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Master's degree Program in  
**Data-Driven Marketing**

**IMPACT OF WEBSITE NAVIGATION  
ON USER EXPERIENCE**

Bárbara Caeiro Bastos

Project Work

presented as partial requirement for obtaining the master's degree Program in Data-  
Driven Marketing

**NOVA Information Management School**  
**Instituto Superior de Estatística e Gestão de Informação**  
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By/por  
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Projeto apresentada(o) como requisito parcial para obtenção do grau de Mestre em Data-Driven Marketing, com especialização em Marketing Digital e Analítica

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PhD

## **STATEMENT OF INTEGRITY**

I hereby declare having conducted this academic work with integrity. I confirm that I have not used plagiarism or any form of undue use of information or falsification of results along the process leading to its elaboration. I further declare that I have fully acknowledge the Rules of Conduct and Code of Honor from the NOVA Information Management School.

*Bárbara Caeiro Bastos*

*Hilversum, Netherlands, 7<sup>th</sup> December of 2022*

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## **ABSTRACT**

The online interactions between consumers and brands determined the need for companies to have a solid infrastructure to support their users. Furthermore, it is crucial to have a good web navigation system to guarantee that consumers can find, access, and use the information that is displayed within it. But, for customers to be able to navigate successfully, companies must consider the website interface as well. The happy marriage of website architecture and interface creates a cohesive user experience. The present study aims to investigate the effect that website navigation on an e-commerce website. Specifically, in how it can impact Key Performance Indicators such as Conversion Rate, Product Wall View Rate, and Percentage to Product Details Page. The company's subject of study is Company X, specifically Company X's website. Furthermore, we developed a new main navigation and left-hand navigation design with the aim of improving the User Interface and Experience. We also were able to improve the consumers capacity to accomplish tasks more effectively. eThe model conducted a mixed method approach.

## **KEYWORDS**

User Experience, User Interface, Navigation Design; Website Navigation; User Experience Metrics

## **SUSTAINABLE DEVELOPMENT GOALS (SGD):**



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## LIST OF ABBREVIATIONS AND ACRONYMS

<b>% to PDP</b>	Percentage to Product Detail Page
<b>CHI</b>	Computer-Human Interactions
<b>CNAV</b>	Category Navigation
<b>CTR</b>	Click Through Rate
<b>CVR</b>	Conversion Rate
<b>GNAV</b>	Global Navigation – Main Navigation
<b>KPI</b>	Key Performance Indicators
<b>LHN</b>	Left Hand Navigation
<b>PDP</b>	Product Detail Page
<b>PLP</b>	Products Listings Page
<b>PW</b>	Product Wall
<b>UX</b>	User Experience

## **1.- Introduction**

### **1.1. Context and Topic Motivation**

With the expansion of the World Wide Web, websites are becoming larger and more complex, making it increasingly difficult for users to find the information they are looking for efficiently (Meteren & Someren, 2000).

Users frequently report being frustrated when they cannot find what they want in the web. Either users cannot find the website they want, or they cannot find what they want when within the website (Notess, 2001).

Due to the limited navigation offered by web browsers, good web navigation must be provided by the website itself (Cockburn & Jones, 1996). For instance, browser navigation tools (like the Back button) often only allow users to trace one path across an information hierarchy (Cockburn & Jones, 1996). Additionally, users frequently use a site's navigation rather than the browser's built-in tracking methods to move ahead (Spool et al., 1999). To prevent customers from being confused and thinking they have entered another website; the website should provide consistent navigation throughout (Shubin & Mehaan, 1997).

Testing should be done with users to make sure that links within the navigation have the right description, and that the content is organized according to what the consumer thinks is correct and not according to what website designers think will fit better the consumers (Lazar, 2001).

However, when customers open a mega menu, they will be exposed to an explosion of navigation links. After, they will select a parent category and every single item will be displayed simultaneously. This may work for menus that only have a few subcategories, but not for menus with many (Anthony, 2020). That is exactly what is happening within the organization's website. It's not only disorienting to look at, but it's frustrating to use. To find the link or item they want to use, users must scan and process the organized whole menu to get a sense of its structure. Then they will do a deeper analysis and process each part of the menu to find their item. It is no wonder why they struggle with them, and why companies who use them lose revenue.

### **1.2. Problem Definition and Objectives**

While web designers are focused on the functional aspects of the websites there have been little attention to user experience interface design and a theoretical approach to web user satisfaction.

The objective is to study how website navigation affects the consumer journey throughout a website. This being the question we want to answer is 'How changes in Website Navigation impact User Experience?'.

To answer this question, we propose the following objectives:

- Research Objective 1: Propose a conceptual model.
- Research Objective 2: Develop an artifact to improve consumer experience and website performance.
- Research Objective 3: Evaluate the artifact.

Motivated by these topics, this study aims to develop and test a conceptual model grounded in Peffers et al. (2008) Design Science Research Methodology (DSRM) Framework, this methodology takes inspiration from previous studies done by Nunamaker et al. (1991), Walls et al. (1992), and Hevner et al. (2004). Our aim is to focus on building a user centered framework that will help improve User experience and Website performance.

### 1.3. Methodological Approach

The investigation methodology of Design Research Methodology (DSRM) will be adopted and successfully complete the goals of this thesis the following methods will be used:

Research Objective	Objective	Method
RO1	Elaborate a conceptual model	Develop a conceptual model based in Literature Review and information collected from the enumerated studies
RO2	Build an artifact to improve consumer experience and website performance	Create a multicriteria evaluation artifact ( <i>PII</i> , n.d.)
RO3	Evaluate the artifact.	Do a multicriteria evaluation

Table 1.- Research Objectives

### 1.4. Thesis Structure

The first section is the Introduction, where we will contextualize the thesis problem, it's definition, the path and methodology to solve it.

The second section is the Literature Review where we will review the most relevant studies, investigations, and projects, regarding the approached subjects in this thesis. The third section is the Methodology, where we will be highlighting the methodology adopted to find a solution for the problem, the methods used for each

phase and where it will be presented the conceptual model. In the fourth section, the results of the conceptual model can be found. In the fifth chapter we will evaluate the results of the test and discuss them and solutions to implement the model.

In the last chapter it will be presented the thesis conclusion, recommendations and limitations of the work done developed. The results of this research are related with the tests applied and the literature review. This final chapter provides a summary of the main patterns that have been identified, discusses open issues that suggest directions for further research and finishes with a reflection on the contribution of the findings.



Figure 1.- Thesis Structure

## 2.- Literature Review

In this second chapter we will present the theoretical concepts used during our project to answer the problem and help in the conceptual model development.

To be able to elaborate the literature review we first decided to start reading and analyzing various papers related with this topic. Furthermore, we also used **University Repository** (Run, 2022) where we could access previous Master Thesis and take it as reference for future work.

Additionally, we also used platforms such as:

- Scopus
- Google Scholar
- Research Gate
- Science Direct
- ACM Digital Library
- IEEE Transactions on Knowledge and Data Engineering

During the research we used keywords such as: User-Centered Metrics for Web; user interface; user experience; website navigation; user centered navigation; website usability; user frustration; web navigation;

### 2.1. User Experience in an E-Commerce Website

User Experience (UX) describes the perceptions and actions users have while interacting with a system, like a website. UX research examines Human-Computer Interaction (HCI) as a whole, including the user's feelings about their experiences, in contrast to the task-related "usability paradigm," which focused on the user's aptitude to use an interface, including the efficiency and effectiveness aspects of the interaction (Hassenzahl & Tractinsky, 2011). A satisfying online customer journey on e-commerce websites requires a good user experience (UX). Both user experience (UX) development and customer journey aim to help users work effectively and efficiently by assisting them in carrying out tasks to achieve the destination (reaching the cart smoothly and eventually purchasing a product). E-commerce websites must consciously consider user needs from both hedonistic and pragmatic perspectives to improve user interaction. Examining the interaction's emotional outcomes and practical usability components allows us to recognize the dual nature of user needs (Falk et al., 2010).

### 2.1.1. What is User Experience?

The significance of User Experience (UX) in interactive product design is widely recognized, but a clear theoretical definition remains elusive, leading to diverse interpretations in academic and industry research. Numerous conferences and workshops have attempted to understand and define UX, yet a definitive and universally applicable definition has proven challenging. Various perspectives (phenomenon, practice, or field of study) exist, emphasizing the complex and dynamic nature of UX. However, it is important to distinguish UX from usability and user interface, as it encompasses emotional, affective, and experiential aspects. The breadth of UX is due to its unit of analysis, which can range from individual user interactions with specific applications to multi-user interactions across diverse disciplines. The landscape of UX research is complex and fragmented, with diverse theoretical models focusing on different aspects such as pragmatism, emotion, and affect (Basri et al., 2016).

Some researchers emphasize the user, others try to understand experience in relation to the product and other focus on the interaction between the user and the product to understand UX. These three dimensions are emphasized once more by Hassenzahl & Tractinsky, (2011) in one of the most widely cited UX papers (Hassenzahl & Tractinsky, 2011). They state that user experience (UX) is a function of the user's internal state (predispositions, expectations, needs and motivations, among other things), the designed system's characteristics (such as complexity, purpose, usability, functionality, for example.), and the context (or environment) in which the interaction occurs (such as organizational/social setting, the significance of the activity, voluntariness of use).

Hellweger & Wang, (2015), gave us a definition that broaden explanation of what User Experience really is: *"I created the term because I believed that usability and human interface were too restricted. I wanted to discuss every facet of the user's interaction with the system, including the manual, interface, graphics, and physical interaction (Norman, 1998)".* This demonstrates the term's complexity.

There is general agreement that the concept is not connected to usability or user interface, even though there is no agreement among authors on how to define it. According to Følstad & Rolfsen, (2006):

- UX can be categorized according to how it relates to usability.
- Usability is included in UX.
- UX enhances usability.
- UX is one of many elements that make up usability.

However, Hassenzahl & Tractinsky, (2011) contend that a broader understanding of usability would advance the design of the user experience rather than just making software usable. A software system may be deemed appealing if it is both usable and engaging, in which case the user may enjoy using it. According to Stage, (2006), recent system developments are emphasizing fun and entertainment more than work in the traditional sense, which has led some to propose a more expansive definition of usability that places a noticeably stronger emphasis on UX (Stage, 2006). Hassenzahl & Tractinsky, (2011) key differences between the conventional view of usability and UX based on their prior work.

They contend that UX adopts a more encompassing strategy, attempting to strike a balance between practical considerations and other (non-task related) hedonic aspects of product ownership and use, such as beauty, challenge, stimulation, or self-expression. UX improves the "subjective" as well. It expressly considers how customers view and judge the things they use. When a quality is usable, the possibility of dissatisfaction is eliminated. Usability may never fully be able to satisfy users completely, despite all attempts. UX, on the other hand, treats happy and unhappy users equally. As the emphasis has switched from usability to experiential elements, researchers have been pushed to consider what UX is specifically and how to grade it (Vermeeren et al., 2010).

According to Forlizzi & Ford, (2000), thinking about the elements of a user-product interaction and all that it entails is a straightforward way to consider what influences experience. UX is defined by Arhippainen & Tähti, (2003) as the impression that a person has when interacting with a product under specific circumstances. In the use context that social and cultural influences have an impact on, the user and the product interact. Aspects of the user include their values, emotions, expectations, and past experiences. Influential factors for the product include adaptability and mobility.



The experiences that arise from user-product interaction are influenced by all these factors. In a similar vein, Forlizzi & Battarbee, (2004) acknowledge the difficulty in comprehending UX.

As a starting point, Roto, (2006) uses the three components listed in "User experience - a research agenda (Hassenzahl & Tractinsky, 2011) to identify a set of attributes that can be used in a variety of UX scenarios. Even though they are less prevalent, there are additional proposals for the UX dimensions. Usability is one of four elements that define user experience, along with branding, functionality, and content, as stated in "*Defining and Measuring User Experience: Are They Two Sides of the Same Coin?*," by Stage, (2006) for instance, along with branding, functionality, and content, usability is one of the four components that make up user experience. One might argue that this redefinition illustrates how UX has evolved to become more product focused. Oygur & McCoy, (2011) suggests that UX is composed of tangible and intangible aspects. There are more interdisciplinary ways UX can be approached. The debate over human experience has a long (philosophical) history and has been further investigated over the course of several centuries by psychologists, neurologist, and others, as noted in "*Experience and Design: Trojan Horse or Holy Grail*" (Lai-Chong Law et al., 2006). Current literature on human-computer interaction, interaction design, and usability engineering has largely disregarded this vast body of human experience research when it comes to UX. "User experience over time" discusses two UX research strands (Karapanos et al., 2009). While the other has its origins in pragmatist philosophy, the former is grounded in social psychology. Studies that examine people's physiological, socioeconomical, psychological, and ideological needs and concentrate on the non-instrumental aspect of user experience (UX) are becoming more prevalent (Hassenzahl et al., 2010).

Considering all these factors and authors and the multidisciplinary nature of UX it is difficult, as said before, to find a concrete definition of the concept. However, in ‘What is User Experience Really: towards a UX Conceptual Framework’ (Hellweger & Wang, 2015b), the researchers were able to construct a conceptual framework based on all of the previous papers written about UX as displayed on Fig. 2.

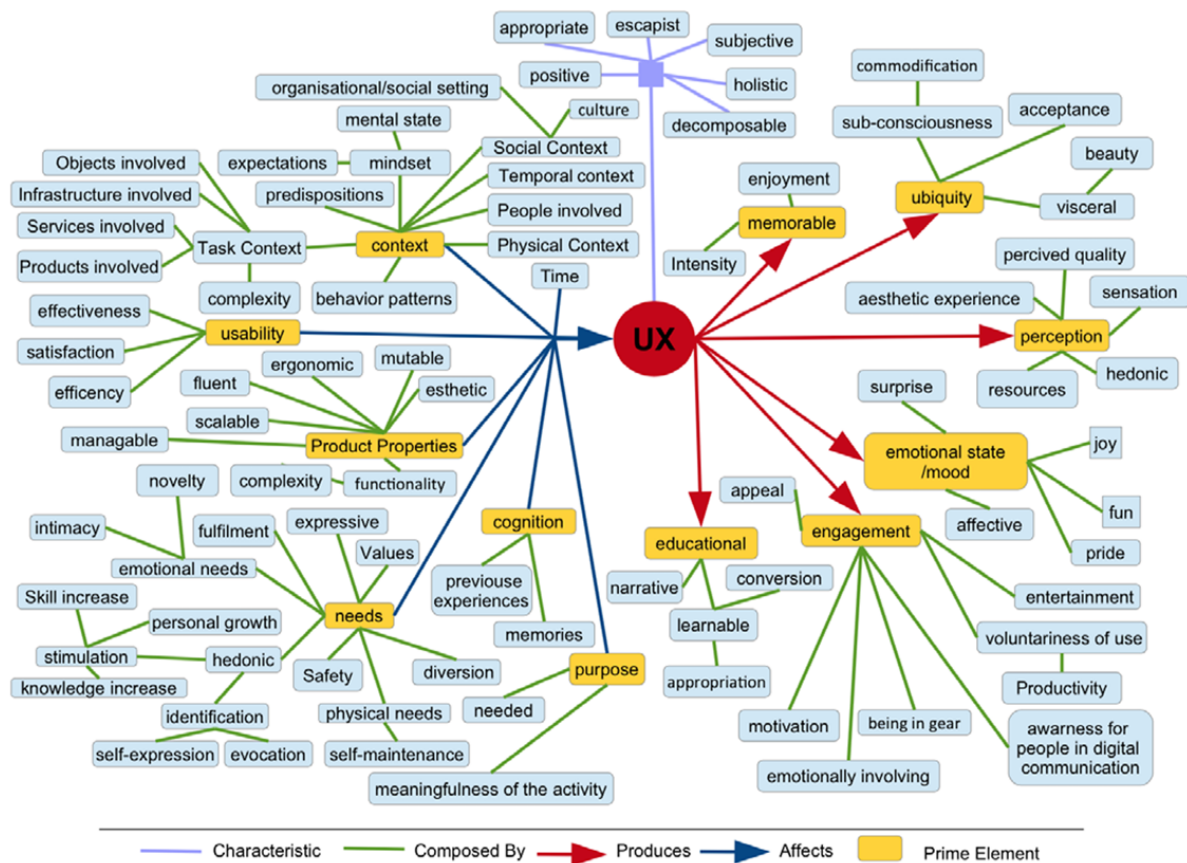


Figure 2.- Proposed UX Conceptual Framework (Hellweger & Wang, 2015)

The proposed UX conceptual framework's components aid in raising people's awareness and sensitivity to the UX offered by various software services and products. Although this framework will change as more authors and research papers are added, it serves as a good starting point for understanding what UX actually entails.

### 2.1.2.- Usability vs UX

Since usability and user experience (UX) are related but distinct concepts, their measurements take a slightly different tack. In general, their research methodologies do overlap. On the table below we can illustrate more clearly the differences between each of the concepts:

Usability	UX	Author
Usability is a crucial component of user experience since it assesses a person's capacity to use an interface in a certain situation. Perceived efficiency, effectiveness, and satisfaction all contribute to usability	-	ISO Committee, 2019
Usability addresses the degree to which the system can be used to achieve goals effectively, efficiently, and satisfactorily	UX addresses the interaction (including the user's thoughts and feelings about the interaction)	ISO Committee, 2019
Usability goals are more subjective and focus on the hedonic aspects of interaction, such as engagement and stimulation	The UX paradigm examines no instrumental quality factors of the interaction, such as the need for surprise, meaningfulness, social context, and voluntariness of use	Hassenzahl & Tractinsky, 2011
-	The various user needs and objectives are connected to the hedonistic and pragmatic aspects of interaction, and addressing both is essential for fostering positive UX.	Moczarny et al., 2012
Usability tests are more task-related and performance-oriented	UX studies focus on the affective aspects of the interaction. User experience measures typically assess the result of the interaction, whereas usability measures can help identify the source of a problem (what users struggle with) and offer potential solutions	Lai-Chong Law, 2011

Table 2.- Differences Between Usability and UX

On e-commerce websites, user navigation strategies can also be seen as pragmatic and hedonistic user needs. The two most used strategies are searching and browsing (Harley, 2018):

- Users conduct searches to locate a specific good or piece of knowledge.
- Users explore the products available to them in an experiential way to determine whether they meet their needs.

Because of this, searching is related to pragmatic goals while browsing is related to hedonic goals. Since they have a variety of needs and access websites

through a variety of channels, users must have a positive user experience on all pertinent pages of a website. Conversion is most likely to happen if a user is aware of the website's purpose, what it offers, and how to navigate it (Harley, 2018).

Schmutz et al., (2010) make the similar argument: user needs are dual in nature and consumers choose between searching and browsing strategies. It is crucial to support both goal-oriented and exploratory behavior from consumers by highlighting which tasks can be completed within the website. But it is important to consider that the degree of experience that a user has with a particular interface—in this case, a website—influences their needs and assessment of the interaction. Falk makes the case in that it is crucial to provide well-organized product information and content, such as guided tours, to users who are less familiar with the interface (Falk et al., 2010). A user's hedonic needs and expectations increase with experience, and these needs and expectations can be met in a variety of ways, such as by providing individualized content (Falk et al., 2010). Additionally, it has been demonstrated that a user assessment over the information flow in the context of e-commerce has a favorable impact on their ability to decide (Ariely, 2000). This being, e-commerce websites need to make an effort to satisfy hedonic quality attributes for knowledgeable consumers and pragmatic quality attributes for new users (Falk et al., 2010).

### **2.1.3.- Customer Journey and UX**

The series of interactions between a customer and a brand at different touchpoints is known as the customer journey (Micheaux & Bosio, 2019). The consumer journey is influenced by their recent and past experiences, just like in user experience (Lemon & Verhoef, 2016).

Journey analysis is important for e-commerce websites because it identifies the options and choices the customer finds along their journey and, most importantly, the trigger moments that influence their decision making, in either continuing or ending the journey (Lemon & Verhoef, 2016). Making buyer personas and tasks for the personas is one way to go about journey analysis. These tasks outline the customer's operational environment and the types of tasks they are responsible for. These tasks are also used in User Experience development and usability testing because the objective is to collect information regarding the user's experience.

Buyer personas used in customer journey analysis are different from the UX personas. The foundation of customer journey design is a buyer persona, which represents a typical customer and their demographic, behavioral, and motivational

characteristics (Micheaux & Bosio, 2019). In contrast, UX personas specify the requirements for the design, such as what functionalities and what kind of content should be present (Garrett, 2010). Analyzing customer experiences can help to enhance UX. An e-commerce website can assist users in finding what they are looking for and supporting their decision-making by offering a seamless experience. On e-commerce websites, good design and UX help to facilitate positive user experiences (Lemon & Verhoef, 2016). For instance, the conversion rate is a commonly used metric to assess how well UX and e-commerce websites perform (Garrett, 2010).

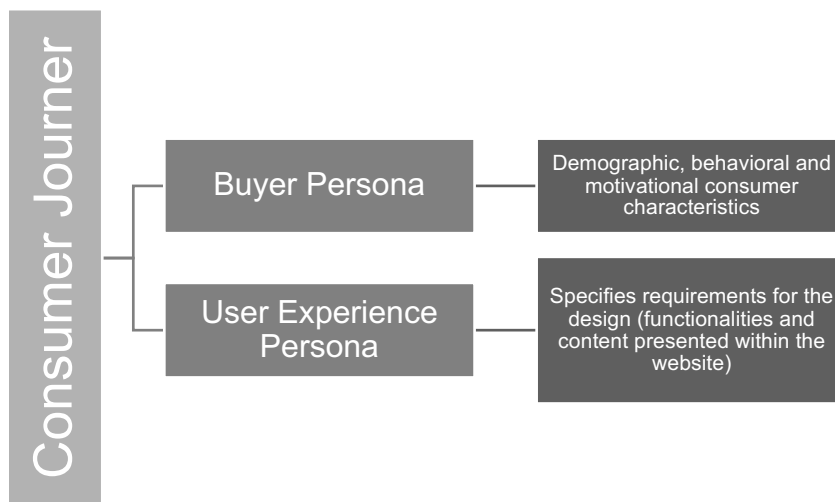


Figure 3.- Buyer vs UX Persona

User Experience and Consumer Journey have one goal in common: UX identifies successful or unsuccessful features from the user perspective while Customer Journey Mapping identifies successful or not touchpoints within the journey. In sum, customer journey mapping and UX design are both about assisting users in achieving their objectives more effectively, efficiently, and satisfactorily. If we have a positive UX we will by consequence have adoption and good usability. A positive UX can also ensure a customer-company relationship that is trusty, which will lead to a higher purchase intention. To understand how UX and the online customer journey are complementary enables designer identifying potential friction points that users may run into in an e-commerce perspective and provide solutions for any issues that might get in the way of them achieving their objectives. Future research might broaden the definition of UX to include multiple-touchpoint customer experiences rather than just a single user interface (Roto, 2006). Additionally, to serve a wider range of users, it's critical to address both pragmatic and hedonistic user needs. For instance, when visiting an e-commerce website, the desires of experienced and inexperienced users

can differ: More experienced users have higher expectations for the emotional and experiential aspects of the interaction, while unexperienced users request more well-organized content and product information (Falk et al., 2010). This is why it is crucial to think about usability, user experience, and the customer journey on an e-commerce website. The intercommunication between the user, the system, and the environment is always considered user experience (ISO Committee, 2019). The user's perspective on the most significant interaction outcomes is that the interface quickly becomes known to them, is easy to learn, and helps them in achieving their goals. The provision of desirable content that satisfies hedonistic and emotional user needs is just as crucial as the provision of practical, useful content for informed decision-making (Rittonummi & Niininen, 2021).

## **2.2. User Experience Metrics**

When building a website, it is necessary to understand what kind of service the company wants to deliver to the customer and how they will perceive it. The question that it imposes is how we can measure user experience considering its broad definition. However, there is a critical need for user-centered metrics for web applications that can be applied to track advancement toward important objectives and inform product choices.

More services and applications can now be found online and are becoming more interactive thanks to advancements in web technology. Various tasks that were previously only available through native client applications can now be carried out by users "in the cloud" (e.g., word processing, editing photos). One of the most important effects of this change for user experience specialists is the possibility of tracking widespread product usage using web server log data. Controlled experiments (A/B tests) that distinguish between various interface options can also be carried out with additional instrumentation.

But from a user-centered perspective, what standards should be used to compare them? What new opportunities are there, and how should we scale up the well-known user experience metrics? In the CHI (computer-human interaction) community, measuring attitude data, such as satisfaction, on both a small and larger scale is already a common practice (via surveys). However, behavioral data established measurements are typically small-scale and collected during lab experiments using stopwatches and checklists, such as effectiveness and efficiency – interaction between the user and the product (Albert & Tullis, 2013). But metrics for

user experience based on extensive behavioral data are a crucial component of CHI research that is still lacking.

The objective of the web analytics team is to focus specifically on key performance indicators rather than just simple page hit counts. However, the majority of the web analytics community works to make key performance indicators be the focus rather than just simple page hit counts. However, rather than being user-centered, the typical motivations in that community are still predominately business-centered. The solutions currently presented are either considered too generic to address user experience questions, or too specific for the e-commerce context to be useful on a larger scale that can encompass the interactions and applications possible within the web.

Rodden et al., 2010, built a framework and procedure for defining large-scale user-centered metrics, both attitudinal and behavioral. They broaden the user-centered metrics based on their experiences working for a large company whose products are entirely web-based, have millions of users each, and include a wide variety of categories (both consumer- and business-oriented).

In recent years, a variety of tools have become available to help monitor and analyze metrics for websites and applications. The analytics software available commercially and for free offers ready-made solutions (Google Analytics and Adobe Omniture). Modern distributed systems and specialized programming languages (Pike et al., 2005) facilitate a comprehensive customized analysis of log data (Dean & Ghemawat, 2008). Techniques for web usage mining can be used to categorize website visitors based on their behavior (H. Chi et al., 2003). The fast deployment and analysis of user surveys is supported by a variety of sellers, furthermore they equally provide software for wide remote usability or benchmarking tests (User Zoom). Literature has paid a lot of attention to the proper design and analysis of controlled A/B tests, in which two similar populations of users are presented with two different user interfaces, and their responses can be precisely measured and compared. (Kohavi et al., 2007).

The effective use of these tools can still be difficult despite this advancement. Standard web analytics metrics might not be appropriate for a specific product goal or research question because they are too general. Given the amount of data available, it's critical to strategize precisely what to look for and the subsequent course of action.

As a best practice, experts suggest centering our attention to a small number of crucial business or user goals and using metrics to track the progress (Burby & Atchison, 2007; Kaushik, 2007; Kohavi et al., 2007). Since product teams haven't always agreed upon or clearly stated their objectives, it has been hard to define related metrics. Metrics should be intertwined with data from other sources, like usability or field studies, to make better decisions (Grimes et al., 2007; Kaushik, 2007). Additionally, they don't replace preliminary or formative user research and are primarily useful for evaluating already-released products.

### **2.2.1.- PULSE vs HEART vs GSM Metrics**

PULSE metrics are what we refer to as metrics or frameworks for evaluating user experience that aim to evaluate the overall health of the products but primarily concentrate on their commercial or technical aspects (Santosa, 2014):

Page views represent the typical volume of visits made to a website over time.

- Uptime: the typical number of hours over which the internet is available.
- Latency time: the average amount of time required to access the internet.
- The average number of unique visitors to the web over the course of seven days. Return is not included.
- Earnings: The anticipated gain users expect to experience because of using the internet. This element is abstract.

These metrics are crucial and connected to user experience; for instance, a product with a low uptime or a high latency is unlikely to attract users. A website that sells online and has a long purchasing process will probably make less money. It is more likely that a product will experience increases in page views and unique users if the user experience is smooth (Rodden et al., 2010).

However, they are all either very low-level or indirect indicators of the user experience, which makes them problematic when used to evaluate the consequences of user interface improvements. Additionally, they may be challenging to understand. For instance, an increase in page views can reflect the popularity of a feature or the fact that users become lost in a complex user interface and end up clicking in circles to find a way out. In the long run, a change that raises revenue momentarily could degrade user experience and drive away clients (Rodden et al., 2010).

The number of distinct users throughout a predetermined time frame, such as the seven-day active users, is a standard metric of user experience. It counts the total



number of users, but it doesn't reveal anything about how committed each user is to the service, like how often they visited over the course of a week. Moreover, it makes no distinction between new and returning users. The number of seven-day active users might potentially rise in the worst-case scenario of 100% user base turnover from week to week.

The HEART (Happiness, Engagement, Adoption, Retention and Task Success) framework is a supplementary metrics framework that was developed in response to the PULSE framework's limitations in measuring user experience quality and giving actionable data. The metrics that teams will use to track goal-related progress can be specified using these categories. From already existing user experience measures, the categories "happiness" and "task success" were extrapolated: Success in a task requires both efficacy and efficiency, whereas happiness also includes satisfaction. Three new categories—engagement, adoption, and retention—were created thanks to extensive behavioral data (Rodden et al., 2010). Finally, the HEART framework can be defined as:

- Happiness: directly correlated with elements of user experience including satisfaction, good word-of-mouth, and perceived usability.
- Engagement: refers to how users interact with a website. It frequently has something to do with the volume, caliber, or depth of contact with a web during a certain period.
- Adoption: This measure is used to calculate the number of new users who register on a website to estimate the number of new visitors.
- Retention: This measure is used to count the number of users who continued to make requests after the prior time limit was reached.
- Task success: This indicator is based on accuracy, efficacy, and efficiency.

Although using the framework as a guide might help you make specific decisions about which categories to include or avoid, it is not always suitable to include metrics from every category. In an enterprise setting, for instance, Engagement might not have much meaning if users are required to use the product for work-related purposes. A team may decide to prioritize happiness or task success in this situation. However, focusing on Engagement at the feature level as opposed to the overall product level may still be useful.

A measure is unlikely to be helpful even if it is expressly related to a goal and may be used to track progress towards that objective. Rodden et al., (2010) outlined an easy-to-follow process for teams to follow as they define the goals of a product or feature, identify the telltale signs of success, and then develop specific metrics to track on a dashboard.

- **Goals:** Finding the goals of the feature or product is the first stage, especially when it comes to user experience. What action must users take? What kind of change is the business looking to implement? The HEART framework should be applied to provide answers to these queries.
- **Signals:** then we must focus if the success or failure of the goal will affect the user behavior or attitudes. What actions should have been done to achieve the goal? What feelings could be associated with success or failure? After this, it is crucial to consider what will be the data sources for these signals. For example, logs and surveys are two signal sources that are often used.
- **Metrics:** Understanding how these signals can be turned into measurements is the final stage. For instance, time tracking.

### **2.3.- MOST IMPORTANT FEATURES OF WEB DESIGN**

Today, engaging website users and mobile applications users requires effective design. The specific elements required to have a good website and mobile application design haven't, however, received much research attention. In the literature under examination, readability, navigation, graphical representation, organization, content utility, and purpose were the design elements that were most frequently discussed (Garett et al., 2016).

Over 20 different design components that are regularly mentioned in research and have an impact on user engagement were examined (Garett et al., 2016). The components under study were:

Table 3.- Design Elements that affect User Experience (Garret et al., 2010)

<b>Design Element</b>	<b>Definition</b>
<b>Organization</b>	If the website is well structured
<b>Content utility</b>	If the information is valuable
<b>Navigation</b>	If the website is simple to use
<b>Graphical representation</b>	If the website is including icons, or other multimedia
<b>Purpose</b>	If the website explains its goals
<b>Memorable elements</b>	If the website encourages visitors to come back
<b>Impartiality</b>	If the information is unbiased
<b>Valid links</b>	If the links provided on the website are functioning
<b>Simplicity</b>	If the website is straightforward
<b>Credibility</b>	If the information provided is reliable
<b>Consistency</b>	If the website is designed consistently
<b>Accuracy</b>	If the information is precise
<b>Loading Speed</b>	If the website loads slowly
<b>Security/Privacy</b>	If the website is secure/keeps user information private
<b>Interactive</b>	If a user may connect with a website and is interactive
<b>Strong User Control</b>	If a website gives consumers the option to customize their experience
<b>Readability</b>	If the website is straightforward to navigate and comprehend
<b>Efficiency</b>	If the website displays information in a way that makes it simple for consumers to find it
<b>Scannability</b>	If the website offers pertinent information
<b>Learnability</b>	If the website is educational (users can learn from it)

In the literature review by Garrett (et al., 2016), Navigation was the most frequently discussed element. The second most highlighted element was the importance of graphics on the website (imagery, videos, etc). Other studies emphasized good organization (information can be easily processed by the user and it's easy to understand). Other elements were also considered in most of the papers analyzed, they were content utility, purpose, simplicity, and readability.

In defining and operationalizing each of these elements, the research studies suggested in Table 4:

Table 4.- Key Elements for User Engagement ('Table 2: Definitions of Key Design Elements' Garrett et al., 2016)

<b>Key Elements</b>	<b>Definition</b>
<b>Navigation</b>	<ul style="list-style-type: none"> <li>• <i>Salient menu/navigation bar</i></li> <li>• <i>Consistency of navigation bar</i></li> <li>• <i>Aids for navigation (e.g., visible links)</i></li> <li>• <i>Easy access to web pages (e.g., no excessive backtracking/clicks and reach through multiple pathways)</i></li> <li>• <i>Search features</i></li> <li>• <i>Users feel in control/ease of managing</i></li> </ul>
<b>Graphical Representation</b>	<ul style="list-style-type: none"> <li>• <i>Inclusion of images</i></li> <li>• <i>Size and resolution of images</i></li> <li>• <i>Multimedia content (e.g., animation or audio)</i></li> <li>• <i>Color, font, and size of text</i></li> <li>• <i>Distinct logos and icons</i></li> <li>• <i>Visual attractiveness/layout</i></li> <li>• <i>Color schemes</i></li> <li>• <i>Effective use of white space/avoid visual overload</i></li> <li>• <i>Minimizing loading time for visual elements</i></li> </ul>
<b>Organization</b>	<ul style="list-style-type: none"> <li>• <i>Cognitive mapping/architecture</i></li> <li>• <i>Understandable structure</i></li> <li>• <i>Logical organization</i></li> <li>• <i>Hierarchical/sequencing organization</i></li> <li>• <i>Systematic information arrangement and categorization</i></li> <li>• <i>Consistency</i></li> <li>• <i>Meaningful labels/headings/titles</i></li> <li>• <i>Keywords</i></li> </ul>
<b>Content Utility</b>	<ul style="list-style-type: none"> <li>• <i>Sufficient amount of information to attract repeat visitors</i></li> <li>• <i>Arousal/motivation (keep visitors interested and further explore the site)</i></li> <li>• <i>Content quality</i></li> <li>• <i>Current/up-to-date information</i></li> <li>• <i>Relevant to the purpose of the website</i></li> <li>• <i>Users' needs and requirements/perceived utility</i></li> </ul>
<b>Purpose</b>	<ul style="list-style-type: none"> <li>• <i>Unique identity</i></li> <li>• <i>Intended purpose of visiting/expectations</i></li> <li>• <i>Type of interaction</i></li> <li>• <i>Organizational attractiveness</i></li> <li>• <i>Visible brand/contact and organization information</i></li> <li>• <i>Information about service policy</i></li> </ul>
<b>Simplicity</b>	<ul style="list-style-type: none"> <li>• <i>Simple subject headings</i></li> <li>• <i>Transparency of information (reduce search time)</i></li> </ul>

	<ul style="list-style-type: none"> <li>• <i>Website design optimized for computer screens</i></li> <li>• <i>Uncluttered layout</i></li> <li>• <i>Consistency in design throughout the website</i></li> <li>• <i>Ease of using (including first time users)</i></li> <li>• <i>Minimize redundant features</i></li> <li>• <i>Easily understandable features/functions</i></li> </ul>
<b>Readability</b>	<ul style="list-style-type: none"> <li>• <i>Easy to read</i></li> <li>• <i>Well-written</i></li> <li>• <i>Grammatically correct</i></li> <li>• <i>Understandable</i></li> <li>• <i>Appropriate amount of content on each page/readable blocks</i></li> <li>• <i>Reading level appropriate content</i></li> </ul>

## 2.4.- WEBSITE NAVIGATION

Designing well-organized websites that allow efficient user navigation has always been a difficult task. One major factor is that users and web developers frequently have very different ideas about how a website should be organized. Numerous approaches recommend relinking web pages to enhance navigation using the respective data (user navigation data), however the cost and how people would react to these changes have not yet been taken into account or assessed (Chen & Ryu, 2013). Considering this, what authors aim to achieve is to improve user navigation while maintaining the original structure of the website.

Businesses are making significant investments in the creation and maintenance of their websites to meet the growing demands of online customers. Galletta et al., (2006) reports say that online sale is comparatively lower to the ones of brick-and-mortar stores. Users' difficulty navigating online stores may be the root reason of this. According to Palmer (2002), subpar website design contributing significantly in a number of high profile site failures. Even if a website has high-quality material, users who have problems discovering the targets are very likely to abandon the website, according to McKinney et al., (2002). One of the main reasons for poor website design is that web developers conceptualize the website according to the assuming what the consumer needs and wants, but that can differ majorly from the reality. This is, user's needs, expectations and wants can be very different from the ones web developers assume they have (Nakayama et al., 2000; Perkowitz & Etzioni, 2000). These make it challenging for consumers to find and navigate the website as what their expectation is different from the reality they encounter on the website. Because website designers do not have a clear understanding of users' tastes and can only set pages according

to their preferences, it can be difficult to avoid this problem. However, it is best to measure a website's efficiency based on user satisfaction rather than then developers. Web pages should therefore be structured so that they generally follow the user's model for how pages should be structured (Lazar, 2001). A lot of efforts have been made to improve website navigability by utilizing user navigation data, and they can be roughly categorized into two categories (Perkowitz & Etzioni, 2000):

- Personalization: assist a specific user reconstruct pages based on the user's profile and the paths they take during the consumer journey.
- Transformation: improve a website navigability by utilizing user navigation data.

Although some people support website restructuring strategies, their disadvantages are clear. First, consumers may become confused by the new website because a complete restructuring could drastically alter where familiar products are located (Nunamaker et al., 1990).

The cost of confusing users because of the changes within the website hasn't been measured yet, as well as changes in website structure, which is highly unpredictable. This is because a website's structure is often created by specialists and follows business or organizational logic, but if the website is totally reorganized, this logic might not apply to the new structure. A completely rebuilt website's usability hasn't previously been evaluated by any studies, which raises questions about how well the reorganization methods will work in practice. Finally, because website reorganization techniques have the potential to significantly alter the current structure, they cannot be regularly used to enhance navigability. We examine the issue of how to enhance a website's structure rather than significantly reorganize it considering the shortcomings of website reorganization methodologies.

#### **2.4.1.- How to measure Website Navigation**

A mathematical programming model created by Chen & Ryu, (2013) makes it easier for users to navigate websites while requiring little structural change. Therefore, the first concern is how to evaluate a website's navigation efficacy. Marsico & Leviardi, (2004) say that information is only relevant if it matches users expectations (Marsico & Leviardi, 2004). According to Palmer, (2002), they should be able to access the needed information on a user-friendly website without getting lost or having to bounce back.

As a result, a well-structured website should be built with the goal of reducing the gap between its structure and users' expectations.

Chen & Ryu, (2013) develop a navigation model by considering prior research. The authors made the decision to measure the effectiveness of navigation using a metric based on the idea of "information scent" that was set in the "information foraging theory." (Chi et al., 2000; H. Chi et al., 2003; Pirolli & Card, 1999). Using the analogy of animals looking for food, this idea simulates the price structure of collecting information using humans. It can also be applied to the process of finding information online (Chi et al., 2000, 2001; Fu & Pirolli, 2007; Jiming Liu et al., 2004; Xie et al., 2006). Information scent describes close-by cues (such as text excerpts and link graphics) that help users locate "distal" target information and choose the best course of action. (Chi et al., 2000).

As soon as a user enters a website, they faced decision-making. They use the information process to estimate the expected effort and likelihood of reaching their destination when making navigational decisions (Galletta et al., 2006). As a result, it is expected that a user will choose the path that looks to have the best chance of leading him to his intended destination. This implies that if a user cannot find the target page in the current path, he may bounce back to a previous page to go in a new path. To measure how many times a user has tried to reach a particular destination, analysts count the number of different paths the users has taken to reach their goal. A path is defined as a user's uninterrupted series of web pages visited (Chen et al., 1998). Each point where a user's goes back results in a path conclusion. Therefore, the more different the site layout or structure is from the user's expectation, the bigger the number paths a user needs to take to reach their destination.

The model's outcome proved that it made user navigation easier. Additionally, the authors discovered an intriguing finding that users who are more likely to leave the website, are more likely to profit from the improved structure than users who are less lost. Using small path inceptions could produce better results, but it would also add a lot newer links, according to experiment results. Therefore, when choosing the proper path thresholds, webmasters must carefully consider the trade-off between wanted enhancements to navigation and the quantity of new links needed to complete the task. (Rodden et al., 2010).

## **2.5.- WEBSITE NAVIGATION ARCHITECTURES**

When building website navigation, we need to pay closer attention to two things: how to please the normal user and how to please the search engine crawler visitor. With this many authors have divergent opinions, some say website designer should focus on the visual aspect of the website to please the 'normal user' (Lide & David, 1999), betting on graphic images others defend that the crucial part is to focus entirely on the search engine optimization (Weideman, 2003).

To get the best search engine visibility websites should follow the 'Five Basic Rules of Web Design'. These rules are the following:

- Easy to read.
- Easy to navigate.
- Easy to find.
- Easy to layout.
- Consistent in design.

By adhering to these guidelines, the web designer ensures that the website meets the requirements of both search engine crawlers and the intended audience. The inclusion of global navigation is essential, as it grants users access to the most significant sections of the website. It is usual for global navigation to be present on every page, allowing users to swiftly navigate from one end of the site to another (Garrett, 2011).

### **2.5.1.- Website Navigation Types**

The Main navigation on the website enables access to the most important parts of a website. Main navigation is available to users on every page of the website, allowing them to get from one end to the other with just one click.

Considering this, there are different types of Main navigation menus that companies can apply or choose from:

- Hamburger Menu: it's a type of navigation that's hidden, to be able to see it the user needs to click on the hamburger icon for the content to appear. Companies often choose to have these types of menus because it occupies a limited amount of space that can be scaled into (Experience, 2016).
- Mega Menu: classifies as a drop-down menu with multi-level expansions which contains all the website navigation in one single menu. It allows customers/



users to access every part of the website by using just one menu (Kalbach, 2007).

- Horizontal Navigation: list of links at the top of each website page. It can be placed in various places within a website page but usually it's always placed before the main content of the page. This menu supports: primary and secondary navigation. Primary navigation can always be visible to the user whereas secondary navigation can be either visible or hidden, in drop-down menus, for example, (Kalbach, 2007).

In Spiratos & Kořistová, 2021, the authors studied which type of navigation menu resonated better with the consumer. They evaluated customer's opinion based on a survey when they formulated the statements to obtain detailed data about the ability of each menu style, the ease of finding a specific product, the ease of understanding menu functions, menu's capacity to improve the website quality, and the impact of the menu on the website's trustworthiness.

From this studied they conclude that Mega Menus showed the most positive results among the three types of menus described, enabling the consumer to clearly understand its functionality and usability.

### 3.- Methodology

After the throughout analysis of all the multi-methodological research framework we decided to apply the last framework mentioned since according to all the paper is the most complete and fulfills the gaps of the previous research methodologies. Considering this we followed:

- Observation: conducted through literature review
- Theory Building: using DSRM process model (Peffer et al., 2014) as illustrated below:

Table 5.- The six phases of a DSRM Process with outputs



Phase	Activity Name	Output
1	Problem Identification and motivation	Lack of a smooth navigation within the website is affecting KPI engagement and from a UX standpoint
2	Define the objectives for a solution	Optimize the layout and functionality of Main Navigation, Left-Hand Navigation and filters based on UX Principles. Address the pain points on Main Navigation and the Left-Hand Navigation Levers (Filter removal, Attribution, Verbiage and Positioning)
3	Design and Development	The functions presented will be defined by the using of DSRM aligned with the literature review
4	Demonstration	Execute the proposed model and solution for the problem with the company and validate if solve the question to the problem identified.
5	Evaluation	Confirm if every function is answered according to the objectives defined. Discuss if there are any changes need, if so, redesigning and define future upgrades to the project and if needed redesigned, define future upgrades to the project.
6	Communication	This thesis

Figure 4.- The six phases of a DSRM Process

- Systems Development: Agile
- Experimentation: A/B Testing

### 3.1.- CONCEPTUAL MODEL INVESTIGATION

The main goal is to develop a conceptual model that provides customers the best experience possible and that enables them to reach their goals as quickly as they can. For that to happen we need to first understand which are the main features navigation menus on website have that are common across a series of websites. It is necessary to understand that main website navigation serves as the prime interface for browsing a website product collection (Holst, 2023a).

It was decided to look at the sports e-commerce retail market since these websites are considered large scale websites and lot of consumers visit them daily. The navigation functions in analysis were considered according to Baymard Institute, (2023). They are an independent website UX research institute that provides guidelines and reports on how websites can provide a positive UX (Baymard Institute, 2023):

Table 6.- Navigation Features that provide positive UX

	Websites										
Main Navigation Features (desktop only)	1	2	3	4	5	6	7	8	9	10	11
Product Categories First Level of the Main Navigation	X	X	X	X	X	X	X	X	X	X	X
Category and Subcategory Relationship is visual on Navigation Menu	X	X	X	X	X	X	X	X	X	X	X
Too Specific Product Categories displaying in the Navigation Menu (>6 menu tabs)		X			X	X				X	X
Displays Drop-Down Menu	X	X	X	X	X	X	X	X	X	X	X
View all' option in the Main Navigation	X	X		X	X			X			
Main Categories options are selectable and point to a page with Sub-Categories	X	X	X	X	X	X	X	X	X	X	X
Shows similar categories for easy scope adjustment	X	X	X	X	X	X	X	X	X	X	
Drop Down menu accessible in all pages	X	X	X	X	X	X	X	X	X	X	X
Drop Down Menu have spacial indicators	X	X	X	X	X	X	X	X	X	X	
The website has Sitewide courtesy ('Sign In', 'Create Account', etc) separed from main navigation	X	X	X	X	X	X	X	X	X	X	X
Search Features	X	X	X	X	X	X	X	X	X	X	X
Links of the website are visible on the Menu Navigation	X	X	X	X	X	X	X	X	X	X	X
Highlight current scope of Main Navigation (highlight the product category we are hoovering)	X	X	X	X	X	X	X	X	X	X	X

Subtitle (corresponding numbers to websites):

1. (Nike, 2023)
2. (adidas, 2023)
3. (New Balance, 2023)
4. (lululemon, 2023)

5. (ASICS, 2023)
6. (PUMA, 2023)
7. (Under Armour, 2023)
8. (Fila, 2023)
9. (Gymsharl, 2023)
- 10.(Alo Yoga, 2023)
11. (JD Sports, 2023)

By looking at the Frequency table displayed bellow we can see which of the navigation features are more used and providing good UX:

Table 7.- Main Navigation Features Frequency

Main Navigation Features (desktop only)	Frequency
<b>Product Categories First Level of the Main Navigation</b>	100%
<b>Category and Subcategory Relationship is visual on Navigation Menu</b>	100%
<b>Displays Drop-Down Menu</b>	100%
<b>Main Categories options are selectable and point to a page with Sub-Categories</b>	100%
<b>Drop Down menu accessible in all pages</b>	100%
<b>The website has Sitewide courtesy ('Sign In', 'Create Account', etc) separed from main navigation</b>	100%
<b>Search Features</b>	100%
<b>Links of the website are visible on the Menu Navigation</b>	100%
<b>Highlight current scope of Main Navigation (highlight the product category we are hovering)</b>	100%
<b>Shows similar categories for easy scope adjustment</b>	91%
<b>Drop Down Menu have spacial indicators</b>	91%
<b>Too Specific Product Categories displaying in the Navigation Menu (&gt;6 menu tabs)</b>	45%
<b>View all' option in the Main Navigation</b>	45%

Most of the e-commerce sports websites can deliver good UX experience regarding the Main Navigation menu. Every product category is easily visible and is linking to other website pages, meaning customers can quickly access to the information they want through here. However, there three features that are affecting negatively UX even though the numbers aren't significant:

- Drop Down Menu have special indicators: One website despite having special indicators between each category on the Menu, the space was not enough making it difficult to differentiate between each category
- Shows similar categories for easy scope adjustment: When clicking a product category the menu should display similar product categories to the one the user is searching for to guarantee that all of his/her need are met
- View all' option in the Main Navigation: under every product category or above there should be a sub category that allows users to see all the items in that product category displayed

However, we concluded that the UX elements that are mostly disrespected within UX guidelines, according to (Baymard Institute, 2023) are the Search Results Page, Product List and Product Page which are closely related with Onsite search and Product Category Navigation/Filter Navigation (or Left-Hand Navigation) - (Holst, 2023b, 2023c). Since we want to focus on Filter/ Category Navigation we will try to understand which are the main features the previous e-commerce has and evaluate (Holst, 2023b; Smith, 2022; Totz, 2023).

Table 8.- Filter Navigation Features (Holst, 2023b; Smith, 2022; Totz, 2023)

Left Hand Navigation Features (desktop only)	Websites										
	1	2	3	4	5	6	7	8	9	10	11
Filtering By Price, Color, Size, Brand	X	X	X	X	X	X	X	X	X	X	X
Provide Category Specific Filters for all Products	X	X	X	X	X	X	X		X	X	X
Provide 'Sales' or 'Deals' Filter Bottom	X		X						X		X
Filters compatible with Product List (visually relatable)	X	X	X	X	X	X	X		X	X	X
Has New Arrivals Botton		X				X				X	
Has Numeric Filtering Values			X		X	X	X		X	X	X
Filters have +10 values	X	X		X							X
Has the apply button for filtering	X	X									
Show the number of matches for each filter	X	X	X	X	X	X	X	X	X	X	X
Hiding or disabling dead-end filtering values		X		X	X	X	X			X	
Filters have checkboxes	X			X	X	X	X	X		X	
Has horizontal sorting + Filtering tool	X		X	X	X		X	X		X	
Filters are presented in a drop-down interface	X	X	X	X	X		X			X	X
Users can combine many filter options	X	X	X	X	X	X	X	X	X	X	X
Enables users to clearly visualize filters selected				X					X		X

Based on Table 10 it's possible to do a Frequency table to help us understand witch filter navigation are most common among the studied websites as well which website

are displaying and functioning according UX Guidelines (Holst, 2023b; Smith, 2022; Totz, 2023).

Table 9.- Frequency of Navigation Features

Main Navigation Features (desktop only)	Frequency	%
<b>Filtering By Price, Color, Size, and Brand</b>	11	100%
<b>Show the number of matches for each filter</b>	11	100%
<b>Users can combine many filter options</b>	11	100%
<b>Provide Category Specific Filters for all Products</b>	10	91%
<b>Filters compatible with Product List (visually relatable)</b>	10	91%
<b>Filters are presented in a drop-down interface</b>	8	72%
<b>Has Numeric Filtering Values</b>	7	63%
<b>Filters have checkboxes</b>	7	63%
<b>Has horizontal sorting + Filtering tool</b>	7	63%
<b>Hiding or disabling dead-end filtering values</b>	6	54%
<b>Provide 'Sales' or 'Deals' Filter Bottom</b>	4	36%
<b>Filters have +10 values</b>	4	36%
<b>Has New Arrivals Botton</b>	3	27%
<b>Enables users to clearly visualize filters selected</b>	3	27%
<b>Has the apply button for filtering</b>	2	18%

On table 10 we could see the most common featured of the investigated platforms. Filtering by price, color, size, and brand, show the number matches for each filter, and combining many filter options, are essential features for Filtering Navigation since they are present across all websites. These results are expected since they are the most important features for obtaining a positive UX (Holst, 2023b; Smith, 2022; Totz, 2023). Navigation providing category specific filters and having filters that are compatible with the Product List page are also of equal importance. Another feature that is essential but not present in every website analysis but presented in more than 70% of the websites is navigation filtering presented in a drop-down interface.

Features that are between 50%-70% continue to be important once they represent more than half of the websites in analysis: navigation displays numeric filtering values (such as price value and shoe size); navigation filters enable users to select filters in checkboxes; navigation filters allow users to truncate filters that are not necessary to achieve their goals. The rest of the features even though they are of big importance as well are not considered by most of the websites: navigation filters have filters related with promo campaigns and discounts as well as with new products; navigation filter has an 'apply' button for applying filters; users are able to clearly see the filters selected. Even though we don't have a significant number of websites with

navigation filters that have more than ten tabs in a feature that affects negatively UX once it contributes to the decrease of loading page speed and makes it harder for users to effectively completing their tasks on the website.

## **4.- Evaluation Method**

The primary object of this study became to build a model that could improve consumers experience/ journey on the website. This investigation was done in one of in a sportwear company, Company X.

Proceeding the development of both navigation models, we needed to start implementing it. Both model implementations were done through a content management system. This Content Management Systems is a suite of applications designed to support search and browse experience on Company X digital consumer channels (companyx.com and Company X App). These applications have to do with a series of activities on Products listing Pages, such as curation and filter navigation. The A/B tests based on PLP, and navigation are created in Apollo and then managed through another partner platform, Optimizely. Then to analyze results we will use Adobe Analytics.

### **4.1.- CASE STUDY COMPANY**

Considering the previous studies and learnings we decided to test consumer journey within one of the websites, Company X, to find out how much the customer engaged with navigation on website. First step before building a conceptual model would be to find and understand what the current state of the website is and where it needs improving:

- Company X's navigation is cluttered, main navigation has about 364 links (Haan, 2022).
- Global website navigation is outdated (Baymard Institute, 2022).
- 80% of the traffic is coming from 20 out of the 364 links customers are actioning in the global navigation (Haan, 2022).
- 21% of the consumers engage with Vertical Navigation (Product Filter Menu). Per each product listing page there are about 15/20 filter options available but about 80% users' engagement with filters comes from just 5 filters. The rest of the filters make up less than 5% of the total filter engagement (Haan, 2022).
- Category Navigation it is not aligned with consumer's scope. The position of each Product Category should be according to business justifications, this is how users expect navigation or website pages to be structured, and not according to what website designers think it fits best (Lazar, 2001).

Next step would be specifically identified what are the guidelines or rules that the website is not respecting to provide the user the best journey possible when on



the platform. The guidelines, according to Holst, 2023a, we decided to focus on for the first test were:

- Ensure that Category and Subcategory Relationships are visually indicated in Navigation menus: each menu should identify clearly what is the main category and subcategory on a menu. For example: on each website menu, if we are talking about an e-commerce website, there should be a main product category followed by product subcategories – Main Category: Shoe; Subcategory: Running Shoes (Baymard Institute, 2023h).
- Highlight the Current Scope in the Main Navigation: each category of the menu should be correctly highlighted so that the user can understand where he/she is on the website. These should be highlighted with text styling, different colors or visual elements to differentiate the appearance of the current navigation category (Baymard Institute, 2023a).
- Implement Product Types with Shared Attributes as Filters Instead of Categories: users will feel lost if the product types aren't categorized correctly, meaning they won't have the right name. This is, in a website, product types should be implemented as filters instead of product categories (Baymard Institute, 2023b).
- Divide categories and Sub-categories into Manageable Chunks: when users are seeing a big list of product categories or subcategories, it's harder for them to choose which one is more suitable for them (Baymard Institute, 2023c).
- Ensure Categories and Subcategories are Clearly Delineated: if consumers cannot clearly differentiate what is a Product Category and what is a Subcategory it will delay product finding and it may contribute to cart abandonment. It's crucial that companies highlight each Category accordingly so that users don't misunderstand to which products each one of them corresponds to (Baymard Institute, 2023d).
- Ensure that Main Navigation and Drop-Down Menu Category Headings Are Clickable Links: Category Headings should be clickable. If they are just static text, it can break users' expectations and they can be forced into entering in narrower scopes, making explorative product browsing harder (Baymard Institute, 2023e).

- Keep Category Naming Consistent: Category naming must be consistent across the navigation. If users are navigating the website and suddenly see that category name change, they will wonder if the options correspond to the same thing. This causes hesitation and uncertainty (Baymard Institute, 2023g).
- Avoid Mixing Category Groups: when categories within the same group have different types, users often will end up confused or will misinterpret one or more of the options (Baymard Institute, 2023f)

Based on these guidelines we decided to do a Control and Variant A test in the main categories of Company's X website:

- Control: website navigation with all the UX guidelines unoptimized
- Variant A: optimized main navigation based on UX learnings, click through rate and business justifications.

This test aims to improve the business overall performance and making a smoother consumer journey. The Key performance indicators that will be affected (after engagement with both navigations) during the test are:

- Primary KPI's:
  - Conversion Rate
  - Percentage to PDP
  - Product Wall View Rate
- Secondary KPI's:
  - Navigation engagement rate
  - Search interaction rate
  - Filter interaction rate (LHN interaction rate)
  - Menu Exit rate (mobile)
  - SEO Value

#### **4.1.1.- Company Analysis – Main Navigation**

In the control version we showcase how the Navigation of Company X's website was across Gender Categories (Men, Women and Kids).

The navigation is cluttered, inconsistent, and a different navigation is displayed when clicking into the different Gender construct. Furthermore, there way too many options for them to choose from. This being the necessary step to take was to remove links from each part of the Main navigation:

- Men: reduce links from 54 to 35 links, reduction of -35%

- Women: reduce links from 74 to 36 links, reduction of -51%
- Kids: reduce links from 66 to 25 links, reduction of -62%
- All genders: from 194 to 96 links, -51% of the links in total navigation

The links selected remaining in the navigation are the ones that have higher Click through rate (time frame of the Analysis is the full month of December 2021, i.e, 1st-31st December 2022):

- Overall visits (people who opened the main navigation and clicked in a link) during that period was about 14.3 million.
- The gender that encompasses most visits is Men (6.7 million visits), followed by Women (3.5 million visits) and Sale (1.7 million visits).

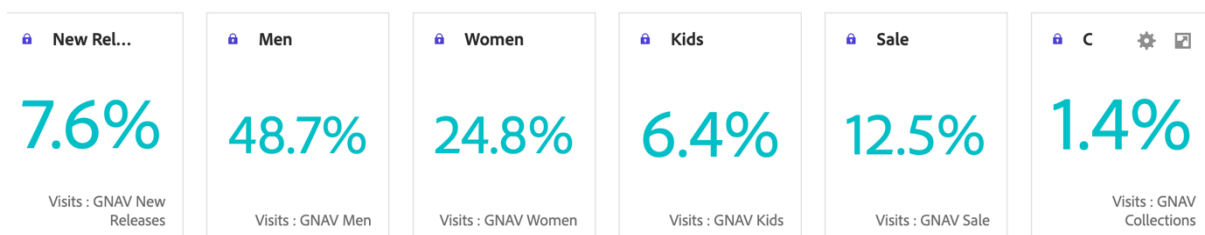


Figure 5.- GNAV Visits Distribution

Looking in depth in Men’s navigation we first analyses how users are interacting with it, meaning which product categories have higher CTR.

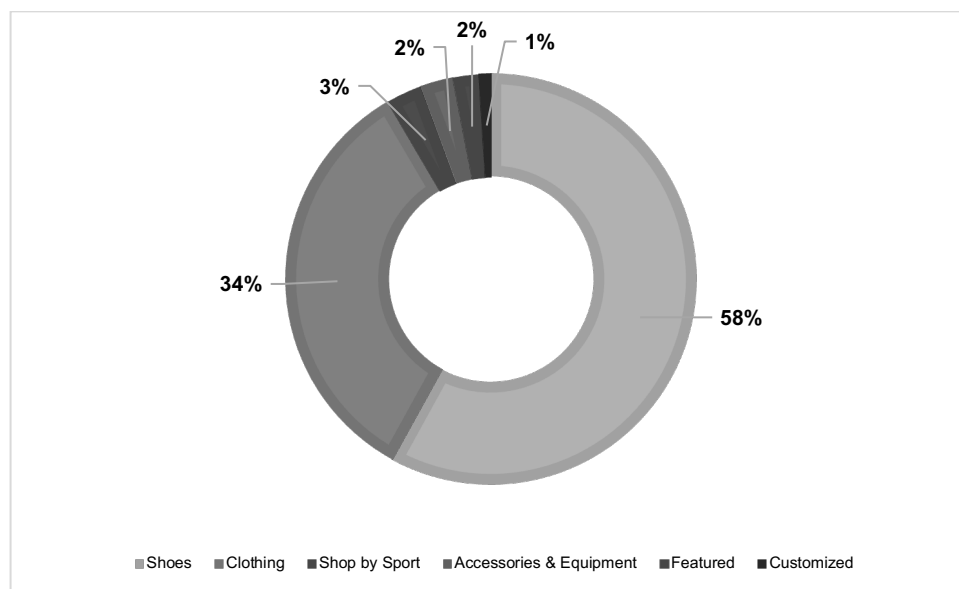


Figure 6.- Men CTR distribution in Main Navigation

In the Figure 10 we can observe that traffic is very concentrated on Shoes (58% of total traffic, about 4 million visits) and on Clothing (34% of total traffic, about 2.3

million visits). The remaining categories, i.e, Shop by Sport, Accessories & Equipment, Featured and Customized, don't make up 200K visits each (Bastos, 2023b).

Considering this, we decided to build on a new navigation. Removing first the terms and links that were redundant, this is, had similar meaning (guidelines: Keep Category Naming Consistent, Avoid Mixing Category Groups and Ensure Categories and Subcategories are Clearly Delineated).

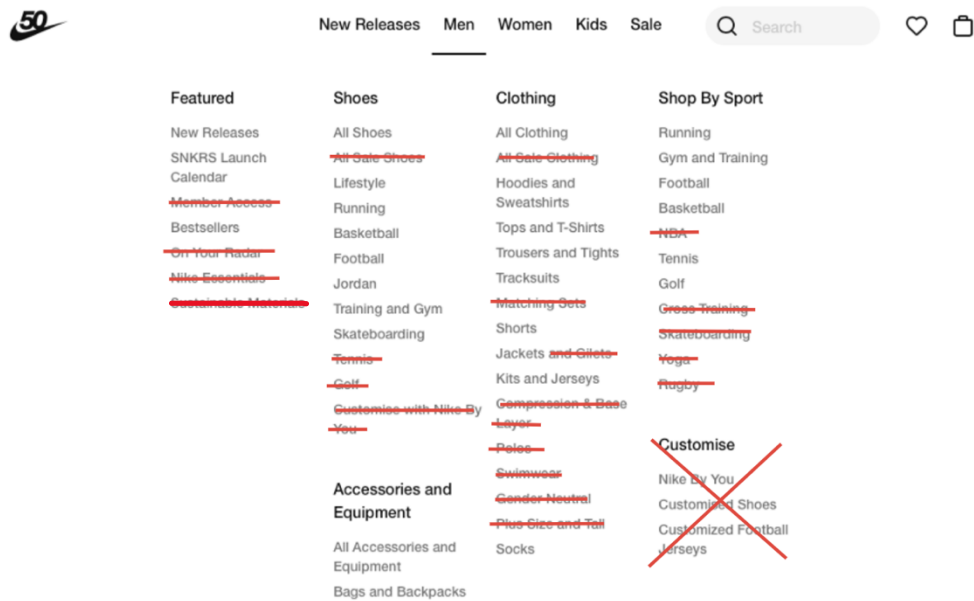


Figure 7.- Links removal Men's Navigation

On each category the excluded subcategories are highlighted in Figure 11:

- **Featured:**
  - Member Access and Sustainable Materials: customer can have access and know which product member are exclusive or have sustainable materials as it is directly displayed on the PW.
  - On your radar: on the website and on Company's X app on the Homepage (main page of the website) there is already a Content Carousel that provides consumers to see the products that are trending now, to have it in the navigation would make it confusing for the user.
  - Company's X Brand Essentials: This is a specific clothing collection so it should sit in the Featured section in the navigation.

- Shoes:
  - All Sale Shoes: Does not make sense to have it as a subcategory once there's a Sale bucket in the navigation where the customer can have access to the same products.
  - Tennis and Golf: Are sports that didn't have much CTR within that category hence why they were eliminated - correspond to about 0.7% and 0.6% of the total category traffic (29k and 24k respectively) (Bastos, 2023b).
- Clothing:
  - All sale clothing: same thought applied as in 'All Sale Shoes'
  - Matching Sets: makes up of 7.9% of total traffic of the category. Consumers can confuse consumers to choose between Matching Sets and Tracksuits. But since Tracksuits is the second most clicked subcategory, Matching Sets was removed from the main navigation (Bastos, 2023b).
  - Big and Tall, Compression and Base layer, Polos, Swimwear and Gender Neutral: were all eliminated from the main navigation since they don't even make up 5% of total CTR in Shoes (Bastos, 2023b).
- Shop By Sport:
  - NBA: was removed from the navigation because we already have Basketball as subcategory. It can make consumers indecisive in what to choose. Furthermore, it does not classify as a Sport, as it is a Sport's League.
  - Cross Training: follows the same though applied to NBA. Gym and Training includes Cross Training, so it does not make sense to have it as a subcategory.
  - Skateboard, Yoga and Rugby: only make up about 12K visits of the total traffic (196K visits), hence why it was excluded (Bastos, 2023b).
- Customized: only takes 0.9% of the total traffic in Men's Navigation Shop (Bastos, 2023b) does not justify having it as a Product Category. In addition, it is seen as a product attribution rather than a category.

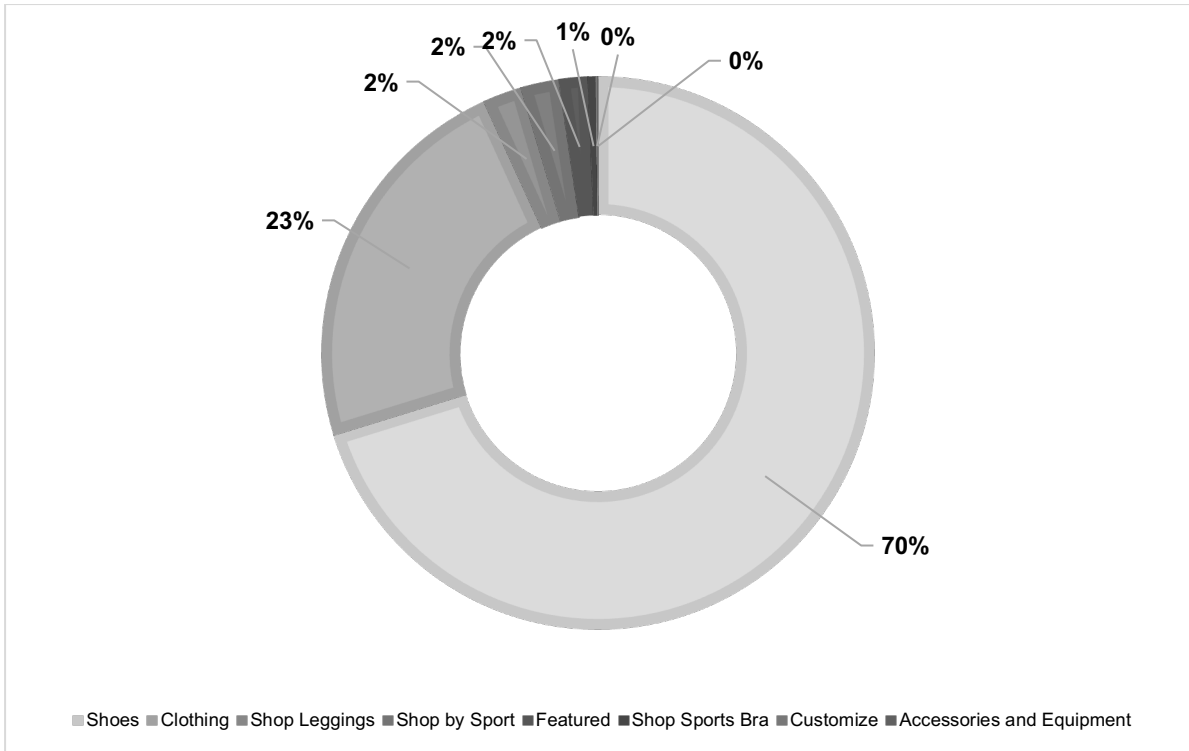
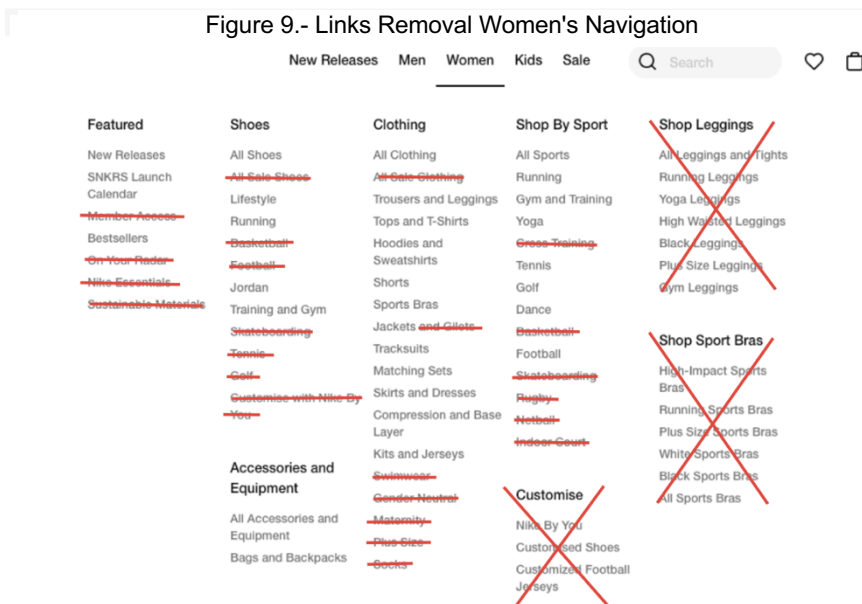


Figure 8.- Women's Navigation Distribution

In the Figure 13 we can observe that traffic is very concentrated on Shoes (70% of total traffic, about 2 million visits) and on Clothing (23% of total traffic, about 673k visits). The remaining categories, i.e, Shop by Sport, Shop Sports Bras, Shop Leggings, Accessories & Equipment, Featured and Customized, make up about 186K visits in total on the six categories (Bastos, 2023b).

Following the previous methodology applied to Men we decided to propose another navigation by removing links:



On each category the excluded subcategories are highlighted in Figure 14:

- Featured:
  - Member Access, Sustainable Materials and On Your Radar: all excluded from the navigations since they don't even have 5k visits altogether, showing that these aren't interesting for consumers.
  - Company X Brand Essentials: removed to maintain consistency with Men's navigation and since it isn't a high trafficked link.
- Shoes:
  - All Sale Shoes: Does not make sense to have it as a subcategory once there's a Sale bucket in the navigation where the customer can have access to the same products.
  - Tennis, Golf, Skateboarding and Football: Are sports that didn't have much CTR. Each doesn't have a higher CTR than 2% of the total navigation (Bastos, 2023b).
  - Basketball: was taken from shoes because after analysis we came to understand that consumers were mistaking Basketball and Jordan shoes. They would go into the Basketball link, and they would click in shoes related with Jordan (lifestyle) rather than performance shoes.
- Clothing:
  - All sale clothing: same thought applied as in 'All Sale Shoes'
  - Swimwear and Compression and Base layer: removed due to low traffic (Bastos, 2023b)
  - Gender Neutral, Maternity and Plus Size: these subcategories were removed from the GNAV because they are product characteristics and not subcategories. These would be more fitting in filters, i.e., in LHN, rather than in the main navigation.
- Shop By Sport:
  - NBA: was removed from the navigation because we already have Basketball as subcategory. It can make consumers indecisive in what to choose. Furthermore, it does not classify as a Sport, as it is a Sport's League.

- Cross Training: Gym and Training includes Cross Training, so it does not make sense to have it as a subcategory.
- Skateboarding, Rugby, Golf, Indoor Court and Netball: only make up about 10K visits of the total traffic (64K visits) altogether, hence why it was excluded (Bastos, 2023b).
- Customized: only takes 0.12% of the total traffic in Women’s Navigation (Bastos, 2023b), it does not justify having it as a Product Category. In addition, it is seen as a product attribution rather than a category.
- Shop Leggings and Shop Sports Bras: were both categories eliminated as they are considered a product subcategory and not a Category. Moreover, together they take 4% of the total traffic in Women’s Navigation.

The next step was to repeat the process to the Kids navigation.

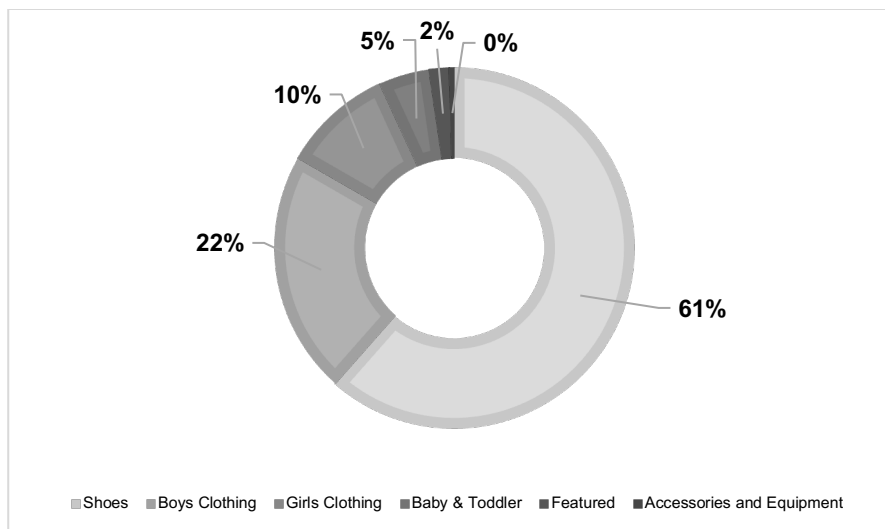


Figure 10.- Kids Navigation Distribution

Like the other Genders, Men and Women, traffic is mostly concentrated on Shoes (549K Visits) and Boys Clothing (194K Visits). The sum of the other four categories make up about 150K of the total traffic (Bastos, 2023b).

Second step of the process is to evaluate which categories can or cannot be eliminated from the navigation to improve UX guidelines and consumer journey on the website:



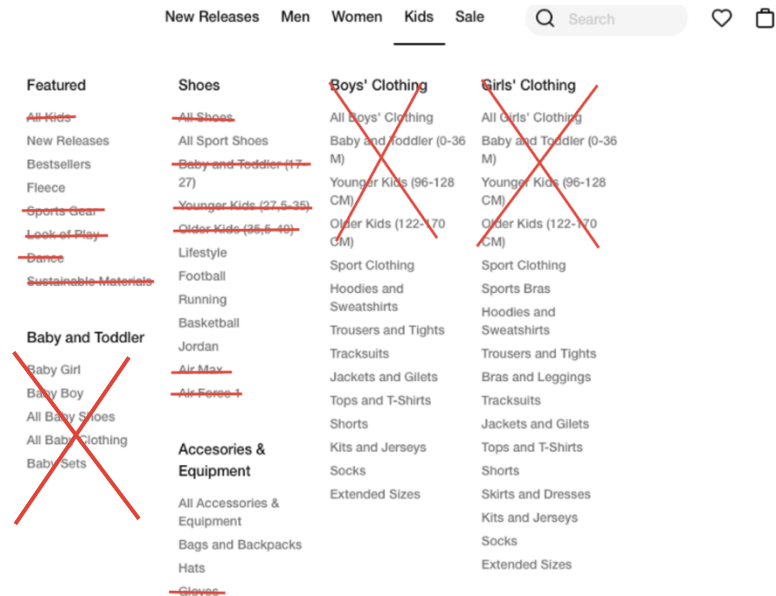


Figure 11.- Links Removal Kids Navigation

In the Kids navigation all product categories have one thing in common which three subcategories:

- Baby and Toddler (0-3 years old)
- Younger Kids (3-8 years old)
- Older Kids (8 – 15 years old)

These subcategories were transformed into a new Category in the Navigation, 'Kids by Age', and eliminated from 'Shoes', 'Boys Clothing' and 'Women Clothing' allowing consumers to choose directly which age they want to buy without being confused. Following the same thought, the 'Baby and Toddler' category was eliminated.

Regarding the other categories:

- Featured: we followed the same method as in Men and Women. Eliminated the links that had less traffic or that didn't make sense to have in the navigation.

Boys and Girls Clothing: these product categories were transformed into only one category, 'Clothing'. The thought followed when elaborating these proposals of the navigation was to:

- Featured: have the newest products, latest releases, and special moments in during the year (special promo campaigns).
- Shoes: have the most popular shoes categories according to customer's needs.
- Clothing: same process followed in Shoes

- Shop By Sport: most looked sports from customers in Europe on Company's X website
- Accessories and Equipment: maintain the popular categories, 'Bags and Backpacks' and 'Socks'. Socks was moved from Clothing to 'Accessories & Equipment' category.

For a link to be included in the navigation it must follow guidelines so that it doesn't decrease UX on the website.



Figure 12.- Decision Tree for defining which categories/subcategories can be included in GNAV.

The key objectives in elaborating these are:

- High Traffic: Pages that are most visited by consumers.
- Independent Product Type: doesn't overlap or has duplicate subcategories.
- Sufficient Product: if the link leading to a PW has at least 20 products.
- Multiple Pathways: alternative methods to get to the PW, either through onsite search or LHN

- Navigating Pathway: Verify what pathway drives KPI's (Visits, % to PDP, ATC, % to PW and Conversion Rate)

#### 4.1.2.- Model Proposal – Main Navigation

Based on previous research and on UX Guidelines we developed three new navigation proposals for Genders: Men, Women and Kids. And decided to elaborate a test to see if the changes would turn out to have a positive impact in KPI's and on the business performance.

	New & Featured	Men	Women	Kids	Sale	Guides
<b>Featured</b>		<b>Shoes</b>	<b>Clothing</b>		<b>Shop By Sport</b>	<b>Accessories and Equipment</b>
New Releases		All Shoes	All Clothing		All Sports	All Accessories and Equipment
SNKRS Launch Calendar		Lifestyle	Hoodies and Sweatshirts		Running	Bags and Backpacks
Fleece Shop		Jordan	Tracksuits		Football	Socks
Valentine's Day Gifts		Running	Jackets		Basketball	
Bestsellers		Football	Tops and T-Shirts		Training and Gym	
		Basketball	Trousers and Tights		Tennis	
		Training and Gym	Shorts		Golf	
		Skateboarding	Kits and Jerseys			
		Nike By You				

Figure 13.- New Men Navigation Proposal

In the New Men Navigation proposal, we can see that all the links that were redundant were eliminated from the navigation. It's not cluttered, it's easier to read and understand. Customers can identify what is a Category and what is a Subcategory. Moreover, Categories were put according to business justifications (level or importance within the business and CTR) and were spaced out giving the impression to the consumer that navigation is clean.

After the analysis on Women's Navigation, the same approach was taken as in Men's. The main objective was to keep it as consistent as possible so the consumer can have a smoother and concise journey throughout the whole website.

	New & Featured	Men	Women	Kids	Sale	Guides
<b>Featured</b>						
New Releases						
SNKRS Launch Calendar						
Fleece Shop						
Valentine's Day Gifts						
Bestsellers						
<b>Shoes</b>						
All Shoes						
Lifestyle						
Jordan						
Running						
Training and Gym						
Nike By You						
<b>Clothing</b>						
All Clothing						
Hoodies and Sweatshirts						
Jackets						
Trousers						
Leggings						
Matching Sets						
Tops and T-Shirts						
Shorts						
Sports Bras						
Skirts and Dresses						
<b>Shop By Sport</b>						
All Sports						
Running						
Training and Gym						
Tennis						
Football						
Yoga						
Dance						
<b>Accessories and Equipment</b>						
All Accessories and Equipment						
Bags and Backpacks						
Socks						

Figure 14.- New Women's Navigation Proposal

The new proposal of the Kids navigation was:

	New & Featured	Men	Women	Kids	Sale	Guides
<b>Featured</b>						
New Releases						
Fleece Shop						
Valentine's Day Gifts						
Bestsellers						
<b>Shoes</b>						
All Shoes						
Lifestyle						
Jordan						
Football						
Running						
Basketball						
<b>Clothing</b>						
All Clothing						
Hoodies and Sweatshirts						
Tracksuits						
Trousers and Leggings						
Jackets						
Tops and T-Shirts						
Kits and Jerseys						
Sport Clothing						
Shorts						
Sports Bras						
Skirts and Dresses						
<b>Kids by age</b>						
Older Kids (7 - 15 years)						
Younger Kids (3 - 7 years)						
Baby & Toddler (0-3 years)						
<b>Accessories and Equipment</b>						
All Accessories and Equipment						
Bags and Backpacks						
Hats						

Figure 15.- Kids Navigation Proposal

As verified in Figure 18, the navigation looks a lot cleaner than before allowing customers to easily choose from the options presented.

To finalize we developed a model that can be used cross-websites based on:

- Categories must be limited: to enable the consumer to fully understand and differentiate between categories they should all have different names and limited.
- Subcategories should be limited: primary categories should have between 6 and 15 subcategories to ensure usability and a UX responsive design (Budiu, 2017). If they have between 0-6 would be the ideal way to present categories to maximize UX.

- The order of each Product Subcategory on the navigation must be according to data: most clicked on subcategories should come first to make it easier for the consumer to read (Pernice, 2017).

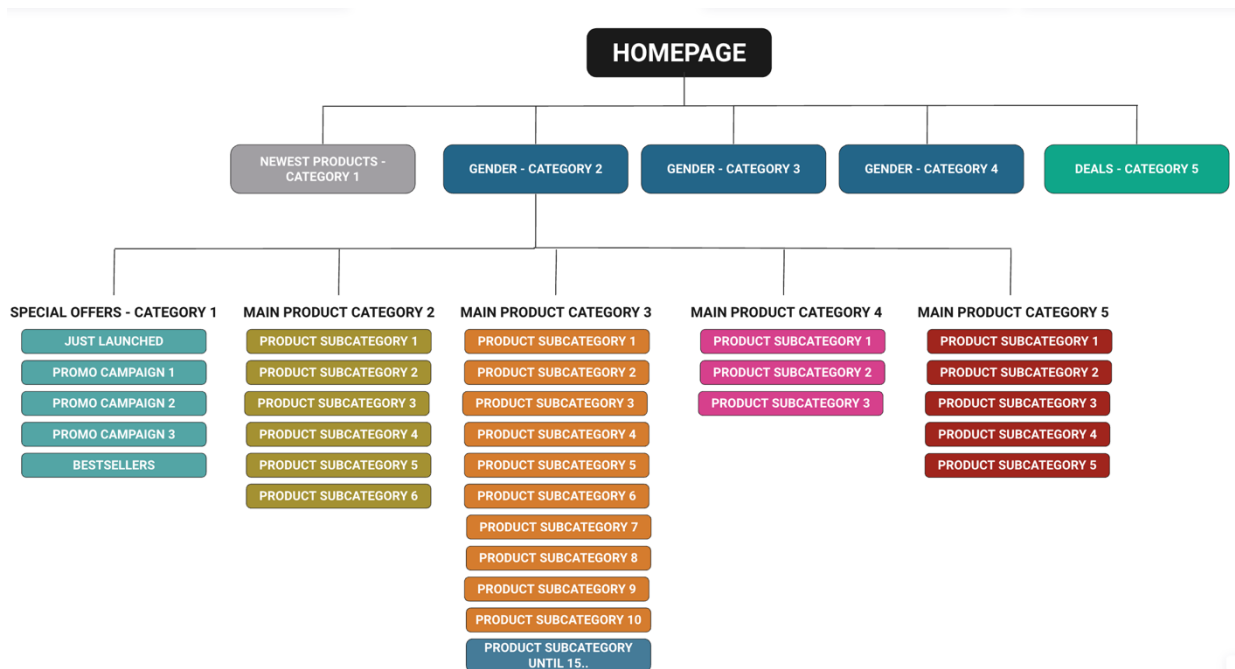


Figure 16.- Main Navigation Model Proposal

#### 4.2.- COMPANY ANALYSIS – LEFT HAND NAVIGATION

These results can mean several things:

- Consumers when reaching Products List Page cannot find the product they want right away, so they continue to narrow down product scope.
- Consumers narrow down the scope because they want to ‘play’ with filters and explore the many options the website has for that specific product category.
- Consumers know exactly what they are looking for and so they will interact with filters to find the product they want quicker.

Through this map we can see how important the usage of filters is in e-commerce website, especially in big retail companies where the assortment of product is of great number. For this reason, it is necessary for these companies to have a simple, concise, and easy to use navigation, so that customers can easily achieve their goals without any friction points.

Besides the stated, we also found interesting data regarding Company’s X website (note all the data gathered was taken from Adobe Analytics which the internal website analytics platform tool the company in question uses):

- 27,9% of the consumers engage with Vertical Navigation (Product Filter Menu).

- Too many products attribution options – average 15-20 filter options available per Product's List Page (Adobe Analytics, 2023).
- 80% of Filter usage come from just 5 filters, the other half represents less than 5% of total filter engagement. This is equally related with the lack of and wrong product attribution.
- Category Navigation is not aligned with consumer's scope. The position of each Product Category should be according to business justifications.

#### **4.2.1.- Conceptual Model – Left Hand Navigation**

Based in the literature review and case studies, we can begin to create our conceptual model aligned with the needs consumers have when navigating a website. The first step will be to state which features of filter navigation should be present in all websites.

The features are:

- Filtering By Price, Color and Size: Study done through 20 e-commerce websites showed that these were the most used features across e-commerce website (Bastos, 2023a)
- Provide Category Specific Filters for all Products: Each PW is different and has a different set of products with specific characteristics. It is essential for companies to align the main product characteristics, or attributions, and make sure that they correspond to that set of products. It is also crucial that these product attributions are common to all the products on that page to guarantee that filter navigation does not become too broad (making harder for users to choose between options). Furthermore, if there are many filtering options appearing at the same (more than ten filtering options) companies should truncate them (Smith, 2023).
- Filters should be presented in a drop-down interface: as we know by many eye tracking studies on the west consumers when consulting any website read from left to right and then top to bottom (Djamasbi, 2014). For this reason, it is also equally crucial that filter navigation menus should be displayed to the left of the PW.
- Filtering tool and sorting tool should be separated: consumers need to be able to differentiate the two, since they stand for different things. Filtering tool

narrows consumer product search while sorting tool enables consumers to organize the PW as they want (sort by bestsellers, for example).

- Consumers should be able to visualize the selected filters: it is crucial for consumers to know which filters they have selected so they don't get lost in their search.

After the enumerating the features that are crucial to have within an e-commerce website on filter navigation.

#### 4.2.3.- Conceptual Model Elaboration

Based on the empirical study done across the industry to find which were the main featured used in filter navigation or left-hand navigation a model was developed. The next step to take is elaborating the new filter navigation that should serve has model for e-commerce websites. We can have a better look at the figure bellow:

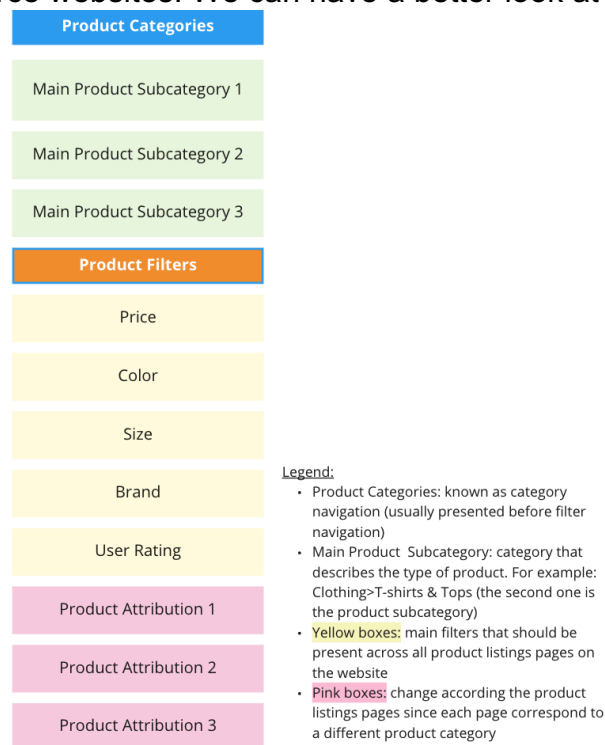


Figure 17.- Filter Navigation Mock-up

#### 4.3.- MAIN NAVIGATION - RESULTS

The new navigation model was implemented during the month of November, the 14<sup>th</sup> of November 2022, and it's currently live on the website. The analysis of results of navigation was done from 1<sup>st</sup> of December 2022 until 31<sup>st</sup> of January 2023 and compared with the same period 52 weeks earlier.

The aim is to see if the implementation of this model impacted positively the consumers and company's KPI's.

The KPI's in analysis were:

- GNAV uses how many people interacted with the navigation.
- % To PDP: percentage of people who reached PDP after interacting with the navigation
- Conversion Rate %: number of people who bought the product after interacting with the navigation.
- PW view rate: number of people who entered a PW after interacting with the navigation.

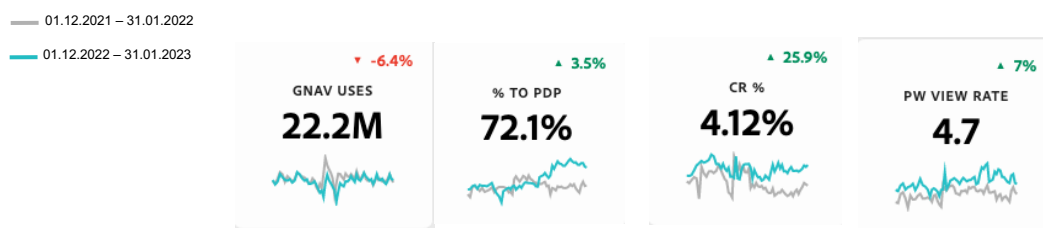


Figure 18.- GNAV Analysis after the model

Regarding GNAV visits or uses, we see that even though it decreased we can see it following the trend. Furthermore, this is not necessarily negatively impacting the experience. It means consumers spend less time to find the products they want leading to less interactions with the navigation.

Product Wall view rate equally had a positive impact in consumer experience increasing +7%.

On percentage to PDP, we can see that it is following a positive trend and in the period in analysis has increased +3.5%. Consumers can easily reach out the final task which reaching PDP and then adding to cart.

Conversion Rate is the most important KPI, and with the model application we had an increase of +25.9%. It is great to see that after the model application we can see the trend line increasing drastically. It's important to also mention that it is more balanced out.



— 01.12.2021 – 31.01.2022  
 — 01.12.2022 – 31.01.2023

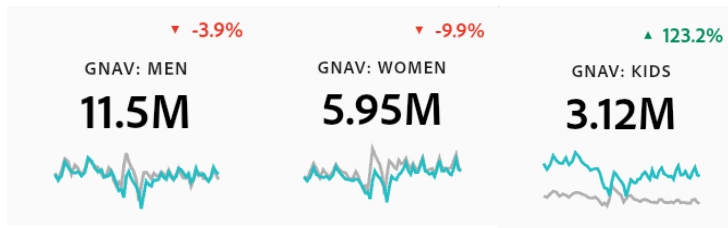


Figure 19.- Navigation Interactions per Category (Time Frame – 01.12.22 until 31.01.23)

Concerning each Gender Category, we see that both Men and Women had a decrease in GNAV visits. This decrease must have been related with the month of January, since in December we analyzed in depth and all the evolution was positive. On Kids, on the other hand, we have seen month on month a massive increase, +123.2%, meaning the changes contributed positively to user experience within the website.

#### 4.4.- LEFT HAND NAVIGATION - RESULTS

Regarding Left Hand navigation the first step to improve UX was to truncate all the filters excluding the 5 main filters (Gender, Shop by Price, Sale, Size and Color) in the top 10 product walls ranked by priority for the test, this is the PLP's where consumers interacted the most with Filters:

Table 10.- Top 10 Page where consumers interact the most with filters.

#	PW	Filter usage %
1	companyxcom>pw>men_shoes_jordan	41%
2	companyx>pw>men_tops & t-shirts	26%
3	companyx>pw>women_shoes_lifestyle	32%
4	companyx>pw>women_hoodies & pullovers	21%
5	companyx>pw>shoes_kids	37%
6	companyx>pw>men_shoes_soccer	40%
7	companyx>pw>women_shoes_running	42%
8	companyx>pw>men_shoes	27%
9	companyx>pw>men_pants & tights	27%
10	companyx>pw>women_shoes_clearance	37%

The hypothesis for the test was to close all the Product Listing Page filters by default with the objective of increasing Product View Rate (PVR) and percentage to Product Listings Page. The main objective is that all filters can be visible to users without having to scroll down within the Products Listings Page.

The test was done only in European Countries, with Euro currency, Austria, Belgium, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Portugal, Slovakia, Slovenia, Spain, The Netherlands. In a 50/50 split, meaning 50% of the users would be able see the test the other 50% would not.

Due to technical issues the test was only done in six Products Listings Page instead of the ten previously planned. The PWs in question were:

- Kid's Shoes Product Wall
- Men's Tops and T-shirts Product Wall
- Women's Hoodies & Pullovers Product Wall
- Women's Running Shoes Product Wall
- Men's Shoes Product Wall
- Men's Pants & Tights

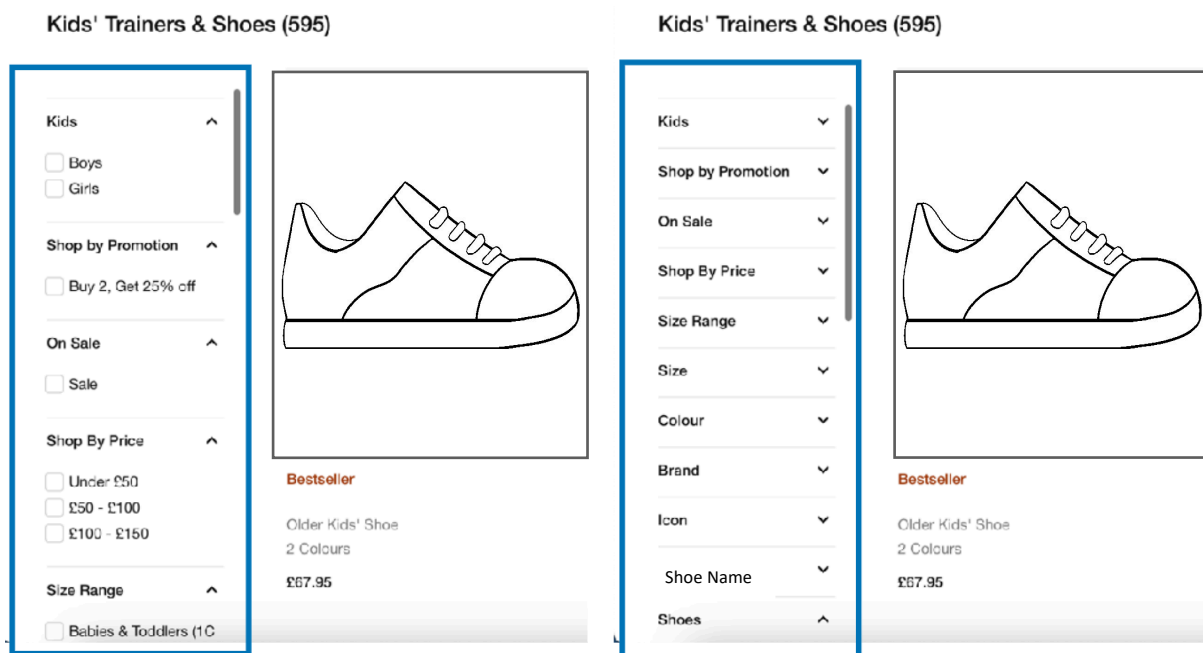


Figure 20.- A/B Test Filters

#### 4.4.1. - Left Hand Navigation – Results per Product Listing Page

		Unique Users	Filtered	Lift	CTR	Lift	ATC	Lift	CVR	Lift	Revenue Per User	Lift
Kids Shoes	Control	203494	8.74%		56.92%		18.95%		2.39%		\$1.96	
	Variante	203243	11.69%	33.75%	61.93%	8.80%	21.74%	14.73%	2.74%	14.64%	\$2.28	16.70%
Men's Pants & Tights	Control	75689	19.57%		56.12%		18.31%		2.73%		\$2.02	
	Variante	75288	19.54%	-0.15%	57.27%	2.04%	18.70%	2.10%	2.88%	5.24%	\$2.10	4.07%
Women's Hoodies & Pullovers	Control	80971	14.91%		52.68%		17.33%		1.86%		\$1.26	
	Variante	81219	15.25%	2.29%	53.29%	1.15%	17.99%	3.83%	1.91%	2.74%	\$1.28	1.52%
Women's Running Shoes	Control	80971	12.52%		54.33%		10.85%		1.62%		\$1.99	
	Variante	81219	14.35%	14.95%	55.10%	1.43%	11.39%	5.02%	1.81%	11.68%	\$2.32	16.84%
Men's Tops & Tees	Control	105609	13.94%		36.14%		13.52%		1.66%		\$0.79	
	Variante	104390	13.78%	-1.20%	36.17%	0.09%	13.26%	-1.94%	1.75%	5.55%	\$0.82	3.92%
Men Shoes	Control	485588	21.03%		51.20%		8.26%		1.19%		\$1.50	
	Variante	486199	20.78%	-1.19%	51.80%	1.18%	8.30%	0.53%	1.19%	-0.26%	\$1.50	-0.51%

Table 11.- LHN Test Results

**Caption:**

Stat testing:

Metrics tested: CTR, ATC and CVR

Colloration:

- Dark Green: strongly confident (>95%)
- Light Green: moderately confident (≥85%)
- No color: ≤85%

As verified on the Table above we could only apply the test in six out of the ten PW's due to technical issues. But we can clearly see that the results have contributed positively to the majority of the KPI's. When it comes to interactions with Filters, we saw a lift both in the Kids Shoes PW and on Women's Running Shoes PW, especially on the first one where it grew significantly.

Regarding CTR and ATC we note that every PW except for Men's Top's & T-Shirt has had positive Lift. We continue to see the Kids Shoes and Women's Running Shoes are the PW's where the test worked best, and consumer experience improved the most.

Lastly, when analyzing Conversion Rate, we saw an uplift in every PW apart from Women's Hoodies & Pullovers and Men Shoes. Again, Kids Shoes and Women's Running Shoes were the PW where the test worked best, and we could see a significant increase in Conversion.

## 5.- Discussion

The impact that User Experience has on an E-commerce website has shown a positive trend during the period in analysis. However, the problem E-commerce Platforms/companies face today is to differentiate between what the consumer effectively wants to satisfy from what the ones companies or web designers think will satisfy the consumer. To have an answer this problem it was suggested to investigate between academic and scientific papers and e-commerce platforms.

By analyzing the information provided by the papers collected, it was possible for us to conclude that the feature affecting UX the most is Navigation. With this in consideration we created two conceptual models. The aim for these models was to create a seamless experience for the User which would enable them to complete the tasks they want to complete while in a website more in the most efficient way possible. Based in the conceptual models, an evaluation was done to see until which scope of the model we could be able to apply the test.

While on the first conceptual model we were able to apply it completely, the second one we could only apply it partially due to the size and scope of the business and how it would impact the consumer if a big change would be implemented.

Beginning with the first model, the optimization of Main Menu Navigation. In the time frame studied and benchmarking it against the previous, we saw an uplift in 25.4% in Conversion Rate and reduction in the number of interactions in two of the Main Navigation Sections (Men and Women). The Main Navigation Section that had an increase in the number of interactions was the Kids navigation bucket. This comes up as the result of the major changes implemented here.

Regarding the second test on filter navigation, we could verify as well that the results were positive. During the implementation of the test, there were some technical difficulties with the platform used, hence why we could only retrieve information from six out the ten pages that were supposed to be analyzed.

We could verify that only two Product Listing pages did not get positive results, on the rest of the pages in analysis we could see a lift in Add to Cart and Conversion Rate overall.

In conclusion, both tests exemplify how small changes in navigation can affect majorly user experience and positively the KPI's companies want to obsess over, Conversion and Add to Cart.

## 6.- Conclusions

The objective of this project is to study the impact the Navigation has on User Experience and how it can leverage positive results among Conversion and Add to Cart.

To do that we developed two models based on the DSRM process model, which aimed to answer the question to the initial problem. In sum, the models developed had the objective of optimizing the layout of the Main Navigation and Left-Hand Navigation in an E-Commerce website, based on UX Principles, which was accomplished after summarizing all the information gathered on the literature review.

To implement the models, we used a platform owned by the company. While we were able to implement the first model fully, the same did not happen for the Left-Hand Navigation Framework. To carry out the first model we had full ownership in-house to implement the changes.

Regarding Left-Hand Navigation Conceptual Model, we did not have the capabilities to carry out the test in Europe because these types of tests are owned by the North America team. Consequently, we encountered some difficulties in communication; the time difference; only meeting with the teams once per month due to the team's availability; test implemented incorrectly when it came to its time frame; errors in which Product Walls the test should have been live. Furthermore, it was equally difficult for us to monitor the results of the test on a daily or, if not daily, on a weekly basis.

After the tests were complemented, we were able to evaluate results and the impact that these models, if applied, would have in the in KPI's, Conversion Rate and Add to Cart rate, of the overall business.

For future works, it is important that the second test, regarding Left-Hand Navigation can be implemented fully. We have already seen that just by having some of the filters truncated it enables consumers to have a full visual on what are the options that the company has without them having to scroll down.

Another important suggestion would be to implement these models across the different geos that the company's digital platform is present, as of right now, these changes have only been applied in Europe. Taking in consideration the impact that it can have on Conversion Rate it's important that the company considers implementing the same models across the different websites. Furthermore, it is also a determinant factor to

have consistency cross the different countries so that consumers can have the same experience they would have visited when US website and the German website.

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## **Appendix**

It is hereby expressly stated that any materials, information and/or data with respect to Nike. Inc used, analyzed and/or studied within the scope of this dissertation are in no way prejudicial to the industry which is the subject of this study; furthermore, all the required authorizations from Nike.Inc were duly obtained for this purpose and cannot be used for any internal use within the university.