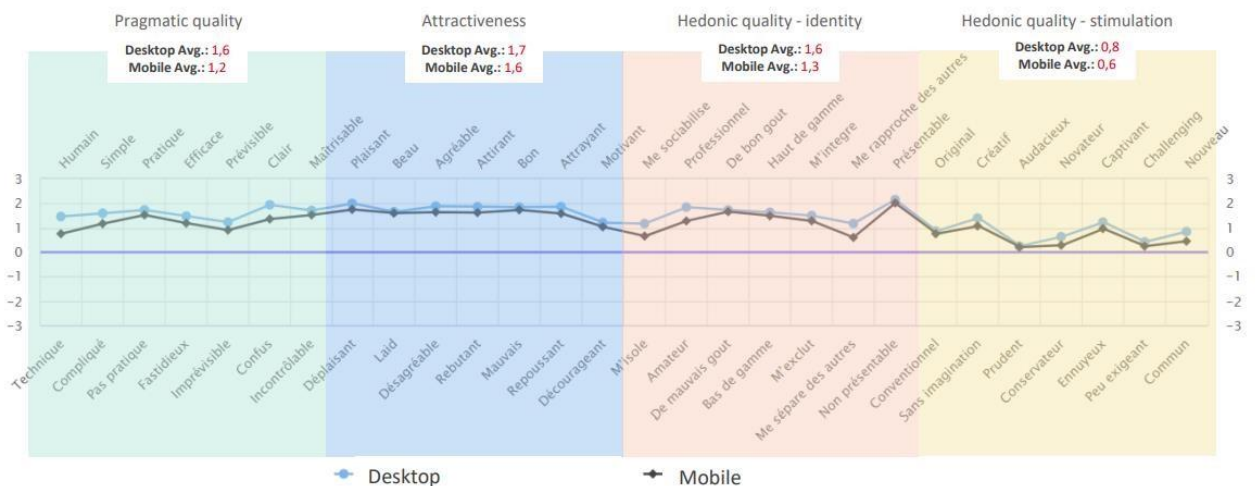


Figure 21. Attrakdiff Results 2

The score of “Hedonic quality – stimulation” is below 1. This is not a bad score, but it means that there is still place for improvement. The score of the “Pragmatic quality” and “Hedonic quality – Identity” are respectively 1.2 and 1.6. This is a high score and means that the users completed their tasks with success and enjoyed doing so. The attractiveness, which measure the overall website pragmatic and hedonic quality has a very good score of 1.76

3.3.3 Card Sorting

The first important statement here, is that in average, by regrouping all the sub-categories of the company’s Topnav, **the users have created a total of 5 categories**. However, as we saw in this paper, the top navigation bar of the company has 7 main entries.

See below the tab that I have created to identify and illustrate in which kind of topics the users tend more to agree to group some sub-categories together. For example, “Acheter chez un revendeur en ligne” (“Buy to a reseller online ») has been placed into 88 different categories. However, “Aliments pour chiens” (“Dogs’ Alimentation”) has been placed into 52 categories. Since there are less categories created for “Dogs’ Alimentation” it means that several users created the exact same name of category in which “Dogs’ Alimentation” belongs. On the contrary, there are less similar categories created for “Buy to a reseller online”, it could mean that the name of this sub-category might not be very clear in the users’ mind.

	Number categories created
▪ <u>Aliments pour chiens</u>	52
▪ <u>Par e-mail</u>	52
▪ <u>Par téléphone</u>	52
▪ <u>Gammes d'aliments Magasins pour chiens</u>	58
▪ <u>Gamme d'aliment vétérinaire pour chiens</u>	58
▪ <u>Découvrir nos différentes gammes d'aliments pour chiens</u>	61
▪ <u>Santé et bien-être pour chiens</u>	63
▪ <u>Chiot</u>	64
▪ <u>Races de chiens</u>	66
▪ <u>Notre histoire</u>	68
▪ <u>FAQ</u>	69
▪ <u>Nos valeurs</u>	70
▪ <u>Vous envisagez d'adopter un chien</u>	70
▪ <u>Développement Durable</u>	75
▪ <u>Espace partenaire</u>	75
▪ <u>Actualités</u>	76
▪ <u>Trouvez un magasin</u>	77
▪ <u>Découvrez notre abonnement</u>	80
▪ <u>Mon Royal Canin</u>	80
▪ <u>Trouver un vétérinaire</u>	82
▪ <u>Acheter sur la boutique en ligne Royal Canin</u>	85
▪ <u>Qualité et Sécurité Alimentaire</u>	85
▪ <u>Acheter chez un revendeur en ligne</u>	88

Table 2. Card sorting categorization

As you can see above, they tend more to agree to group sub-categories referring to: Alimentation, Dogs, Health issues and Royal Canin general information.

Then, to illustrate the categorization choice of the users, we use a *Dendrogram*, which is a hierarchical grouping diagram, allowing data to be organised in a tree structure according to their similarities. Here, what I mean by similarities is the users' proportion that grouped some sub-categories together. The dendrogram is only used to provide data and having a global insight about what the users think about the categorization: It is not exhaustive and there is no "one right answer." Besides, its analyse and the ensuing recommendations must be taken lightly. It is very important to find the right balance. Indeed, if we reduce the number of categories on the Dendrogram (if we focus on the right side of the Dendrogram), unavoidably, only few users will agree on grouping all the sub-categories all together. Inversely, if the only variable we value is the users' degree of agreement, and we want it to be as high as possible, we might suffer from a lack a relevance in the decision we take. Indeed, it is true that 95% of the users spontaneously group "By phone" ("*Par telephone*") and "By mail" together. The degree of agreement is therefore very high. Nevertheless, there is little point in creating a whole category on the TopNav, only for these two items.

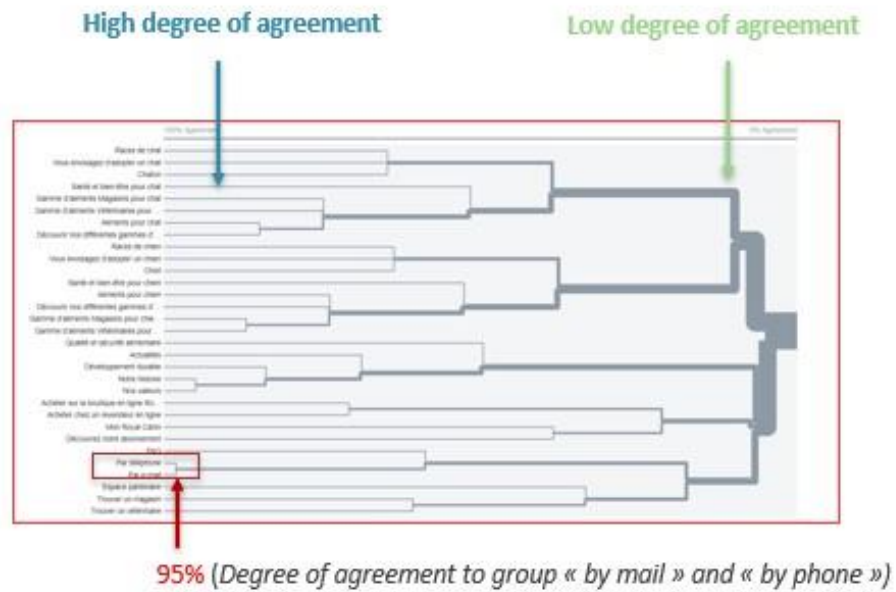


Figure 22. Example Dendrogram

Because the users spontaneously created 5 categories, I started from this base to try to find the best categorization scheme, according to me. Below, you will find an example of categorization with 5 main entries, realized thanks to the *Dendrogram*.

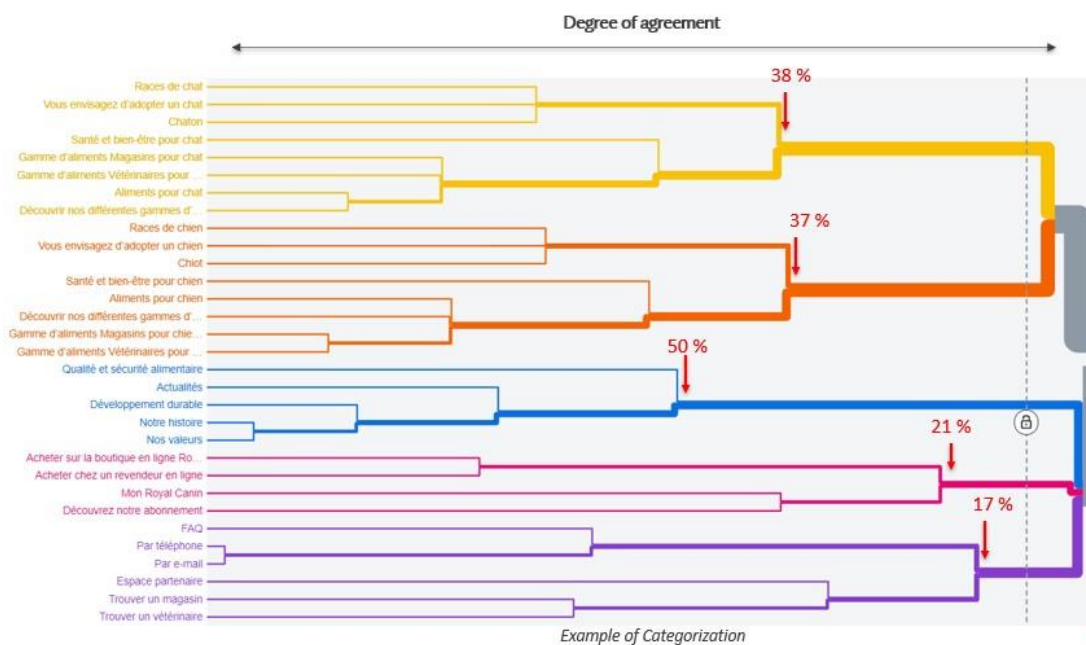


Figure 23. Example of Royal Canin Dendrogram

- So, 38% of the users agreed to group “Cat Breeds” (*“Races de chats”*), “Adopt a cat” (*“Vous envisagez d’adopter un chat”*), “Kitten” (*Chaton*), Health and wellbeing for Cat” (*“Santé et bien-être pour chats”*), “Shop range food for Cat” (*“Gamme d’aliments Magasins pour chats”*), “Vet range food for Cat” (*Gamme d’aliments vétérinaire pour chats*), “Tailored nutrition for Cats” (*“Aliments pour chats”*) and “Discover our different range food for Cat” (*“Découvrir nos différentes gammes d’aliments pour chats”*) all together.
- 37 % of them agreed to group “Dog Breeds” (*“Races de chiens”*), “Adopt a dog” (*“Vous envisagez d’adopter un chien”*), “Puppy” (*Chiot*), Health and well-being for Dog” (*“Santé et bien-être pour chiens”*), “Shop range food for Dog” (*“Gamme d’aliments Magasins pour chiens”*), “Vet range food for Dog” (*Gamme d’aliments vétérinaire pour chiens*), “Tailored nutrition for Dogs” (*“Aliments pour chiens”*) and “Discover our different range food for Dogs” (*“Découvrir nos différentes gammes d’aliments pour chiens”*) all together.
- 50 % of them agreed to group “Quality and food security” (*“Qualité et Sécurité alimentaire”*), “Actualities” (*“Actualités”*), “Sustainable Development” (*“Développement Durable”*), “Our story” (*“Notre histoire”*), and “Our values” (*“Nos valeurs”*) all together.
- 21% of them agreed to group the sub-categories “Buy on the Online Shop RoyalCanin” (*“Acheter sur la boutique en ligne Royal Canin”*), “Buy to a reseller online” (*“Acheter chez un revendeur en ligne”*), “My RoyalCanin” (*“Mon Royal Canin”*), and “Discover our Club sub”cription" (*“Découvrez notre abonnement”*) all together.
- 17 % of the users agreed to group the sub-categories “Frequently Asked Questions” (*“FAQ”*), “By phone” (*“Par telephone”*), “By e-mail” (*“Par mail”*), “Partner area” (*“Espace partenaires”*), “Find a Shop” (*“Trouver un magasin”*) and “Find a Vet” (*“Trouver un vétérinaire”*).

We also wanted to explore the idea of gathering all the cats & dogs' category together, in order to clean up a little the Topnav. This way, the user would have to click on a category which could have been named after “My pet” or “My animal”, and then, he would have to choose between two subcategories: “Cats” or “Dogs”. Consequently, we had a particular look at the degree of agreement if we mix these two big categories. It turned that the users were extremely against this idea, as you can see in the part of the Dendrogram below:

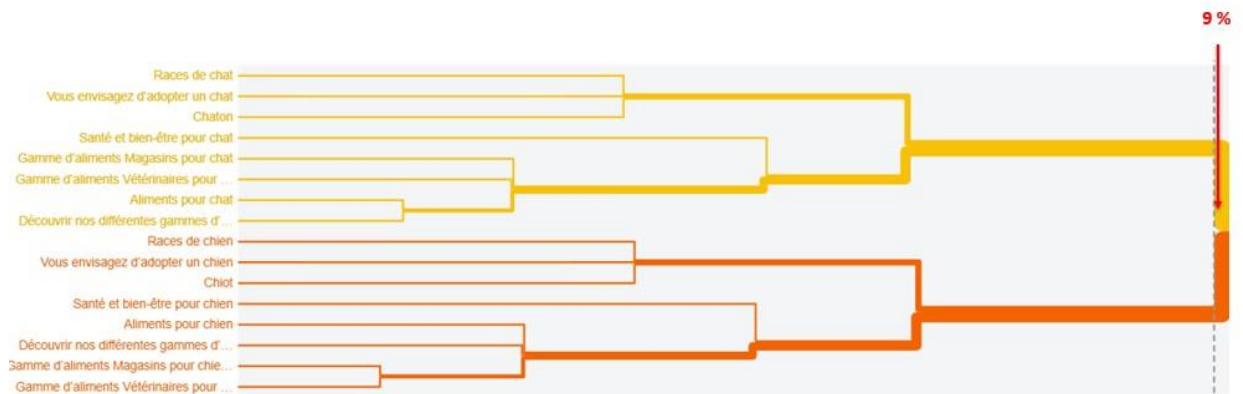


Figure 24. Example of Royal Canin Dendrogram - Cats & Dogs

Thus, we can see that only 9% of the users agreed to mix the Dogs & Cats categories together.

Then we asked to the users the most suitable name for the categories they created. Based on the Dendrogram and the top categories name given by the users, you will find below our recommendation for the TopNav Categorization and naming:



Figure 25. New Topnav recommendation French

You will find this Topnav design in English below:

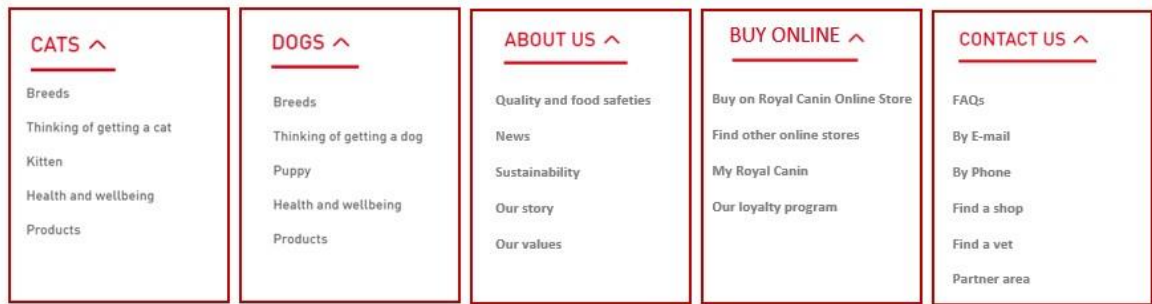


Figure 26. New Topnav recommendation English

Instead of having 7 categories, we suggest having only 5, and we do not have a “Product” Category anymore. Indeed, what emerges from the analyse is that the users expect to find tailored food for their cat, in the cat section and for their dog, in the dog section. Not in a third category dedicated for products. In the same way, we suggest deleting the category “tailored nutrition” which refer to a questionnaire to find out the most suitable food for the user’s pet.

The subcategories “Find a Vet” and “Find a shop” were more located by the users in the category “Contact us”, rather than in the category “About us”.

4. Conclusions

If UX requires technical tools, we can not set aside the emotional aspect when assessing the user experience. In order to evaluate the user experience of a website, it is useful to conduct several analyses:

- User-testing, in order to understand how the user is navigating through the website.
- Quantitative survey, in order to gather data and quantify the satisfaction or dissatisfaction of the users.
- Cardsorting, in order to understand the users' logic (and validate or not the consistence of the survey's responses).
- Attrakdiff, a way to catch the users' feeling about their experience on the website.

In this last section, we will discuss the results obtained in the analysis, with the UX heuristics mentioned in the theoretical framework we have seen in the literature review. Then, I will present the limitations of the business cases analyse, as well as the limitations of the heuristics in this context.

4.1 Royal Canin Topnav and the UX Heuristics

In this section, we will make the parallel between the RoyalCanin Topnav and the UX heuristics seen in the literature review.

In the Royal Canin study case, we saw that the users attached a great importance to the Top Navigation menu. They agreed in the great majority on the fact that the navigation menu is an essential element to facilitate their journey on a website and improve their experience. This justifies the need of conducting this analyse, in the first place.

Indeed, when Bastien & Scapin evoked the Thematic 2 (The workload), they first focused on the importance of the “The shortness” and the need for the user to find the information he wants as quickly as possible, and intuitively. The Top navigation menu seems to respond to this need, and it participates to reduce the workload of the users on the website.

We can also put in relation Nielsen’s work about the visibility of the System Status (Heuristic #1) and our Royal Canin business case. Indeed, Nielsen underlined the importance of letting the user know what is going on, on the interface and letting him know where he is and where he could go after.

When the user clicks on a category on the Royal Canin’s website, the chosen category become Red. Besides, the red arrow is facing upwards, whereas the grey arrows of the other categories are pointing downwards.



Figure 27. Topnav 1 – RoyalCanin.fr

In the same idea, when the user hovers a CTA (before actually clicking on it), its becomes red. This functionality is in perfect adequation with Nielsen Heuristic’s about the visibility of the System Status. Indeed, the user is moving on the top navigation menu with its computer mouse, and the system interacts with him: something is going on.

Bastien & Scapin (Homogeneity and consistency, Heuristics #6), Nielsen (Consistency and Standards, Heuristic #4) and Colombo & Pasch (Ergonomical Transparency, #Heuristic 4), once again, all agree on a UX Principle. In their work, they all insisted on the importance of the system to be consistent. In the sense of, the graphical codes and the visuals must be applied to all pages or all similar information.

On the Royal Canin Top navigation we remark that the arrow that we talked about does not exist on the category “Alimentation sur mesure” (“tailored nutrition”), which is a lack of consistency on the Top navigation menu.

When a user clicks on a category, for example “A propos de nous” (“About Us”) and then clicked on a sub-category, for example “Nos valeurs” (“Our values”), the category becomes grey-colored again, like the other ones.

However, the system shows him the previous steps he takes while using the Top Navigation menu. But, in addition to that, it gives him the possibility to return where he was on the website before the last button he clicked on. In other words, if he is disappointed in the content offered or if he clicks on a button by mistake, he can easily “undo” his action.

Colombo & Pasch (Potential Control, Heuristic #7), Jakob Nielsen (User control and Freedom, Heuristic #3), Bastien & Scapin (The user control over his action, Heuristic #3), all have mentioned the importance of the user’s feeling of control over the system to evaluate the UX Design on a website. They particularly insist on the possibility to undo an action and on the fact that the user should under no circumstances, feel trapped by the system.

Besides, this functionality also helps the user to understand where he is right now on the website and where he was before, as we discussed previously. (*Visibility of the System Status*, Nielsen, Heuristic #1).



Figure.28 Topnav 2 – RoyalCanin.fr

Bastien & Scapin told us about the fact that the users should not be encumbered with useless information. When we asked to the users if the number of categories was correct according to them, among them, 58% responded that this number (7 categories) was perfectly correct.

However, when they conducted the Card Sorting, they spontaneously created 5 of them. Thus, one existing category could appear as useless for the user, even if he is not aware of it. Indeed, by including the dog products only the “Dogs” category, and the cat products,

only in the “Cats” category, most of the users chose to “forget about” the Products category. After all, it was not essential according to them.

We can also rely on this heuristic about the quantity of information inside a category. For example, when we click on the “Products” category, the user is facing a lot of information, and he could be confused, and he may not know where to click. (*See Screenshot below*)



Figure 29. Products Category – Royalcanin.fr

This can be put in paralleled with Nielsen’s heuristic about minimalist design (Heuristic #10). Indeed, every extra unit of information that is not relevant for the user is distracting him from his initial goal. Besides, this part of the top navigation menu does not comply with the UX Heuristics given by Nielsen, Colombo & Pasch and Bastien & Scapin, for several reasons.

First, it does not respect the heuristics concerning homogeneity and consistency (which we discussed previously within this last part), since this page is built completely differently than the others on the top nav. (See the Screenshots below : The “Cats” category and the “Dogs” category.) It does not respect either Nielsen’s heuristic about aestheticism (Heuristic #10). For example, the pictures of the dog and the picture of the cat do not have the same size. The text is not justified and there is a discrepancy on the right: the dropdown menu is not on the middle of the page.

We can also rely on the first heuristic of Bastien & Scapin: The Guidance. And more precisely, on the sub-criteria of this heuristic, concerning the Readability. Indeed, the CTA

“Trouver l’aliment adapté pour votre animal” (“Find the right product for your animal”) is cut. The user can only see “Trouver l’al..” .

Finally, this page does not comply either with Nielsen’s heuristic about the visibility of the system status nor with the heuristic about consistency to the extent that, the content written in red is not clickable (“Aliments pour chiens”; “Aliments pour chats”; “Besoin d’aide pour trouver le bon produit”). The clickable elements are: “Gamme Nutrition Santé” (for Dogs and for Cats) and “Gamme d’Aliments vétérinaire” (for Dogs and for Cats). Nevertheless, the user, by getting “used” to navigate on the interface may be confused on where he has to click. In addition to the fact that he is already facing with plenty of information on this dropdown category.

As we saw with Bastien & Scapin Heuristics (Thematic 1: the guidance), the items that are related to each other should be grouped by localization. For that, we needed to understand the users’ logic and the link they find between the different categories. Thanks to the Card Sorting conducted in the Royal Canin analyses of the Topnav, we now have a global insight about which kind of elements should be grouped together in the same categories.

We found out that the users wanted to have separated categories between the dogs and the cats in order to facilitate their journey on the website, using the top navigation bar.

Colombo and Pasch mentioned the necessity for the system to be customizable according to the users’ preferences and specificities. They have to feel that the website was tailored for them. In the same idea, in the Heuristic#7 concerning the flexibility of the system and its efficiency of use, Nielsen highlights the importance for the system to allow customization by the users or to provide a personalized experience. For example, to provide specific content or functionalities for specific users. We can imagine, to improve the user experience of the top navigation menu of RoyalCanin.fr to provide some personalization also, for its users. Indeed, if the user is already signed in on RoyalCanin.fr he could see first on the topnav the elements he is the most interested in. For example, if he has a dog, he mainly sees content about dogs. This could be applied on the categories and the sub-categories.

4.2 Limitations, contribution, and future research lines

In this section we will address the limitations of this paper, the contribution and the future research that could be conducted in order to go further in the approach.

4.2.1 Limitations

While analysing the results, I have noticed some contradictions between the users' responses in the online survey and the results obtained with the card sorting. For example, most of them responded that the number of categories was neither too much nor too little. However, they spontaneously deleted 2 categories while doing the Card Sorting. In my opinion, it is important to ask for the users' opinion and to take their insights into consideration, but we cannot just rely on these results. We can raise several limits related to Heuristics for UX Design. The heuristics were created to be as general as possible, and scalable for different interfaces, consequently they do not give us clear and specific recommendations. According to Carine Lallemand and Guillaume Gronier, authors of the book "Méthodes de design UX: 30 méthodes fondamentales pour concevoir des expériences optimales", published in 2018 (« UX design methods: 30 fundamental methods for designing optimal experiences»), different UX experts can find different problems or improvement areas on the same interface. Thus, the results of the heuristics analysis may vary according to the experts that conducted it. They also add that another frequent problem is the trend of experts to overassess the number of real problems on the interface. These kind "problems" raised are called "false warning". Besides, the authors do not give us an assessment grid nor specific evaluation criteria. Finally, given the complexity and the subjectivity of the User Experience, we might be sceptical about the possibility to summarize the whole subject in a few principles. According to me, we have to take a step back from the heuristics and do not take it all for granted. We also have to think about the ROI (Return On Investment) before undertaking an action, and so, asking ourselves the question: "For every euro I will spend on this action, how many euros of value am I getting back?". And sometimes, it takes more investment capital and human capital (here, working hours) to "fix a problem" on an interface, than it costs to the company if it let the situation remained unchanged. The heuristics method has been criticized for its lack of credibility when using it all alone.

4.2.2 Contribution

I have not found so far any research paper related to the assessment of the Topnav's user experience, by using simultaneously a quantitative survey (including a user-testing question), a card sorting and an attrakdiff, paralleled with the UX heuristics.

In this paper analyse I have been trying to be general and to catch the users' feelings and insight about the Royal Canin's website only. In his paper "Deconstructing Context to Understand its Impact on the User" (Ortiz Nicolás, 2019), Ortiz aimed to explain to what extent the context has an influence on the user experience. The aim of my research was to focus on the feelings experienced because of the website only.

Even there are several limits to UX heuristics, it does not mean that the method is useless, on the contrary, it is to me, a powerful tool in UX Design, but even more significant when used in parallel with a more quantitative method. I think that it can be very insightful in combination with other user-centred methods, such as user testing. Or also associated with quantitative survey and an attrakdiff. As we saw on the introduction, the user experience can be very subjective, in the sense that it is also based on the users' feelings and perceptions. Consequently, in my opinion, the assessment of the user experience of a website cannot only be based on quantitative data and the combination of heuristics, users testing, quantitative survey and attrakdiff are very useful tools to catch the users' insight about their experience on a website.

4.2.3 Future research lines

If we decide to go further on this analysis, it would be interesting in my opinion, to determine if the conclusions obtained in this paper would have been different or similar if the website analysed was about another product. It would also be worthwhile to conduct this analysis about a non-E-commerce website. Also, since the analysis has only been conducted on the French market, we may think that the results could have differed if the study would have

been conducted in another country. This way, we could discuss how the users assess their experience on a website, what are their priorities and expectations to ensure a good experience, according to the different regions of the world. According to me, it would be interesting to conduct this analyse on a whole page or several pages of a website, because a lot of heuristics can hardly be applied on the Topnav only.




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Appendices

CHATS ^ CHIENS v ALI	CHIENS ^ ALIMENTATION SU	ALIMENTATION SUR MESURE À PROPOS DE NOUS ^ PRODUITS v
Races Vous envisagez d'adopter un chat Chaton Santé et bien-être Aliments	Races Vous envisagez d'adopter un chien Chiot Santé et bien-être Aliments	Notre histoire Espace Partenaire Développement durable Actualités L'approche nutritionnelle de Royal Canin Nos valeurs Mon Royal Canin Qualité et sécurité alimentaire FAQ

Appendix 1: Cats;Dogs; About us topnav. Royalcanin.fr

CHIENS v	ALIMENTATION SUR MESURE	À PROPOS DE NOUS v	PRODUITS ^	OÙ ACHETER v	NOUS CONTACTER v
<p>Besoin d'aide pour trouver le bon produit ?</p> <p>Essayez notre recherche de produits</p> <p>Trouver l'al...</p> 		 <p>Aliments pour chiens</p>	<p>Gamme Nutrition Santé</p> <p>Une nutrition précisément adaptée aux chiens de tous âges, de toutes tailles et de toutes races.</p> <p>Gamme d'aliments Vétérinaires</p> <p>Permettent de préserver la santé des chiens chez lesquels des troubles ont été diagnostiqués par le vétérinaire;</p>	 <p>Aliments pour chats</p>	<p>Gamme Nutrition Santé</p> <p>Une nutrition précisément adaptée aux chats de tous âges, de toutes tailles et de toutes races.</p> <p>Gamme d'aliments Vétérinaires</p> <p>Permettent de préserver la santé des chats chez lesquels des troubles ont été diagnostiqués par le vétérinaire.</p>

Appendix 2: Products topnav Royalcanin.fr

À PROPOS DE NOUS v	PRODUITS v	OÙ ACHETER ^	SUR MESURE	À PROPOS DE NOUS v	PRODUITS v	OÙ ACHETER v	NOUS CONTACTER ^
Acheter sur la boutique en ligne Royal Canin Acheter chez un revendeur en ligne Trouver un magasin Trouver un vétérinaire			<p>Par téléphone</p> <p>Numéro vert : 0 800 41 51 61</p> <p>Du lundi au vendredi de 8 h 30 à 19 h et le samedi de 9 h à 13 h. Les appels sont gratuits depuis un poste fixe.</p>	FAQ	Par e-mail		

Appendix 3: Where to buy; Contact us Topnav Royalcanin.fr