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The Graduate School of Sciences and Engineering

**Master of Science in
Industrial Engineering**

SAMPLE SPINE

**USER EXPERIENCE DESIGN: OPTIMIZATION OF
VIDEO ON DEMAND INTERFACE**

by

Simge KANTAR



**USER EXPERIENCE DESIGN: OPTIMIZATION OF VIDEO ON
DEMAND INTERFACE**

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Simge KANTAR

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ABSTRACT

Contemporarily, with the advancing technology, it is not enough to think about only the ease of use while designing an interface. Now, users want to enjoy and not to be bored while using a system. Because the feelings and expectations of users become more and more important, designers have to make designs by considering the feelings of users as much as the ease of use.

User Experience (UX) is a freshly minted research area which needs to be in each step of designing process. User Experience aims testing of every single idea and application designed for interface by the real users. Generally designers tend to consider the things from their own side, but in order to design a useful interface, they need to see the process through users' eyes.

In this thesis project, it was planned to investigate, improve and compare the Video on Demand television interfaces by using User Experience design techniques and tests. For application Digiturk was selected. The main purpose of choosing that area is increasing satisfaction by providing a better and usable TV experience to customers who are using Digiturk. For this study, the user's insights were observed and tested in terms of usability. For this purpose, three user testing methods-survey, card sorting, A/B test- were selected and used. The aim was testing and - if possible- optimizing the movie category list (e.g. horror, comedy, action, etc.) of that TV interface by using these particularly selected UX tests.

Keywords: Usability, User Experience, interface, Digiturk, television.

KULLANICI DENEYİMİ TASARIMI: FİLM KATEGORİSİ ARAYÜZÜ OPTİMİZASYONU

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ÖZ

Son yıllarda, gelişen teknolojiyle birlikte bir arayüzü tasarlarken sadece kullanım kolaylığını dikkate almak yeterli olmamaktadır. Kullanıcılar artık bir sistemi kullanırken sıkılmadan ve keyif alarak kullanmak istemektedirler. Kullanıcının hissiyat ve beklentileri daha da önemli olmaya başladığından, tasarımcılar kullanıcıların hissiyatını da göz önünde bulundurarak tasarımlar yapmalıdır.

Kullanıcı deneyimi tasarım sürecinin her aşamasında olması gereken yeni bir araştırma alanıdır. Kullanıcı deneyimi arayüz için tasarlanmış her bir fikrin ve uygulamanın gerçek kullanıcılarla test edilmesini amaçlar. Genellikle tasarımcılar üretirken sadece kendi taraflarından bakmaya eğilimlidirler ancak kullanıcı bir arayüz tasarlamak için süreci kullanıcının gözünden görebilmeleri gerekir.

Bu tez projesinde, bir film izleme televizyon arayüzünün kullanıcı deneyimi teknikleriyle incelenmesi, geliştirilmesi ve karşılaştırılması planlanmıştır. Uygulama için Digitürk seçilmiştir. Amaç kullanıcılara daha iyi bir TV deneyimi yaşatarak memnuniyeti arttırmaktır. Bu çalışma için kullanıcının iç görüşleri kullanılabilirlik yönünden gözlemlenmiş ve test edilmiştir. Bunun için, üç kullanıcı deneyimi testi- anket, kart gruplama, A/B testi- seçilmiş ve kullanılmıştır. Amaç digitürkün sağladığı film kategori listesini (ör: korku, komedi, aksiyon, vb.) test etmek ve mümkünse iyileştirmektir.

Anahtar Kelimeler: Kullanıcı Deneyimi, kullanılabilirlik, Digitürk, arayüz, televizyon

To my parents

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LIST OF SYMBOLS AND ABBREVIATIONS

SYMBOL/ABBREVIATION

UX User Experience

CHAPTER 1

LITERATURE SURVEY ON USER EXPERIENCE DESIGN AND USABILITY

1.1 INTRODUCTION

In this project, it is planned to investigate, improve and compare the DIGITURK television interfaces by using User Experience design techniques and tests.

Digiturk is the first television broadcasting platform of Turkey which is founded in 1999. It conveys its television, radio, music and interactive channels with the best display and audio quality to its subscribers.

Digiturk launched “Whenever and wherever you wish” concept in 2013 which is a technology lets users to reach any kind of TV programs whenever and wherever they want to watch. In this concept, all movies are presented as ‘Video on Demand’ under categories such as horror, romantic, comedy, etc.

The aimed area of the project is improving and changing Digiturk’s movie categories presented as ‘Video On Demand’ according to Turkish users’ preferences.

The main purpose of choosing that area is increasing satisfaction by providing a better and usable TV experience to customers who are using DIGITURK. Because televisions are used by almost all kind of people constantly, applying User Experience techniques are highly necessary and will be certainly helpful in terms of both customer and provider.

1.1.1 The First Interaction Between User And Interface: Usability

“Usability rules the web. Simply stated, if the customer can’t find a product, then he or she will not buy it.” –Jakob Nielsen

According to the most famous usability expert Jakob Nielsen, usability is a quality attribute that assesses how easy user interfaces are to use. Nielsen also states that usability has five attributes which are ease of learn ability, ability to remember, efficiency, error rate and user satisfaction.

In addition to these attributes, there is a key one which is utility. It examines the design’s functionality and asks the question “Does it do what users need?” Usability and utility are both very important and need to be thought together to decide if a product is useful. The combination of usability and utility gives the definition of “useful” (Nielsen, Usability 101: Introduction to Usability, 2012).

So, why usability is important?

Usability is the key word of web survival. If a web site is not easy to use, people leave. If it is not interesting, they leave (Nielsen, Usability 101: Introduction to Usability, 2012). So, what is the magic that will keep them in your system? The issue about learn ability is not the time actually. It does not matter how difficult your web site design is, user will learn how to use it in anyway if they spend enough time. The important thing is why should they spend that much time to learn it? What is their motivation? Or more importantly, is there a motivation?

Time is getting more and more important as everything around us getting faster to use. We look for second not even minutes. Therefore even if you develop a difficult design which has vital outputs for the users, they will use it anyway. But the difficult thing is to be able to incorporate potential users to your system and to get users from your competitors without a strong motivation. All in all, why should users spend their valuable time to fill a form to register a site that they do not even know the outputs?

Imagine how difficult to include new users into your system before they close it if they do not understand quickly. You have just a couple seconds before users click to the “close” button.

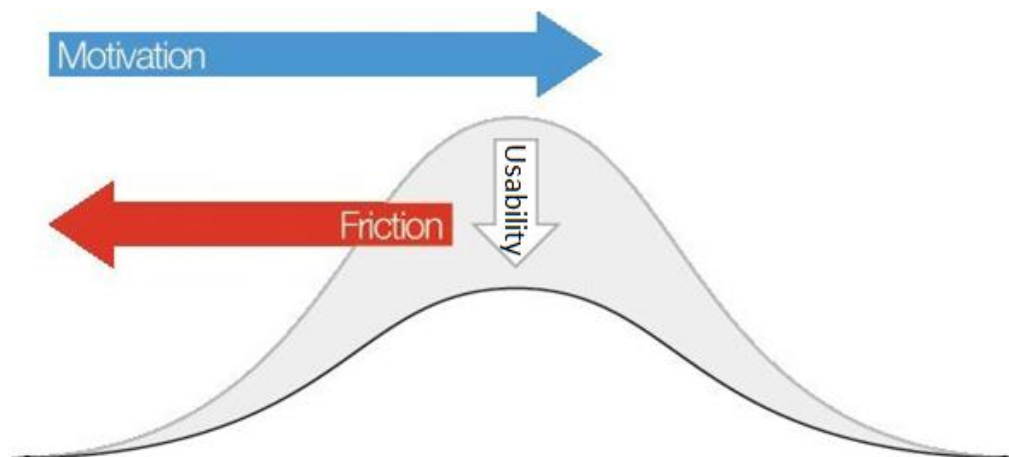


Figure 1.1 Usability-Motivation Graphs.

Usability can be explained by a graph simply. In the graph above, the height shows the difficulty of registering to a web site. Going through all the obstacles is your “motivation” and difficulty of this action which prevents the action is shown as “friction”. The element in the middle which reduces the difficulty is “usability”.

Another component of gaining user is “trust”. If users can not feel safe when they get into a website, they leave and again the first seconds of user in that website is highly important. Most of the people are afraid of leaving a safe atmosphere to try something new. That’s why making users feel safe and earning their trust should be a circumstance while designing a web page. Design has an important role in here. People like and prefer the things which look more beautiful than others. It is proven that the attractive designs can effect even big and vital decisions of users.

1.1.2 User Experience

“An experience is a story, emerging from the dialogue of a person with her or his world through action” – Marc Hassenzahl

Though it is very new, User Experience (UX) concept is becoming a growing trend. The number of researches and articles about UX is increasing rapidly day by day. There are many different approaches which are trying to explain UX in different ways. Even though they tell the same thing inherently, most of them are being complex and

confusing, and causing contradiction in terms. This confusion is because of the multidisciplinary nature of this concept. Different backgrounds of researchers such as engineering, sociology or psychology cause different approaches and definitions (Tokkonen & Saariluoma, 2013). There are some researches conducted to find a common understanding of UX as Helena Tokkonen did, but none of them could conclude a single shared definition.

UX can be academically summarized as every aspect of the interaction between user and a product, service or company (Nielsen & Norman, The Definition of User Experience). These aspects can be described as usability, utility, emotional satisfaction and interaction quality (Kuniavsky, 2003). UX is not just creating a fancy interface, but creating an experience through a device (Hassenzahl, 2013).

As Albert Einstein said if you can't explain it simply, you don't understand it well enough, so beyond all the academic definitions, what is UX at heart?

Every product is a solution. Problems create products. When the designers see the gap, the product is developed as a solution and experience starts with this solution.

User Experience is the effect on user which is left by the product. It is an emotional interaction starting as a feeling while usage. It is basically about what we feel and what we remember after using the product.

Because the main thing is a feeling and because the human psychology plays an important role on the concept, it is very difficult to design and predict. Even though a product is designed perfectly which provides all the needs of users, all experience can be collapsed with a single negative bug, comment or a moment. Daniel Kahneman ensamples the connection between experience, feeling and memory very well. In his example; while listening an absolutely perfect music record, the audience hears a terrible rattle at the end of the record. He says that it ruined the whole experience, but Daniel Kahneman claims that experience is not the one ruins, it is the memories of this experience. Actually audience had have the experience, listened a good music for 20 minutes but it has no meaning because the only thing left from this experience was the ruined memory.

Hassenzahl states that “Experience or UX is not about technology, industrial design or interfaces. It is about creating a meaningful experience through a device.” Experiences are meaningful events through which not much knowledge gained (Hassenzahl, 2013).

As conclusion, the root of experience is feelings and emotions. What users see when they look the product? What they feel while using it? What they remember after using? What comments they make about the product? All these questions constitute the concept of User Experience. UX researchers mainly look for the answers of these questions.

1.1.2.1 Importance of UX

Just like every product is a solution for a problem, UX is also a solution which can be considered as a life saver for the companies. When the designed interface does not work as expected, it will raise the disappointment feeling of customers, and this kind of feeling is the last thing that you want them to experience. This is the point that businesses need UX. UX is a key for businesses, complex sites, projects or applications. The web pages of any business are the first impression to its users. It is important not to forget that users decide in seconds to stay or leave the site. Technology is created for people who to use it. If people cannot use it, it becomes nothing but a waste of money and time. In order to make technology usable, UX is needed. A good UX makes technology easier to use; if it is easier to use, people use it more often; if it is used more often, it adds more value to the product.

There are six key benefits of UX which are defined by the Usability Professionals Association;

- Increased productivity
- Increased sales and revenues
- Decreased training and support costs
- Reduced development time and costs
- Reduced maintenance costs

- Increased customer satisfaction. (User Experience Professionals Association, 2013)

UX should be considered as a core for interfaces or any product design. It is always a better idea to make changes in the beginning then making it at the end.

1.1.3 Design

1.1.3.1 Aesthetics

“Good design is the most important way to differentiate ourselves from our competitors.”-Samsung CEO Yun Jong Yong

The purpose of every design is creating a solution that effectively solves a problem. Everything has been developed to make us perform more effectively in the world. But there is another point as well beyond functionality of a design: aesthetics, attractiveness and beauty (Norman, 2004). However some designs just look attractive but nothing, aesthetics has always been significant. A good looking design plays a critical role in sales of a product when people have to choose among products doing the same thing (Miller, 2005).

Aesthetics is one of the dynamics of experience. It is the visual interaction and attractiveness which make a connection between user and product. But can it really affect the users' choices?

There are opposite opinions about the importance of aesthetics. While one group is supporting that it has a high effect on user experience, other group is totally tend to dismiss the importance of aesthetics.

Spite of the contrary group, as many researches proved that it is impossible not to see the role of aesthetics in our life. However the usability of a product is essential, beauty is mostly the first reason for users to front a product. It is the moving force which makes us learn the things we actually are not interested or buy the things we actually do not use. Attracting by beauty-this is human nature.

The reason of that is simple. Beautiful things create positive feelings. These feelings move people towards the beautiful one over other options. Donald Norman, the

UX expert, says that beauty is important; beauty in environment, actions and products that we buy and use. “Beauty and brains, pleasure and usability-they should go hand in hand.” (Norman, 2004).

It can also be said about technology and interfaces, contrary the people who think functionality is enough to sell a product. That fact is aesthetics brings trust. According to the Stanford Web Credibility Study, users mostly believe the websites that look professionally well designed. When a site is less credible, users tend to leave the site quickly; they do not buy, do not register and do not return. The study shows there is a clear connection between design and site credibility (Fogg, 2002).

These two terms, aesthetics and functionality, need to be combined and given the same importance in order to give a good experience to users. A poor visual design can disaffect users easily and they never learn the inside functionality of system or interaction design (Garrett, 2011).

There are two good research examples about that issue. First one is done in Japan and repeated in Israel. Researchers in Japan made an experiment to measure the affects of aesthetics on users through ATM interfaces. They established two ATM machines in the same location which had totally the same architecture, location, interaction except their interface. One of them had an attractive interface design and other had a poor visual interface design. The experiment showed that while the prettier designed ATM attracted people more and provided a better customer satisfaction, the other ATM caused user complaints (Kashimura, 1995). The researchers in Israel repeated the same experiment to prove that aesthetics is not important in Israel as much as Japan because of the cultural difference of people. But when they completed the experiments their results were also similar to Japan. They concluded that aesthetics may considerably affect system acceptability (Tractinsky, 1997).

If the system is lack of aesthetic value, it will fail both to attract and to hold the users’ attention (Steenbergen, 2010). The most important advantage provided by beauty is increasing motivation and electiveness. It is a reason for preference between similar products. It can be thought as a door which pulls users inside. After crossing that door, it is functionality which keeps users in system, so after all, aesthetics is an advantage, a plus and a profit for the product.

1.1.3.2 Functionality

“Design is not just what it looks like and feels like. Design is how it works.” – Steve Jobs

It is primarily necessary to analyze the problem correctly to be able to create a successful product. A product can only exist as long as it fulfills the user's needs. Just like every product, every interface is created to solve a problem. Every interface is different and all of them create their own design framework according to their most critical tasks. The vital thing is to make those tasks accessible and notable for users. This designates the functionality of a web site. Even the best functionalities can be useless if it cannot let users know it is there or if it is too clumsy which makes people avoid seeking. Therefore accessibility is the first primary factor of functionality. Fitts's Law which is created by Paul Fitts is an appropriate way to explain and implement accessibility in a web site.

According to Fitts's Law, the time to move to a target area is a function of the distance and the size (Fitts, 1954). Basically, the bigger and closer a target, the easier it is to be accessible. This law can be used as a model to help designers about interfaces and web page layouts. There are two major ways that designers should follow to create an accessible interface; making items big and making them close. However a larger button on a page is easier to click on, bigger is not always better. Usability runs along a curve, not a line (Gross, 2011). It means even the size of an object is increased constantly, the usability of that object will not increase with the same amount, it will stop increasing after a point.

The second primary factor of Fitts's Law is making the item closer. It refers the distance between the mouse pointer and targeted object. Designers should place the site components logically to decrease the amount of time required in completing a task. Placing and grouping similar items together is a way to increase functionality. Placing similar elements closer is helpful to increase performance while organizing the navigational items of a web page.

As a conclusion of Fitts' Law, making a good combination of size and location will increase the quality and functionality of the web page by providing an easier

experience for users. Netflix is a good example of using this combination. In Netflix's page, all elements are located and sized according to their priorities. The most important element which is 'play' button is the biggest item on the screen. Also related items are located very close to each other to minimize mouse movements.

As a result, determining the most important tasks and locating them in right places, and minimizing mouse movements and number of clicks will provide better accessibility and better accessibility will create better functionality.

Simplicity is another supporter of functionality. People will not be willing to stay in a page if they cannot understand it quickly. A complex interface can scare users easily. As the learning time increases, the endurance of user decreases. Because of that, keeping learning time as short as possible is a key factor of functionality. Starting simple and clear is essential; after gaining users, it can be continued with more complex features. How can be a simple, lean interface obtained? By thinking simple, it can be created by designing buttons easily related to functions, emphasizing actions, using sort and filter functions. Eventually, simplicity will bring a better functionality.

Robert Rodriguez says "When you take technology and mix with art, you always come up with something innovative." Aesthetics and functionality together is a true combination of a good design which users desire to experience.

In order to see what really users think about the importance of aesthetics and functionality, a survey is conducted. However a survey which asks users directly to make a decision between aesthetics and functionality, it was thought that majority will choose functionality because of the simple logic that no one want something cannot work but looks good. Because of that reason, a question of "which one do you prefer? Aesthetics or functionality?" might not give a balanced and credible result, so a control list which evaluates a web site from aesthetics and functionality sides are created by using Jakob Nielsen's 10 Heuristic Evaluation principles for interaction design.

10 Heuristics of Jakob Nielsen;

- Visibility of system status
- Match between system and the real world
- User control and freedom

- Consistency and standards
- Error prevention
- Recognition rather than recall
- Flexibility and efficiency of use
- Aesthetic and minimalist design
- Help users recognize, diagnose, and recover from errors
- Help and documentation

In the survey sheet, it was not stated which one belongs to aesthetics and which one belongs to functionality in order to prevent prejudice. They are given in a random order and it is asked users to give points for each criteria from 1 to 5 (1 is the least important and 5 is the most important).

In order to learn the relationship (weights) of variables with their related factors Exploratory Factor Analysis (EFA) and then Partial Least Squares methods are run to the data set. The quality of each construct in the proposed model was checked using principal component analysis and Cronbach's alpha. For the data set, Cronbach's alpha values of each block (greater than 0.80) and the principal component analysis tests lead to an acceptance of the unidimensionality of all blocks.

These 10 heuristic criteria were created to evaluate a web site from 10 different aspects and among these 10 one of them is for evaluating aesthetics (aesthetic and minimalist design) and one for evaluating functionality (flexibility and efficiency of use) after EFA. By using these 2 criteria, it was developed 9 survey elements in which 4 of them refers aesthetics and 5 for functionality to judge a web interface.

Aesthetics

- Consistency of colors
- Appearance of web site
- Simplicity of the language
- Harmony of outlook

Functionality

- Ease of use
- Guidance and Error prevention
- Grouping- site navigation
- Flexibility
- Help function

The relationships (loadings) between those factors and their observed variables are given in Table XX.

Table 1.1 The outer model estimation.

Factor	Observed Variable	Loadings	Factor	Observed Variable	Loadings
Aesthetics	APR	0,807	Functionality	EAS	0,790
	COC	0,855		FLX	0,649
	HOUT	0,747		GEP	0,863
	LANG	0,798		HLP	0,700
				NAV	0,758

As it can be seen in the table above, outer weights show that all components are logically related to their own factors (aesthetics and functionality). For the functionality the two most important and related components are Ease of Use (EAS) and Guidance and Error Prevention (GEP) by the weight scores of 0,391 and 0,311, while the highest scored components of aesthetics factor are Simplicity of Language (LANG) and Appearance of Web Site (APR) by the weight scores of 0,345 and 0,335.

The reliability and validity of the structural model is checked using communality scores. The average variance extracted (AVE) scores for aesthetic and functionality are 0,64 and 0,57 accordingly. All test scores for individual item reliability, convergent validity and discriminate validity indicate that the proposed UX model is reliable and valid.

Also the relation between two factors can be observed as effect of 0,724 from aesthetics to functionality which means aesthetics and functionality are strongly related to each other.

As conclusion, aesthetics and functionality cannot be apart from each other if designers aim to create a useful design to provide the best experience to their users.

CHAPTER 2

UX TECHNIQUES

User Experience observes the interaction between user and interface. Once an idea is created, it needs to be tested before application, during application and after application constantly from the users' eyes.

A common mistake made by most of the companies is to ignore user tests while producing a new product. Mostly a product meets the users at the very end producing step or even after putting it on the market. They sometimes jump directly to the marketing and sales without even any test or content control. An idea may seem brilliant but it can be illusory, the user thoughts can never be truly estimated. Not letting users into the process usually leads failure, but the thing is very simple actually. From the first step, users' thoughts, advices and feedbacks should be observed till the end.

Design is made for users. A problem creates a product idea and a product is designed to solve this problem and to make users satisfied. It can be considered as a gift to users. In order to make users happy with this gift, designers need to know them very well, with every detail such as what they like or what they need. Knowing a person is a natural process however for understanding users we need some specific methods. These methods are called with several names such as user experience tests, usability tests or user testing. They all describe the process of learning what users do. To get into the users' mind, user experience tests are the best and the most valid way that all designers should follow.

User Experience Tests are used for understanding and measuring users' expectations and behaviors while using a specific product in online or offline

environments. In traditional way, these testing refer the process of observing and listening to real users while carrying out some specific tasks given in order to see what works well or which features are unnecessary, what are the limitations and benefits. Although it sounds very easy, actually it is not that simple as much as it seems. Because most data collected during tests is qualitative, and it is found mostly ambiguous and difficult to analyze by many researchers (Emanuel, 2013). Human behavior is not easy and stable to measure and it has the psychological side which makes the test more difficult to analyze. It is usually counted as one of the limitations of UX testing. But against all difficulties, it is extremely effective to improve the performance of a web site. After optimization by conducting user testing, researches prove that a significant increase is observed in sales, loyalty level and number of users.

Yes these tests are beneficial but how they can provide these benefits? Why are they that effective? Designers design a website by considering only their thoughts; they see the things only from their side. We cannot know how a user really feels when they enter to our page. We just expect them to stay in the site, register the site and buy the things we sell or use our features. But in fact, we really need to put ourselves in their place to see how they think. UX tests let us to see the product from users' perspective. It gives us the reasons. Reasons of why the users leave the site, why they decide to register, why they buy. It shows what features work and what do not. What creates difficulty and cause bottleneck on the flow? In which moment they decide to leave the site? How they feel in the site? These information are priceless if it is purposed to improve the experience provided for users. Sales on a site can be increased as much as 225% by providing sufficient product information to users when they need it (User Interface Engineering, 2001).

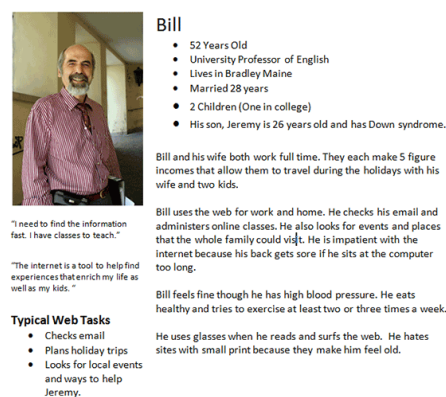
An interface is a bridge between users and companies. It connects them to each other. A selling process through an interface is totally different than the one which is done face to face. It is more complicated to understand and solve the problems, and it is hard to control users from a distance. While selling a product directly, it is easier to control and direct the process as we want, but while selling a product through an interface, users are all alone there and it is almost impossible to control the things and make them do what we want. Because of that, it is necessary and important to learn the problems that users face while using the interface. Behind the success of a company, the

fact of knowing its users lays. Also the cost of determining and fixing problems in the beginning level is much smaller than last level. According to Bias and Mayhew's 1:10:100 theory; while the cost of user experience researches which is done in the beginning is 1; the cost of changes in production level is 10 and corrections after launching is 100 (Bias & Mayhew, 1994).

It is already mentioned about User Tests. By using these tests, we try to learn how users use our product, what is their motivation, etc. Mostly the results of these tests are qualitative; there are also methods for quantitative data. For example; average time to finish a task, percentage of failure or success, ranking, etc. However many researchers find quantitative data easier to analyze; they should not use it as the main method of user experience research (Emanuel, 2013). Quantitative data is more comfortable and can statistically prove the tested subject but cannot explain a human's behaviors completely and is not inspiring. It can be thought as one of many other supportive techniques; qualitative data need to be backed up with quantitative data.

There are many kind of kind of evaluation techniques and tests to provide a better experience for users such as eye tracking, click testing, tree testing, etc.. In this thesis project, only four of them are going to be used which are Survey method, Card Sorting, A/B Test and Heuristic Evaluation.

2.1 PERSONA



Bill

- 52 Years Old
- University Professor of English
- Lives in Bradley Maine
- Married 28 years
- 2 Children (One in college)
- His son, Jeremy is 26 years old and has Down syndrome.

Bill and his wife both work full time. They each make 5 figure incomes that allow them to travel during the holidays with his wife and two kids.

Bill uses the web for work and home. He checks his email and administers online classes. He also looks for events and places that the whole family could visit. He is impatient with the internet because his back gets sore if he sits at the computer too long.

Bill feels fine though he has high blood pressure. He eats healthy and tries to exercise at least two or three times a week.

He uses glasses when he reads and surfs the web. He hates sites with small print because they make him feel old.

Typical Web Tasks

- Checks email
- Plans holiday trips
- Looks for local events and ways to help Jeremy.

"I need to find the information fast. I have classes to teach."

"The internet is a tool to help find experiences that enrich my life as well as my kids."

Figure 2.1 Persona Example.

A persona is a fictional person card used to describe the target user of a certain product. They are not real people, but prototypes that are describes as if they were real people. Personas include details about the users' information suc as age, gender, education, personal interests, needs, goals, behaviors, etc. It is usually the first step of most usability studies. They help designers to understand what users want and need.

2.2 SURVEY



Figure 2.2 Survey.

Survey is the most common and simple way for gathering information from a large variety of people. They are set of questions which can be about any topic and they are used to evaluate the people's opinions, preferences or characteristics. Survey is a useful method of testing a system from different parameters and it is an accepted and most frequently used technique by UX comities, because users and their opinions are the main issue of UX. Surveys help to answer the questions of who, what, where, why about users and the subject also.

2.3 CARD SORTING

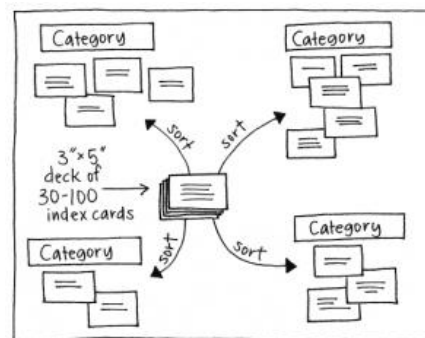


Figure 2.3 Card Sorting.

Card sorting is an early conceptual prototyping method which used to build the information architecture and to arrange the menu structure and navigation map of an interface. It is used to understand how users comprehend and expect to see the structure of a given interface (Ma, 2010). Card Sorting is a technique that provides insights into user's mental model of categorizing and clustering information (Nielsen, Card Sorting: Pushing Users Beyond Terminology Matches, 2009).

Application of the method starts with creating cards which includes all information of the system and it is asked users to group the cards into categories as they want to see the site navigation. There are two types of card sorting; open card sorting and closed card sorting. In open card sorting, users are free to group all cards into categories that they determined. In closed card sorting, the examiners (designers) first define the main categories and users group the cards into the given categories. The tests can be conducted by using software as well as it can be done by preparing paper prototypes.

Card sorting is a very efficient and easy way to estimate a better interface navigation which gives good results.

2.4 TREE TESTING

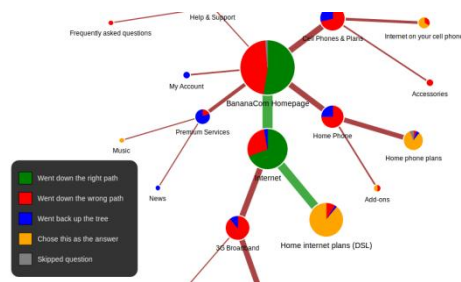


Figure 2.4 Tree Testing.

Tree testing is another UX method which is applied to measure the findability and discoverability of menu items in a web site. It measures the accuracy of labeling, link grouping and hierarchy of navigation structure. It asks from users to look for items in established categories instead of placing them into categories likewise in card sorting. Because of that it is also known as ‘Reverse Card Sorting’. In application, a menu structure given to users with only the top categories, and by questions such as ‘Which item do you click if you want to buy a television?’ the accuracy of menu structure is tested.

2.5 A/B TESTING

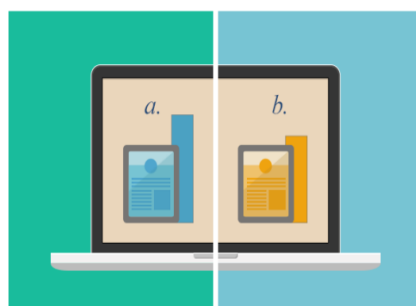


Figure 2.5 A/B Testing.

A/B Test provides a performance measure for the different versions of an interface. It is a simple way to test the effects of any new design or change on an

interface by comparing with the current design. While A refers the current design, B is the experimental new design and after testing versions A and B with different users, it is easily determined which performs the best.

A/B Testing has four big benefits such as; measuring actual behavior of users, ability to measure even small changes, resolving trade-offs and being cheap (Nielsen, Putting A/B Testing in Its Place, 2005). It is one of the best ways of removing conflicts and predictions by giving exact results.

2.6 SUS – THE SYSTEM USABILITY SCALE

SUS-System Usability Scale is a simple and reliable tool for measuring the usability. It is developed by Jon Brook in 1986 in response to the usability measurement requirements. SUS is a ten-item (more or less) questionnaire tool used for a subjective measurement of usability for any interface. The questionnaire items cover a variety of aspects of system usability such as; training, complexity, consistency, etc. The overall score of the SUS questionnaire gives the usability scale of the system (Brooke, 1996).

2.7 EYE TRACKING

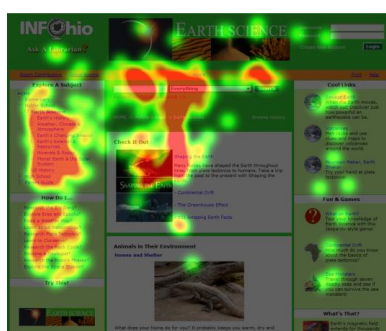


Figure 2.6 Eye Tracking.

Eye contact is a natural source of information which is used for both observing a visual attention of people communication and also communication with a technological system. Eye (gaze) tracking can be used to monitor user's eye movements and intents

on the page (Nilsson, Gustafsson, & Carleberg, 2009). This tool provides information about what, where, how long and how many times a user looks on screen, also where user's attention is focused on, his/her intention and mental situation. In order to implement this method, software and hardware (e.g. camera) is needed and the outputs of the test are generally as follows;

- Heat maps: show the intense areas that user look the most.
- User records: show the video and audio records of users while using the system.
- Route maps: show the directions of eye movements on screen.
- Mouse movements: shows the maps for mouse movements.
- Time statistics: show how long user look on a point on screen.

2.8 GUERRILLA TESTING



Figure 2.7 Guerilla Testing.

Guerilla testing is a strong, useful usability technique that gives a lot of useful clues about users to designers. Different than the other usability techniques, guerilla testing is more interesting and fun to apply. The point is that test is performed out of laboratory environment. Testers meet the users in their environment, it can be a coffee shop or home in which user can be relax and behave normal. It is asked them to think aloud as they perform the given tasks. During tasks, testers observe the users silently and take notes to evaluate the product usability.

CHAPTER 3

USER EXPERIENCE IMPLEMENTATION ON DIGITURK TV INTERFACE

This study is applied to Video on Demand interface of Digiturk, a television broadcasting platform of Turkey which is founded in 1999. It conveys its television, radio, music and interactive channels with the best display and audio quality to its subscribers, not only in Turkey but also in many other countries. Digiturk which has been one of the biggest technology investments of Turkey along 14 years, goes ahead as the leader brand of Turkey today in digital platform operations.

Digiturk launched “Dilediğin Zaman Dilediğin Yerde” (Whenever and wherever you wish) in 2013 which is a technology lets users to reach any kind of TV programs whenever and wherever they want to watch. They provide a free TV experience to the audiences with its applications, specialized channels and a wide range of contents from sports to culture, entertainment to news and documentaries.

Digiturk aims to continue being one of the best brands of Turkey by developing and increasing its subscribers’ satisfaction with new contents and services. In this sense, they give extra importance to user experience and usability works on their interfaces.

For this thesis project, we decided to work with Digiturk. They asked us to improve and change their movie categories presented as ‘Video On Demand’ according to Turkish users’ preferences.

3.1 CASE DEFINITION

In the case of Digiturk movie category list; there are 16 categories are listed one under the other in the Video on Demand interface. They did not use any pull-down (hidden) category item which means whenever the user clicks on a category, the movies under that category appears on the right of the interface. These categories and category list design were created by Digiturk designers without getting any feedback from users.

The problem they observed is that because the category list is long, it takes time of users to scan all categories and also there may be some categories actually useless and some categories missing for the users. The first thing we want to learn is what users actually think about the current categories, which categories they do not use and which additional categories they want. After learning users' preferences about category demand, second thing that we want to fix is the design of the category list. By testing it on users we aim to see if we can create a leaner and shorter list and is it going to be more useful than the current design.

3.2 METHODOLOGY

The tests chosen to use in this project are selected according to the problem which we are responsible to solve. The main purpose is “creating a new movie category list based on user insights” which leads us to select three main usability methods among many of them.

The tests planned to accomplish for this project are as follows;

- Survey
- Card Sorting
- A/B Test

The selected methods are used subsidiary to each other which means the results of each method are used to support one another.

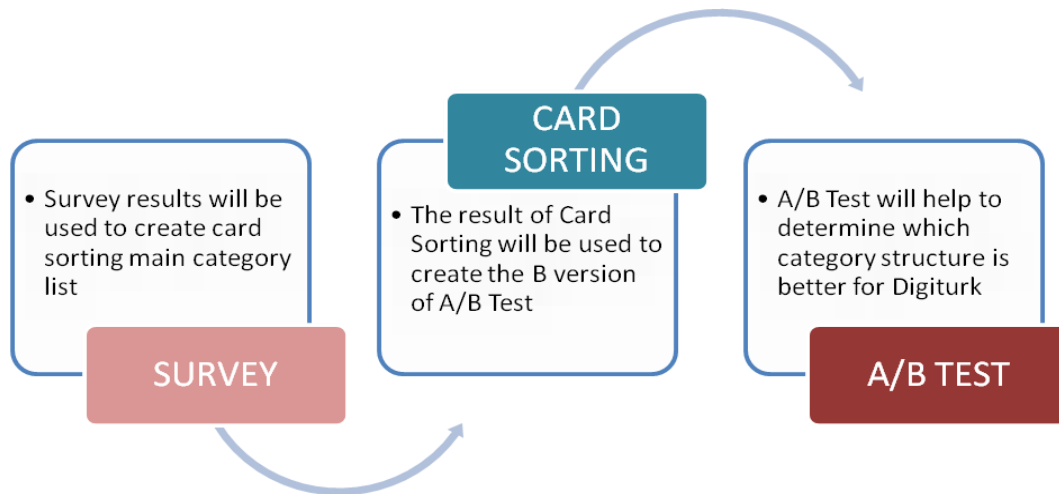


Figure 3.1 Method Flow.

As it is seen in the flow schema above, the survey results will be used in card sorting, and card sorting results will lead the way to start A/B test.

In survey, the aim will be to understand how Turkish users categorize movies and which ones preferred most. Besides with a second survey, it is planned to see how people place certain (well-known) movies under categories.

Card sorting technique will be used to create an alternative navigation for movie category list by using real users. To be able to apply this test, first survey's results will be used to determine main and sub categories.

The last method is A/B Testing. This method is basically a comparison method. The current category list and the alternative list which will be found by using card sorting test are going to be compared by means of time, click numbers and user satisfaction survey scales. The results of A/B test will give us some clues about new structure and will also help to evaluate both versions.

The overall tests are going to be modified based on Digiturk Project and all the results coming from each test will be useful to understand users' mind and wishes in order to create a better user experience for Digiturk users in the future.

3.3 APPLICATION AND FINDINGS

3.3.1 Survey 1

The first step of user experience tests for this project is selected as ‘User Survey’. Because of the reason that we have to fully understand who our users are, what they think, what they watch, how they categorize the movies, what is important for them. To be able to create a better design, first of all we need to know our users, so the best way to know users is survey method. For this project two surveys are conducted.

In the first survey generally the purpose was to see which searching criteria are mostly used, which categories are most preferred and which categories can be combined by Turkish people. Survey has applied 59 people. Results compared by demographic data and crosstabs.

It is aimed to get from this survey as an output;

- Identification of population characteristic (Age, Education, subscription)
- Any pre categorization is required or not (Turkish foreign, year, actor...)
- Which are the most preferred categories?
- Which are less preferred categories?
- A movie can be involved more than one category
- Which categories similar, which can be combined

Demographic Data for this survey:

Survey has been conducted in Istanbul with the sample size of 59.

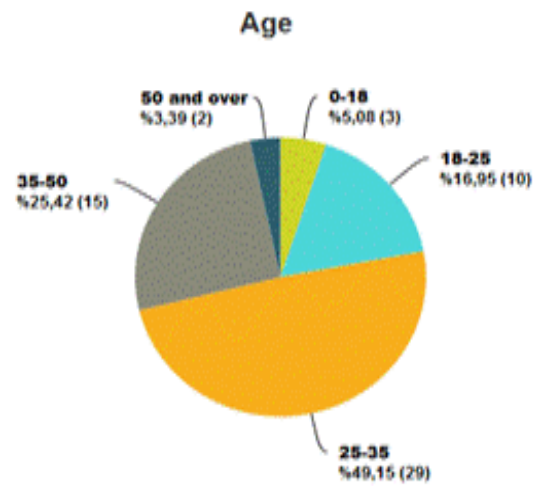


Figure 3.2 Ages of Participants.

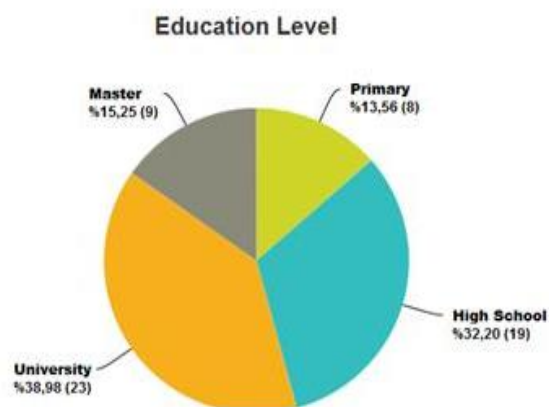


Figure 3.3 Education Levels of Participants.

Table 3.1 Education-Age-Subscriber Cross Table.

		Education				Total
		Primary	High Scholl	University	Master	
Digiturksubscriber	Age 18-25		0	1	0	1
	25-35		3	4	2	9
	35-50		1	2	1	4
	50 and over		2	0	0	2
	Total		6	7	3	16
Not a subscriber	Age 0-18	2	1	0	0	3
	18-25	1	5	3	0	9
	25-35	0	4	10	6	20
	35-50	5	3	3	0	11
	Total	8	13	16	6	43
Total	Age 0-18	2	1	0	0	3
	18-25	1	5	4	0	10
	25-35	0	7	14	8	29
	35-50	5	4	5	1	15
	50 and over	0	2	0	0	2
Total	8	19	23	9	59	

There are 16 subscribers and 43 nonsubscribers of Digiturk. Also Education level and Age is available according to being subscriber or not.

Preliminary Categories

It is also checked whether preliminary categories should be in the structure or not. It is asked in survey which filtration facilitates the process of searching movies. For that mostly used movie web pages and online movie platforms are observed and four mostly used filtration categories are determined to put in survey and asked people to choose one option which will be handy for them.

Four preliminary categorization options as follows:

- Turkish- Foreign
- Awarded-Other
- Subtitle-Dubbing
- Year

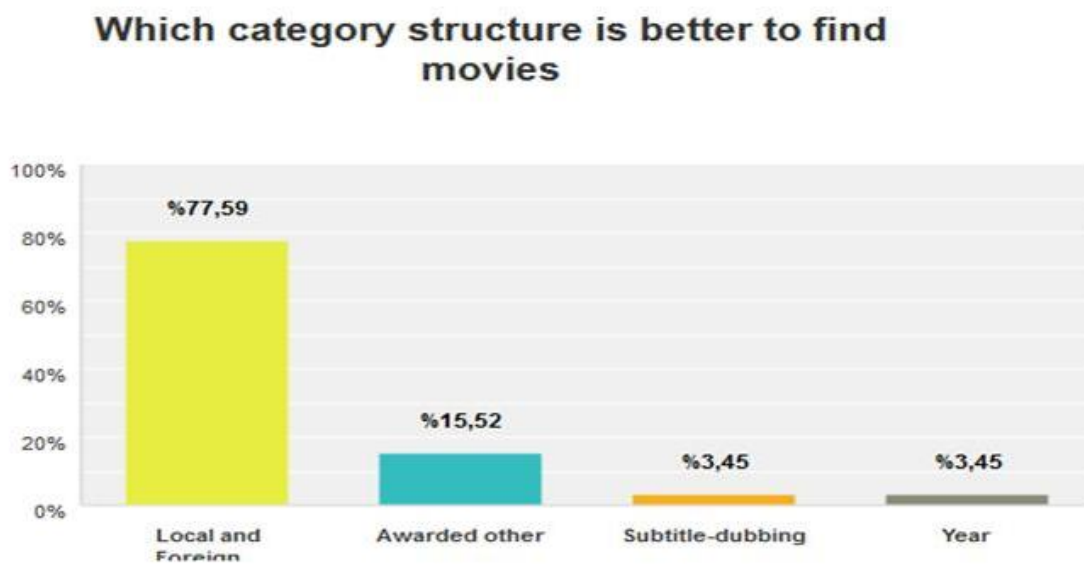


Figure 3.4 Preliminary category preferences for detailed search.

Turkish - Foreign categorization has mostly been selected by people, which means it may make the process easier so that it can be considered as a category.

Education level & Preferences:

Table 3.2 Table of Education level and preferences while searching for movies.

		Which is easier to find movie				Total
		Turkish- Foreign	Awarded- Other	Subtitle- Dubbing	Year	
Education	Primary	87.5%	12.5%	0.0%	0.0%	8
	High Scholl	94.7%	5.3%	0.0%	0.0%	19
	University	69.6%	17.4%	8.7%	4.3%	23
	Master	55.6%	33.3%	0.0%	11.1%	9
Total		78.0%	15.3%	3.4%	3.4%	59

Chi square test:

Because both data categorical chi square is applied to test is there any difference between education level and preferences.

Table 3.3 Chi-Square Test Table for Education level and preferences.

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.538 ^a	9	.309
Likelihood Ratio	11.445	9	.246
Linear-by-Linear Association	5.351	1	.021
N of Valid Cases	59		

a. 12 cells (75.0%) have expected count less than 5. The minimum expected count is .27.

Pearson Chi-Square Sig 2 sided value is 0.309 >0.05 so there is no statistical difference in preferences between education levels.

Digiturk Subscribe& Preferences

Table 3.4 Preferences of participants according to subscription.

		Which is easier to find movie				Total
		Turkish-Foreign	Awarded-Other	Subtitle-Dubbing	Year	
Digiturk	Subscribe	93.8%	6.3%	0.0%	0.0%	16
	Not a subscribe	72.1%	18.6%	4.7%	4.7%	43

Table 3.5 Chi-Square Test Table for subscription.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.357 ^a	3	.340
Likelihood Ratio	4.598	3	.204
Linear-by-Linear Association	2.970	1	.085
N of Valid Cases	59		

Pearson Chi-Square Sig 2 sided value is 0.340 >0.05 so there is no statistical difference in preferences for subscribers and not subscribers.

Category ranking

Another question was about sub categories. Four sub category types given for a detailed search and asked users to rank them from 1 to 5 (where 1 is the least and 5 is the most important).

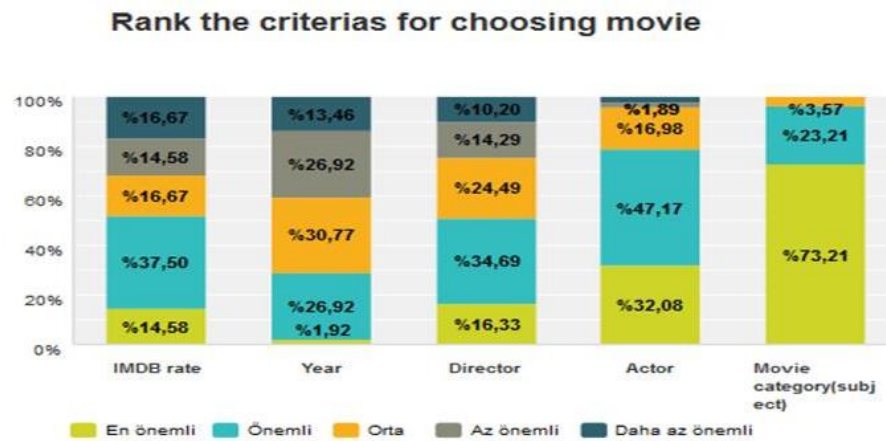


Figure 3.5 Ranking the criteria for choosing movies.

Its observed Movie Theme (subject) is the most important for people while choosing a movie and Actor, Director, IMDB rate and year comes respectively.

Next question was about movie categories (types) which are currently used by Digiturk to search movie on Video on Demand. It is asked people to choose the categories that they watch the most and the least. The aim was to identify which categories are used mostly by Turkish audiences.

Another point was the idea of matching two or more categories together in order to create a leaner movie category list. First of all, people's opinion about that is asked whether a movie can be in more than one category or not. %96,55 of the participants voted as 'yes', so the answer showed that it is not bothering for people to see a movie in more than one category which means similar categories can be combined.

Later, it is asked them to match some given movie types to each other to see which categories people tend to match together. It is wanted to see two or more categories can be either connected or not according to users and which categories they want to see together.

3.3.2 Survey 2

For the second survey, two questions are prepared. In the first question, movie categories were not given, participants only wrote the categories they know. For the second question, 27 well known-popular movies are given to users and asked them to assign the movies under the categories that already written in the first part.

Expected outputs:

- Which categories are mostly known
- How people assign movies to categories
- Which categories are similar according to users

Demographic Data

Test applied to 30 people where 50% is in 25-35 age intervals and 40% of participant was on high school education level and % 46 was one university level.

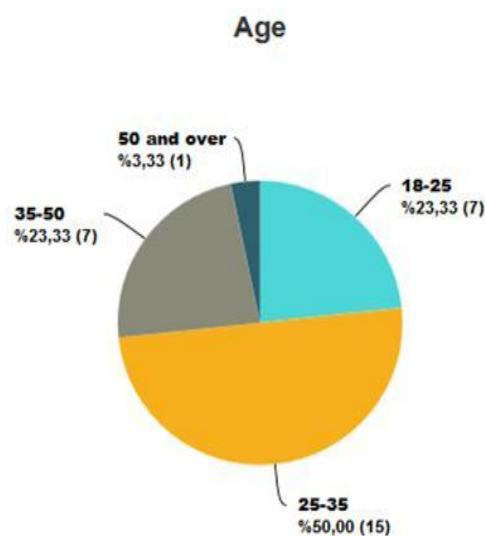


Figure 3.6 Demographic Data for tree testing.

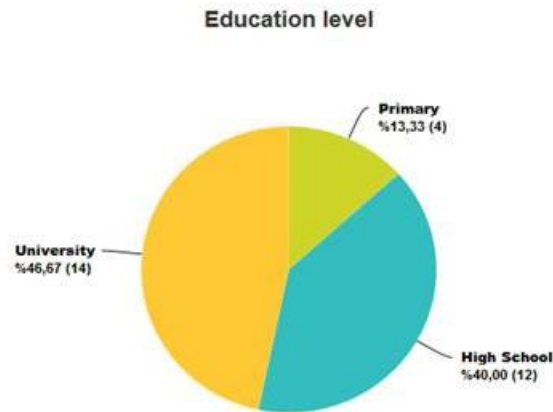


Figure 3.7 Education levels of participants in Tree Testing.

Movie Categories Rates

People are asked to write which categories they know then categories are listed as percentage of writing from highest known to the lowest.

Table 3.6 Movie categories that is known by participants with percentages.

Category	Rate	Category2	Rate3
Comedy	%93,33(28)	Western	%30,00(9)
Dram	%90,00(27)	Dance	%3,33(1)
Action	%73,33(22)	Mystery	%3,33(1)
Horror	%73,33(22)	Short Film	%3,33(1)
War	%63,33(19)	Music	%26,67(8)
Animation	%60,00(18)	Biography	%23,33(7)
Science Fiction	%60,00(18)	Documentary	%20,00(6)
Fantastic	%53,33(16)	Crime	%20,00(6)
Adventure	%50,00(15)	Psychological	%13,33(4)
Police	%40,00(12)	Turkish	%13,33(4)
Romantic	%36,67(11)	Family	%10,00(3)
Love	%33,33(10)	Romantic Comedy	%10,00(3)
History	%33,33(10)	Sport	%10,00(3)
Thriller	%30,00(9)	Foreign	%10,00(3)

Movie Assignment to categories

Table 3.7 Survey Movies.

1.Babam ve oğlum	10.Piyanist	19.Buz Devri
2.Kadın akli erkek akli	11.Forrest Gump	20.Testere
3.Dövüş Kulübü	12.The Prestige	21.Harry Potter Serisi
4.Issız adam	13.Paranormal activity	22.Selvi boylum al yazmalım
5.İyi, Kötü ve Çirkin (TheGood, theBadandtheUgly)	14.Akıl oyunları (A Beatifulmind)	23.Esaretin Bedeli (TheShawshankRedemption)
6.Yüzüklerin efendisi	15.Celal ile Ceren	24.Hızlı ve öfkeli
7.Ben efsaneyim (I am legend)	16.Sokak dansı (step up)	25.Benjamin Button'ın Tuhaf Hikayesi
8.Eşkiya	17.Korkunç bir film (scarymovie)	26.Charlie'nin Çikolata Fabrikası
9.Titanic	18.Baba (TheGodfather)	27.Gora

27 movies are given to participants and they assigned them to categories.

Table 3.8 Survey 2 results table showing how people assign movies to categories.

	Family	Science fiction	Biography	Dance	Dram	Turkish	
1.Babam ve oğlum-	0.07(2)	0.03(1)	0.03(1)	0.03(1)	0.74(20)	0.07(2)	
	Love	Fantastic	Comedy	Romantic	Romantic comedy		
2.Kadın akli erkek akli-	0.2(2)	0.1(1)	0.4(4)	0.1(1)	0.2(2)		
	Action	Biography	Dram	Thriller	War	Sport	Foreign
3.Dövüş Kulübü-	0.45(9)	0.05(1)	0.15(3)	0.1(2)	0.1(2)	0.1(2)	0.05(1)
	Love	Dance	Dram	Romantic	Turkish		
4.Issız adam-	0.25(6)	0.04(1)	0.20(5)	0.37(9)	0.12(3)		
	Action	Adventure	History	Western			
5.İyi, Kötü ve Çirkin-	0.1(1)	0.1(1)	0.1(1)	0.7(7)			
	Action	Science fiction	Dram	Fantastic	Adventure	War	History
6.Yüzüklerin efendisi-	0.03(1)	0.20(6)	0.03(1)	0.48(14)	0.13(4)	0.03(1)	0.03(1)
	Action	Science fiction	Fantastic	Thriller	Horror	Adventure	Foreign
7.Ben efsaneyim-	0.16(3)	0.44(8)	0.05(1)	0.05(1)	0.05(1)	0.16(3)	0.05(1)
	Action	Science fiction	Biography	Dance	Dram	Thriller	Adventure
8.Eşkiya-	0.03(1)	0.03(1)	0.03(1)	0.03(1)	0.48(16)	0.06(2)	0.03(1)

(continued)

	Love	Biography	Dram	Romantic	History	Foreign	
9.Titanic-	0.29(7)	0.04(1)	0.20(5)	0.33(8)	0.08(2)	0.04(1)	
	Biography	Dance	Dram	War	History	Foreign	
10.Piyanist-	0.11(2)	0.05(1)	0.23(4)	0.47(8)	0.05(1)	0.05(1)	
	Biography	Dram	Thriller	Horror	Psychology	Romantic	Sport
11.Forrest Gump-	0.2(2)	0.3(3)	0.1(1)	0.1(1)	0.1(1)	0.1(1)	0.1(1)
	Science fiction	Dram	Fantastic	Thriller	Foreign		
12.The Prestige-	0.25(2)	0.12(1)	0.37(3)	0.12(1)	0.12(1)		
	Science fiction	Biography	Thriller	Horror	Psychology		
13.Paranormal activity-	0.16(2)	0.08(1)	0.16(2)	0.5(6)	0.08(1)		
	Science fiction	Biography	Dram	Psychology	War		
14.Akl oyunlari-	0.3(3)	0.2(2)	0.3(3)	0.1(1)	0.1(1)		
	Action	Dram	Short film	Comedy	Romantic comedy	Turkish	
15.Celal ile Ceren-	0.04(1)	0.04(1)	0.04(1)	0.78(18)	0.04(1)	0.04(1)	
	Action	Love	Dance	Adventure	Music		
16.Sokak dansi-	0.14(1)	0.28(2)	0.14(1)	0.14(1)	0.28(2)		
	Family	Comedy	Horror				
17.korkunç bir film-	0.07(1)	0.78(11)	0.14(2)				
	Dance	Dram	Thriller	Whodunit	Crime		
18.Baba (The Godfather)-	0.09(1)	0.27(3)	0.09(1)	0.27(3)	0.27(3)		
	Animation	Fantastic	Comedy	Adventure			
19.Buz Devri-	0.83(15)	0.05(1)	0.05(1)	0.05(1)			
	Dram	Thriller	Horror				
20.Testere-	0.05(1)	0.16(3)	0.77(14)				
	Science fiction	Fantastic	Adventure				
21.Harry Potter Serisi-	0.25(4)	0.56(9)	0.18(3)				
	Love	Biography	Dance	Dram	Comedy	Romantic	Turkish
22.Selvi boylum al yazmam-	0.28(7)	0.04(1)	0.04(1)	0.32(8)	0.04(1)	0.24(6)	0.04(1)
	Dance	Dram	Thriller	Crime	Turkish		
23.Esaretin Bedeli-	0.14(1)	0.28(2)	0.14(1)	0.28(2)	0.14(1)		
	Action	Fantastic	Thriller	Adventure	Foreign		
24.Hızlı ve öfkeli-	0.64(16)	0.04(1)	0.08(2)	0.2(5)	0.04(1)		

(continued)

	Science fiction	Biography	Dram	Fantastic	Psychology		
25.Benjamin Button'ın Tuhaf Hikâyesi	0.2(2)	0.2(2)	0.4(4)	0.1(1)	0.1(1)		
	Family	Animation	Fantastic	Comedy	Adventure		
26.Charlie'nin Çikolata Fabrikası	0.14(1)	0.14(1)	0.28(2)	0.28(2)	0.14(1)		
	Family	Science fiction	Fantastic	Comedy	Horror	Adventure	
27.Gora	0.04(1)	0.09(2)	0.04(1)	0.71(15)	0.04(1)	0.04(1)	

Outputs:

- Different participants put one movie at least three category
- Different participants put one movie at most seven category
- Comedy, Dram, Action, Horror categories are the most known ones.
- 83% of persons that attended the survey assigned the movie 'Buzdevri' to animation category.
- People did not assign any movie to mystery and documentary categories.
- 80 times (maximum) movies are assigned to dram categories.
- If a movie assigned to love category it's also assigned to romantic category (romantic category includes love category.)
- If a movie assigned to whodunit category it's also assigned to action category (action category includes whodunit category.)

Category Summary Table for Survey Results

Table 3.9 Summary table from Survey Results.

	We gave categories users sign if they know it		User wrote what they know	
	Most frequent used categories?(Conducted with 60 persons)	Less frequent used categories?(Conducted with 60 persons)	Which categories do you know ?(Conducted with 30 students)	Which categories do you know (Conducted with 30 persons)
Family	%28,81	%6,78	%3,45	%10,00
Action	%57,63	%5,08	%96,55	%73,33
Animation	%15,25	%18,64	%65,52	%60,00
Documentary	%32,20	%11,86	%17,24	%20,00
Science Fiction	%38,98	%16,95	%86,21	%60,00
Biography	%10,17	%25,42	%31,03	%23,33
Short Films	%1,69	%37,29	0	%3,33
Cartoons	%15,25	%35,59	%3,45	0
Dance	%3,39	%50,85	%17,24	%3,33
Dram	%20,34	%25,42	%93,10	%90,00
Fantastic	%18,64	%23,73	%55,17	%53,33
Thriller	%27,12	%25,42	%20,69	%30,00
Comedy	%54,24	%3,39	%96,55	%93,33
Horror	%22,03	%33,90	%100,00	%73,33
Adventure	%49,15	%3,39	%58,62	%50,00
Musical	%10,17	%40,68	%31,03	%26,67
Whodunit	%33,90	%10,17	%24,14	%40,00
Political	%13,56	%30,51	0	0
Psychological	%23,73	%25,42	%13,79	%13,33
Romantic	%25,42	%25,42	%72,41	%36,67
Romantic comedy	%37,29	%13,56	%37,93	%10,00
War	%30,51	%16,95	%17,24	%63,33
Sport	%15,25	%20,34	%10,34	%10,00
Crime	%18,64	%20,34	%17,24	%20,00
History	%35,59	%16,95	%17,24	%33,33
Love	0	0	0	%33,33
Mystery	0	0	0	%3,33
Turkish	0	0	0	%13,33
Foreign	0	0	0	%10,00
Western	0	0	0	%30,00
Kids	0	0	%3,45	0
Classical	0	0	%3,45	0
Art	0	0	%3,45	0
Yeşilçam	0	0	%10,34	0

From surveys, the summary table above is created. After conducting two surveys on real users; the useless, missing and important categories of the current list are obtained according to users' insights.

- Description and Festival categories were selected as the least preferred ones.

- Action, animation, science fiction, dram, horror, Turkish, Romantic, comedy categories were rated as the most important categories.

- Adventure, whodunit, western, fantastic, psychological, romantic, sport, musical and documentary categories were missing

- Some categories which refer the same movies were decided to merge under one name such as musical and dance as only musical or love and romantic merged as only romantic.

3.3.3 Card Sorting

Second step of the project is applying Card Sorting method to create another category navigation structure by using people. Here a closed card sorting test is used; therefore the main (upper) categories are determined before the test. The survey results are used to decide which categories should be the main categories and which categories should be the sub categories. Also it is determined that which categories should not be involved in the structure by reading the survey results.

After observing survey results and also by using the reviews of Digiturk usability experts, the lists below are created.

Main Categories:

- Action
- Animation
- Science Fiction
- Dram
- Comedy
- Romantic
- Horror
- Others
- Turkish

Sub Categories:

- Fantastic
- Thriller
- Family

- Whodunit
- Crime
- Psychological
- History
- Documentary
- Musical
- Sport
- Biography
- Western
- Yeşilçam
- Short Films
- War
- Romantic comedy
- Adventure

Main categories are given as groups and sub categories given as cards to users. Users are asked to categorize cards under the groups also in main category list, an additional category ‘Others’ is added to let people assign the cards that they cannot relate any other group. Users were not allowed to change groups to cards, however they can change sub categories (cards) to main category (groups) if there is a card that they want to see as a main category.

Card Sorting test is applied to 17 people in Istanbul. Participants used post-it cards to arrange their way of navigation systems. Each category was written on a different post-it card and sub categories were given mixed.

Outputs

A matrix table is obtained from card sorting test. The values in the table show the percentage of number of participants who categorized the cards to the groups.

Table 3.10 Card sorting results table with main and sub categories.

	Action	Animation	Science Fiction	Dram	Comedy	Romantic	Horror	Others	Turkish
Fantastic	5.9%	0.0%	82.4%	0.0%	0.0%	0.0%	5.9%	0.0%	0.0%
Thriller	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	94.1%	5.9%	0.0%
Family	0.0%	11.8%	0.0%	41.2%	5.9%	0.0%	0.0%	5.9%	29.4%
Whodunit	82.4%	0.0%	0.0%	0.0%	5.9%	0.0%	5.9%	0.0%	0.0%
Crime	58.8%	0.0%	0.0%	11.8%	0.0%	0.0%	5.9%	17.6%	0.0%
psychological	0.0%	0.0%	17.6%	47.1%	0.0%	0.0%	23.5%	11.8%	0.0%

(continued)

History	0.0%	0.0%	5.9%	23.5%	0.0%	0.0%	0.0%	52.9%	17.6%
Documentary	0.0%	0.0%	5.9%	0.0%	0.0%	0.0%	0.0%	82.4%	5.9%
Musical	0.0%	0.0%	0.0%	0.0%	17.6%	23.5%	0.0%	52.9%	0.0%
Sport	5.9%	11.8%	0.0%	0.0%	0.0%	0.0%	0.0%	82.4%	0.0%
Biography	0.0%	0.0%	5.9%	5.9%	0.0%	0.0%	5.9%	76.5%	5.9%
Western	47.1%	5.9%	0.0%	0.0%	0.0%	0.0%	5.9%	41.2%	0.0%
Yeşilçam	0.0%	0.0%	0.0%	5.9%	5.9%	0.0%	0.0%	5.9%	82.4%
Short Films	0.0%	5.9%	0.0%	0.0%	11.8%	0.0%	0.0%	76.5%	0.0%
War	64.7%	0.0%	0.0%	17.6%	0.0%	0.0%	0.0%	17.6%	0.0%
Romantic comedy	0.0%	0.0%	0.0%	0.0%	23.5%	64.7%	0.0%	11.8%	0.0%
Adventure	47.1%	5.9%	0.0%	0.0%	5.9%	5.9%	0.0%	29.4%	0.0%

Results:

The highlighted numbers show the highest ratings of assigning cards to the groups. For each sub category (card) highest percentages are identified in order to determine which sub category should take part under which main category.

Also it is checked whether any sub category should be assigned as main category or not, however there was no significant value to change a sub category to main category.

3.3.4 A/B Test

The last step was A/B Test. For the A/B comparison, a B structure (alternative structure) is needed to compare with A structure (current structure). For that, the results of card sorting led to constitute the alternative structure. The result of the A/B tests is going to show the comparison between generated new navigation structure which is result of survey and card sorting tests and current structure that is already being used by Digiturk.

Current structure:

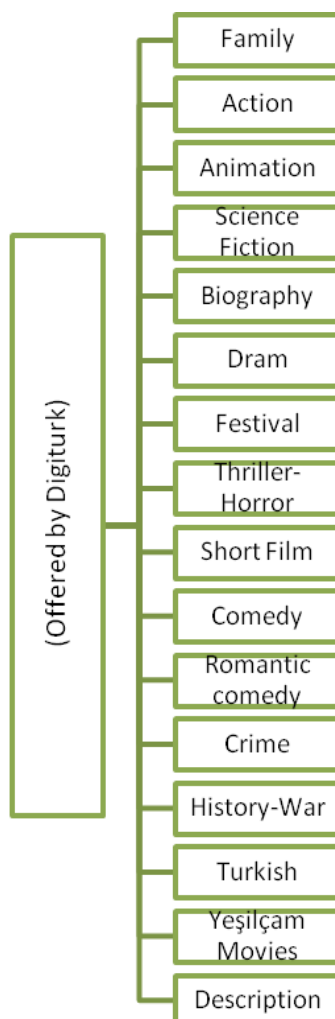


Figure 3.8 Digiturk's current movie structure in Video on Demand.

Digiturk's current structure has no sub categorization and 16 categories are seen at the same time in the structure. However Digiturk also used some matching such as History-War and Thriller-Horror.

Generated Structure:

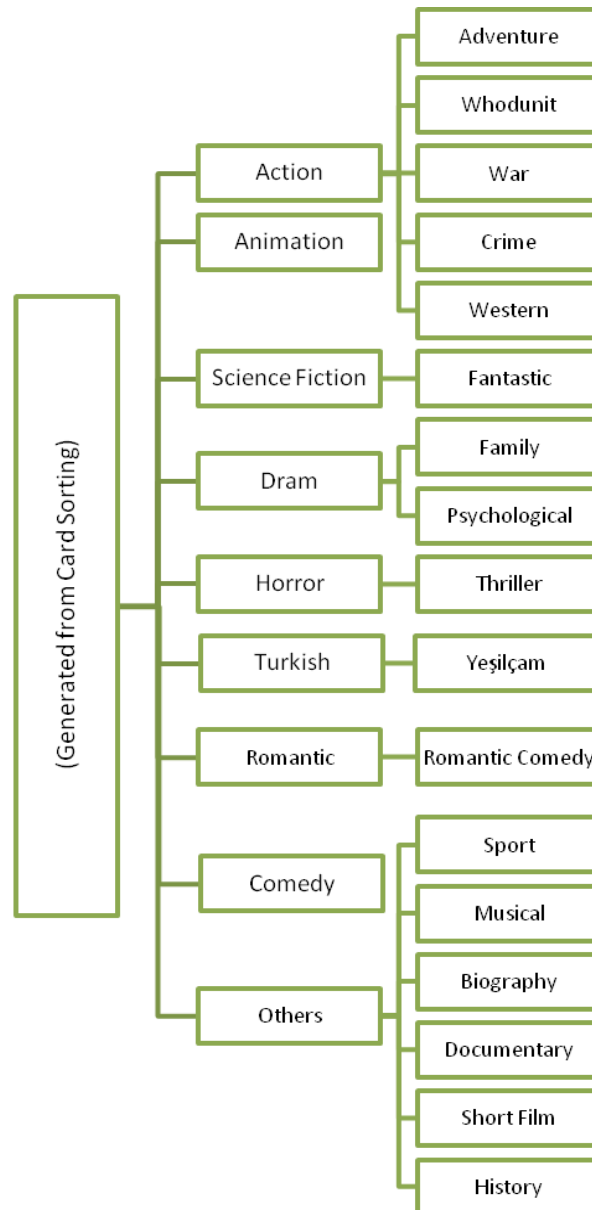


Figure 3.9 New structure proposal generated from Card Sorting.

The generated structure which is result of survey and card sorting tests, has 9 main categories in the first place and users will be able to see the sub categories by clicking on the main categories. The aim here is creating a leaner and easier navigation structure.

Comparison Method

For the comparison, A/B test lets users to use both versions by means of given tasks. Current structure has shown as “A” and generated structure has shown as “B”.

First a web page model is created for each version by using Wix web development platform. Everything such as colors, pictures, font, size etc. are beholden to be same for both version. 12 movies are placed under the categories (Movies are selected same with the movies in survey 2; most popular ones are selected). Movies are located under categories according to survey 2 results (highest percentages are considered).

After preparing the test environment, it is asked from users to find 5 movies that they know, in the structure. While they are completing their tasks, time to find a movie (in seconds) and click numbers to reach a movie are counted. At the end, after users completed their tasks, they are asked to complete a satisfaction survey for the structure they used. In order to create the survey, the System Usability Scale (SUS) survey method is used.

With SUS survey, it is aimed to measure;

- Complexity
- Inconsistency
- Fun
- Easiness
- Simplicity
- Accuracy
- Speed

Survey conducted to 72 people (36 for A, 36 for B) with 8 scale questions and asked them to scale each questions from 1 to 5 (1 is strongly disagree and 5 is strongly agree).

Table 3.11 SUS Survey Questions.

No	Survey Questions
1	Easy to use
2	System is very complex
3	It saves time
4	I can achieve what I want to do in few steps.
5	Funny to use
6	There are many inconsistencies in the system
7	I found what I was looking for accurately
8	There are missing categories

Results and Evaluation of A/B Test

The flow of the test is as follows;

1. 5 movies among 12 (already located under A and B categories) are asked users to find in one of the navigation versions (A or B).
2. For each movie the time and number of clicks are measured until a user finds the movie.
3. After applications on A and B interfaces, users are asked to fill the SUS survey to scale their overall satisfaction about navigations.

Important points;

- First of all, users have to be informed that their skills or speed or they are not the ones which are tested, but only the system itself is tested.
- If a user does not know the asked movie, another movie name should be given.
- It is essential that users need to feel totally free during test. They can talk, they can try anything or they can wait as long as they want.
- There cannot be any interruption, redirecting or judgment from researcher.

Test is applied total number of 72 users, ages between 18 and 30.

Time and Click Results

The time and click results are collected on an Excel table (A.1) and analyzed descriptive statistics for both A and B. (All time values are in terms of seconds).

Table 3.12 Descriptive statistics of time and click for A.

A	<i>Avg. Time</i>		<i>Tot. Click</i>
Mean	10,001	Mean	6,722
St Error	0,852	St Error	0,344
Median	8,1	Median	6
P-Value	0,017	P-Value	0,017
St Dev	5,110	St Dev	2,065
Variance	26,111	Variance	4,263
Kurtosis	0,673	Kurtosis	6,482
Skewness	0,985	Skewness	2,148
A-Squared	0,92	A-Squared	0,005
Minimum	3,8	Minimum	5
Maximum	25	Maximum	15
Total	360,03	Total	242
N	36	N	36
95,0% CI	1,729	95,0% CI	0,699

When the average time results of A version are examined, it can be said that the data does not fit the normal distribution by looking at the P value which is less than 0.05 (%95 confidence level).

Mean value is 10,001 second/movie and deviation is 5,110 second/movie, the average time to find a movie in version A is 10,001 seconds.

If the statistics for total number of click results are scanned, the average number of clicks to find a movie for one user is 6,722 click/movie.

Also, minimum value and first quartile is 5 and median is 6 so almost 50% of data is 5,5 and max number of clicks is 15 to find a movie in version A.

Table 3.13 Descriptive statistics of time and click for B.

B	<i>Avg. Time</i>		<i>Tot. Click</i>
Mean	9,586	Mean	6,861
St Error	0,958	St Error	0,246
Median	8,1	Median	7
P-Value	<0,005	P-Value	<0,005
St Dev	5,746	St Dev	1,477
Variance	33,019	Variance	2,180
Kurtosis	1,330	Kurtosis	1,014
Skewness	1,353	Skewness	1,099
A-Squared	1,89	A-Squared	1,74
Minimum	2,4	Minimum	5
Maximum	24	Maximum	11
Total	345,1	Total	247
N	36	N	36
95,0% CI	1,944	95,0% CI	0,500

For the version B, it is also seen that the P value is less than 0.05 (%95 confidence level) which means data does not fit the normal distribution. Mean value is 9,586 second/movie and deviation is 5,746 second/movie, the average time to find a movie in version B is 9,586 seconds.

In terms of click results, the minimum value is 5, first quartile is 6, median is 7 and max number of clicks is 11 to find a movie in version B. Furthermore, the average number of clicks to find a movie for one user is 6,861 click/movie in version B.

Comparison of Time and Click Results

In order to see better the difference between A and B versions' time and click results, two sample t-test is applied to both data.

T-test for time data of A and B:

Difference = $\mu(1) - \mu(2)$

Estimate for difference: 0,415000

95% CI for difference: (-2,141693; 2,971693)

T-Test of difference = 0 (vs not =): T-Value = 0,32 P-Value = 0,747 DF = 69

When the t-test results above were observed, it can be seen that the p value of the test is higher than the a-level (0,05) which means there is no statistically difference between average times of A and B.

Same as time data the same test is applied to click data as well.

T-test for click data of A and B:

Difference = $\mu (1) - \mu (2)$

Estimate for difference: -0,139000

95% CI for difference: (-0,984581; 0,706581)

T-Test of difference = 0 (vs not =): T-Value = -0,33 P-Value = 0,744 DF = 63

Here also same conclusion can be done; the 0,744 p-value is higher than 0,05 a-level which means there is no statistically difference between two versions.

When the results of A/B test are compared, basically the outcome can be summarized as there is not a dramatically big difference between two versions. But if it is observed a bit deeper, the slight differences can give some clues about the systems.

The time data of the A/B test shows that in version A (current structure), the average time that a user spends while looking for a movie is slightly higher than version B (alternative structure). The meaning of that fact is alternative structure B let the users to find the movie they want a bit faster. The leading reason might be the brief outlook of the navigation structure which is leaner and shorter while in structure A users need to scroll down and up to see all categories which causes time loss.

On contrary, the fact that the click results show that in current structure A, users reached a movie with fewer steps than the alternative structure B. This result is quite reasonable because in Digiturk's current structure (version A), all the categories are listed one under the other which means user can see all 15 categories at once.

SUS Survey Results

This survey is prepared on “Survey Monkey” database and conducted to each of those 72 people right after they used the structures. The results are dragged from Survey Monkey and collected on an Excel table to analyze. The summaries table below shows the number of users who voted for each question.

Table 3.14 SUS survey results by number of people.

No	Survey Questions	A(36 people)					B(36 people)				
		1	2	3	4	5	1	2	3	4	5
1	Easy to use	0	0	11	9	16	0	3	4	16	13
2	System is very complex	20	8	5	1	2	20	5	4	6	1
3	It saves time	2	2	10	10	12	0	4	8	16	8
4	I can achieve what I want to do fewer steps.	0	3	11	9	13	0	3	10	14	9
5	Funny to use	1	5	7	11	12	0	4	5	16	11
6	There are many inconsistencies in the system	16	9	7	4	0	19	10	4	1	2
7	I found what I was looking for accurately	0	5	10	8	13	0	3	6	16	11
8	There are missing categories	19	8	3	6	0	18	6	3	6	3

1 Strongly Disagree / 5 Strongly Agree

In order to analyze data to find the average scores of A and B, first of all data listed openly (A.2). Before analyzing, the data of negative questions which are questions 2, 6 and 8 are reverted to find true scores. It means for example; if a user voted 2 for one of those questions, it is changed to 4 to analyze. First correlations and then averages are calculated.

Table 3.15 Correlation table of SUS questions.

	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Q1	1							
Q2	0,378	1						
Q3	0,413	0,337	1					
Q4	0,454	0,405	0,602	1				
Q1	0,366	0,129	0,487	0,258	1			
Q2	0,512	0,379	0,394	0,343	0,114	1		
Q3	0,430	0,312	0,423	0,452	0,266	0,335	1	
Q4	0,303	0,245	0,214	0,185	0,201	0,316	0,289	1

The table above shows the correlation results of questions. It showed that questions 1 and 2, and questions 3 and 4 are highly correlated which is very accurate. While question 1 evaluates the easiness of system, question 2 measures the complexity; two questions are similar and related. Also questions 3 and 4 are for evaluating time and click results by users.

After finding correlations, a summary table for each question and for each versions is prepared.

Table 3.16 Summary table for SUS questions.

	Avg Q1	Avg Q2	Avg Q3	Avg Q4	Avg Q5	Avg Q6	Avg Q7	Avg Q8	Average
A	4,139	4,194	3,778	3,889	3,778	4,083	3,806	4,167	3,979
B	4,083	4,083	3,778	3,806	3,944	4,250	3,972	3,833	3,969
Grand Total	4,111	4,139	3,778	3,847	3,861	4,167	3,889	4,000	

By using pivot table, average of each question and final averages of A and B are calculated. The results let us to compare two structures also each question for A and B. For some questions A looks better while for some of them B looks more satisfying. For example for question 4; result shows that users could find the movies in slightly fewer steps in A structure than B. This result also supports the click results which showed the same conclusion. Also the last question supported that people might think that there

may be missing categories in B because of the hidden (pull-down) menu items. For the question 5; it can be concluded that the pull-down menu makes the system more fun to use. The question 6 and 7 showed that in the new structure category and movie matches look more accurate and consistent to users.

When the final average results for A and B are calculated, it is seen that the score of version A is very slightly higher than the version B, yet they are very close though.

In order to see better if there is a statistically significant difference between SUS results of two versions, a two sample t-test was applied in here.

Two-sample T for A vs B:

	N	Mean	StDev	SE Mean
A	8	3,979	0,184	0,065
B	8	3,969	0,164	0,058

Difference = μ (A) - μ (B)

Estimate for difference: 0,010625

95% CI for difference: (-0,177346; 0,198596)

T-Test of difference = 0 (vs not =): T-Value = 0,12 P-Value = 0,905 DF = 13

As it was concluded before, t-test results also supported that conclusion. Test showed that the p-value which is 0,905 is less than a-level which is 0,05. That means there is not a statistically big difference between A and B versions in terms of SUS survey results.

There might be several reasons for this result;

- The time for adapting a new system
- The understanding time for pull-down menu system
- Complexity caused by the appearance of pull-down menu
- Confusion caused by hidden items
- Higher click numbers

CHAPTER 4

CONCLUSION

Usability and User Experience works are getting more understandable and more important as value. Before, when a product is produced and tested by only designer's or engineer's eye was enough to release it to the market. At the end, this early release causes additional costs to the firms. Once producers realized that fact, the term usability became more important. When the producers remember the fact that they produce goods for human beings and the major thing what makes a product counted as usable is user insights, they started to concentrate usability researches and to establish usability teams or hire experts from outside as in the Digiturk case. Digiturk, as a big and corporate company, know that the real optimization can be achieved by working and connecting directly to the end users. The information of what exactly users' experiences through the product is too valuable to construct usability.

User Experience helps defining something as usable or not. Even though usability consist of engineering disciplines, statistics, human factors, ergonomics and physiology; actually the root of the UX endures on psychology. The thing makes usability different from other engineering studies is its nature of focusing on human. It examines the interaction between user and product and basically it depends on emotions. And that is the reason why it is not easy to predict. Because of that, in order to determine usability of a product, we need User Experience Tests which requires the full collaboration of real users. Usability testing refers evaluating a product or service by testing it with representative users. Participants try to complete several tasks while they are observed by researchers. Every action they do are recorded as a selected way like video records, voice records, screen records or just taking notes. The goal is identifying any usability

problem, collecting qualitative and quantitative data, understanding user behavior and determining participant's satisfaction about the product.

The challenge is here to be able to find or adapt the right tests which exactly fit our product and fulfill our needs and questions about product.

In this thesis project collaborated with Digiturk, it is aimed to design a new category structure for Digiturk's movie category list presented as Video on Demand according to Turkish people's insight, so they can easily reach out the movies and find what they are trying to find quickly, while giving them an enjoyable experience through the interface. But beyond this, it is desired to explain and understand Turkish users' preferences about movies and categories, their movie watching habits and frequencies, how they define and group categories by also comparing people from different educational backgrounds and different ages. This kind of information about audiences is important not only for this study but also can be used for other projects in Digiturk.

In order to reach out a new structure and usability information, three usability tests are decided to apply in an orderly manner; survey, card sorting and A/B tests. The combination and process of these tests are chosen only for this project and each test supported one another, also each of them gave different information about users.

Surveys provided a better understanding about who are the users, what they want and how they think such as their favorite categories, how they categorize movies or how they feel about them. By the help of surveys the important and unimportant categories were defined which will help to revise which categories should be on the list. Survey results are also utilized for card sorting test. The reason of choosing this test was the fact that working on a navigation system and for navigational systems card sorting is the best test to carry on. It lets users to arrange every item in their way of use. It is an easy and fun method to apply and facilitates to see majority's way of navigation. Card Sorting results are used for creating A/B test. A/B test is basically a comparison method which also helps to see the way and behaviors of users while they are using the interfaces. Except comparison of two systems, A/B test allows to observe users and make conclusions. Even though there are different ways of applying A/B test, for this project, it is chosen to record time and click data, and also the test is combined with the SUS evaluation method. It means statistical and behavioral (qualitative) data

information and results are combined as a method generated for this TV interface project.

The main contributions of the thesis is that applying UX methods which has limited number of examples especially in Turkey into a brand new field with the different way and combinations of existing methods. We believe that this research will lead and help other researches about that area and also will be helpful for similar TV or online interfaces working with categories. Because this kind of online/offline movie platforms are highly interacted with users and requires the involvement of users directly which means users need to get into the interface, understand the system and find category or movie they want by themselves alone without a manual or description. So, preparing and providing the best and highest usability to people is the core element of those broadcasters (or companies) to get a high level of customer satisfaction. The competition in today's world is really big and conditions are too cruel to forgive even a single defect. Therefore even small improvements and knowing users well help the companies to increase their quality, reliability and revenues. Everything starts with the ability of seeing things through users' eyes to provide them the best experience and to make a company the leader of its market.

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APPENDIX A

CALCULATIONS

A.1 Average time and total click calculations of A and B versions.

		Avg. Time	Tot. Click
U1	A	18	5
U2	A	14,6	6
U3	A	6,2	5
U4	A	25	11
U5	A	20,4	8
U6	A	12,2	7
U7	A	13,3	8
U8	A	7,7	7
U9	A	15,3	9
U10	A	15,2	8
U11	A	15,7	9
U12	A	8,2	5
U13	A	13,7	15
U14	A	4,6	5
U15	A	6,4	5
U16	A	12,4	7
U17	A	11,8	7
U18	A	4,4	5
U19	A	8	7
U20	A	5	5
U21	A	16,2	8
U22	A	4,8	5
U23	A	11,4	7
U24	A	7,2	6
U25	A	9,6	9
U26	A	5	5
U27	A	6,4	6
U28	A	3,8	5
U29	A	5,8	6
U30	A	7,2	7
U31	A	8	6
U32	A	5	5
U33	A	10	6
U34	A	4,2	5
U35	A	9,4	6
U36	A	8	6
		10,00093	242

		Avg. Time	Tot. Click
U1	B	23	5
U2	B	24	9
U3	B	21,2	11
U4	B	23,8	9
U5	B	15	6
U6	B	11	7
U7	B	11,2	6
U8	B	8,7	8
U9	B	9,2	7
U10	B	11	10
U11	B	8,2	6
U12	B	7,5	7
U13	B	7,2	7
U14	B	9,6	6
U15	B	11,8	10
U16	B	5,6	5
U17	B	6,4	7
U18	B	8,2	6
U19	B	7,8	7
U20	B	2,8	5
U21	B	9	5
U22	B	7,2	6
U23	B	4,4	6
U24	B	15,8	8
U25	B	6,6	7
U26	B	5,6	7
U27	B	5,4	6
U28	B	4,2	6
U29	B	8	7
U30	B	2,4	5
U31	B	4,4	6
U32	B	7,6	7
U33	B	13,2	8
U34	B	7	6
U35	B	2,4	6
U36	B	8,8	7
		9,586111	247

A.2 SUS data table.

Type	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Type	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
A	3	4	3	5	3	2	4	4	B	2	3	2	3	4	1	2	2
A	4	4	4	3	4	3	5	5	B	4	5	5	5	3	4	4	3
A	5	5	5	5	4	5	4	5	B	4	5	4	4	4	4	4	5
A	5	5	5	4	5	5	5	5	B	5	5	5	5	5	4	5	5
A	3	1	1	2	3	3	2	4	B	5	5	5	4	5	5	3	5
A	5	5	5	5	5	5	5	5	B	4	5	4	3	4	5	5	5
A	5	5	5	5	5	5	4	5	B	5	5	2	2	4	5	5	5
A	5	5	5	5	5	4	4	5	B	4	5	4	4	4	5	4	5
A	5	5	4	4	5	2	5	5	B	4	4	4	4	4	4	4	3
A	4	4	2	2	4	3	3	2	B	5	1	2	3	4	3	3	4
A	4	5	3	3	4	4	3	2	B	4	3	4	2	2	5	2	2
A	4	4	3	3	3	4	3	2	B	2	2	2	2	4	1	2	5
A	3	2	3	3	4	5	3	5	B	5	5	4	5	3	5	4	4
A	4	5	5	5	4	5	5	4	B	2	4	3	4	3	3	4	2
A	4	5	3	4	2	5	2	3	B	5	2	5	4	5	4	5	5
A	5	5	5	5	5	5	5	5	B	5	5	5	5	5	5	5	5
A	3	3	4	2	3	3	5	4	B	5	5	4	5	5	5	5	4
A	5	5	5	5	4	5	4	2	B	5	5	4	4	4	5	4	5
A	4	5	4	4	4	5	3	5	B	4	5	3	5	5	4	5	1
A	5	5	4	5	5	4	2	5	B	5	5	5	5	4	5	5	5
A	5	1	5	5	5	5	5	5	B	4	5	4	4	5	5	3	5
A	5	5	4	4	4	5	5	5	B	4	5	4	3	4	5	4	5
A	4	5	4	4	3	4	3	4	B	4	5	5	5	5	5	5	5
A	3	5	5	4	5	2	4	2	B	4	2	3	4	5	5	5	1
A	5	4	3	3	5	4	2	5	B	3	5	4	3	3	5	4	5
A	3	5	3	3	2	4	3	5	B	3	5	3	3	4	5	4	5
A	3	3	4	3	3	4	3	4	B	4	3	4	4	5	4	4	5
A	5	5	5	5	5	5	5	5	B	4	4	4	3	4	5	4	4
A	3	3	4	3	3	3	3	3	B	5	5	4	5	4	5	5	5
A	3	4	3	4	4	4	2	4	B	3	4	3	3	4	4	4	4
A	4	4	4	5	2	3	4	4	B	4	2	4	3	4	3	3	2
A	5	5	1	3	2	3	5	5	B	4	3	3	4	2	4	3	2
A	5	5	3	3	4	5	4	3	B	5	4	3	4	2	5	4	4
A	3	3	3	5	1	5	5	5	B	4	4	3	4	2	4	4	3
A	5	4	5	4	5	5	5	5	B	3	2	5	3	5	3	3	1
A	3	3	2	3	2	4	3	4	B	5	5	4	4	3	4	4	2

APPENDIX B

SURVEYS

B.1 Survey 1.

1. Age

- 0-18 18-25 25-35 35-50 50 and over

2. Education Level

- Primary High School University Master

3. Digiturk Subscriber?

- Yes
 No

4. Which category structure is better to find movies

- Local and Foreign
 Awarded other
 Subtitle-dubbing
 Year

5. Rank the criteria for choosing movie

	Most important	Important	Middle	Less Important	Least Important
IMDB rate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Year	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Director	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Actor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Movie category(subject)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. Which categories do you most frequently use for choosing movie?

- Family Action Animation Documentary

B.2 Survey 2.

1. Age

- 0-18
- 18-25
- 25-35
- 35-50
- 50 and over

2. Education level

- Primary
- High School
- University
- Master

3. Choose the categories you know

- | | | |
|--|--------------------------------------|--|
| <input type="checkbox"/> Family | <input type="checkbox"/> Thriller | <input type="checkbox"/> Romantic Comedy |
| <input type="checkbox"/> Action | <input type="checkbox"/> Mystery | <input type="checkbox"/> War |
| <input type="checkbox"/> Animation | <input type="checkbox"/> Short Movie | <input type="checkbox"/> Sport |
| <input type="checkbox"/> Love | <input type="checkbox"/> Comedy | <input type="checkbox"/> Crime |
| <input type="checkbox"/> Documentary | <input type="checkbox"/> Horror | <input type="checkbox"/> History |
| <input type="checkbox"/> Science Fiction | <input type="checkbox"/> Adventure | <input type="checkbox"/> Western |
| <input type="checkbox"/> Biography | <input type="checkbox"/> Musical | <input type="checkbox"/> Foreign |
| <input type="checkbox"/> Dance | <input type="checkbox"/> Whodunit | <input type="checkbox"/> Turkish |
| <input type="checkbox"/> Dram | <input type="checkbox"/> Pshcology | |
| <input type="checkbox"/> Fantastic | <input type="checkbox"/> Romantic | |

4. Assign categorie for each movie

1.Babam ve oğlum

4.Issız adam

7.Ben efsaneyim

2.Kadın akli erkek akli

5.İyi, Kötü ve Çirkin

8.Eşkîya

3.Dövüş Kulübü

6.Yüzüklerin efendisi

9.Titanic

- | | | |
|------------------------|-------------------------|--------------------------------------|
| 10.Piyanist | 16.Sokak dansı | 22.Selvi boylum al yazmalım |
| 11.Forrest Gump | 17.Korkunç bir film | 23.Esaretin Bedeli |
| 12.The Prestige | 18.Baba (The Godfather) | 24.Hızlı ve öfkeli |
| 13.Paranormal activity | 19.Buz Devri | 25.Benjamin Button'ın Tuhaf Hikayesi |
| 14.Akıl oyunları | 20.Testere | 26.Charlie'nin Çikolata Fabrikası |
| 15.Celal ile Ceren | 21.Harry Potter Serisi | 27.Gora |

