

## USER EXPERIENCE DESIGN: AESTHETICS OR FUNCTIONALITY?

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### **Abstract:**

Most of the time, just designing a perfect looked interface is not enough for users to use it properly. 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. The purpose of the User Experience (UX) is to increase customer satisfaction and sales by providing the largest ease of use, benefit and enjoy for users. A product can only exist as long as it fulfills the user's needs with its *functionality*. On the other hand importance of *aesthetics* cannot be ignored. It is the visual interaction and attractiveness which make a connection between user and product. In this paper, it is planned to investigate the importance of (and also relationship between) functionality and aesthetics of (web) interfaces from the eyes of users. A survey designed to measure different aspects of aesthetics and functionality is conducted to 41 web users. The results supported with statistical and managerial implications provide useful information for product managers, designers and also for users.

*Keywords: user experience, aesthetics, functionality, usability*

# 1. INTRODUCTION

In design of every type of products, either a web interface or a solid tool, beyond all aspects, two main dynamics-aesthetics and functionality- play the most important role for their usability. For some products, designers work on aesthetics more, for some of them, functionality is everything that product has. It is usually hard to predict the people's interests for a product before it is released to the market. Human minds are somehow complicated and unpredictable even while giving a simple decision. For this study, it is wondered which aspect of the product effects users more and makes them buy or use it, aesthetics or functionality? What actually influences human behaviors and feelings?

## 1.1. What is 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 learnability, ability to remember, efficiency, error rate and user satisfaction.

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 learnability 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? What is the thing that attracts them into the product?

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 of seconds before users click to the "close" button. Right in that moment user experience steps in to the concept.

## 1.2. What is user experience (UX)?

*"An experience is a story, emerging from the dialogue of a person with her or his world through action"*— Marc Hassenzahl

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. 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). UX is not just creating a fancy interface, but creating an experience through a device. Experiences are meaningful events through which not much knowledge gained (Hassenzahl, 2013).

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.

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. The leading attracting force is always the design of the product and design has two important pillars; aesthetics and functionality.

## 1.3. Importance of 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).

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.

#### **1.4. Importance of 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 these 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.

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 on 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.

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 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.

## **2. METHODOLOGY**

### **2.1. The UX model and data collection**

In order to see what really users think about the importance of aesthetics and functionality, it is decided to conduct a survey. However a survey which asks users directly to make a decision between aesthetics and functionality, we 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 following up 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

These 10 heuristic criteria are created to evaluate a web site from 10 different aspects and for different types of products (e.g. online shopping site, TV interface, software design, etc.) different types of control lists can be created for each 10 elements by researchers and designers. For our case, we will develop a control list (survey) which examines only the aesthetics and functionality sides of design. Among these 10 heuristics, one of them is for evaluating aesthetics (aesthetic and minimalist design) and one for evaluating functionality (flexibility and efficiency of use). By using these 2 criteria, we developed 9 survey elements in which 4 of them refers aesthetics and 5 for functionality to judge a web interface.

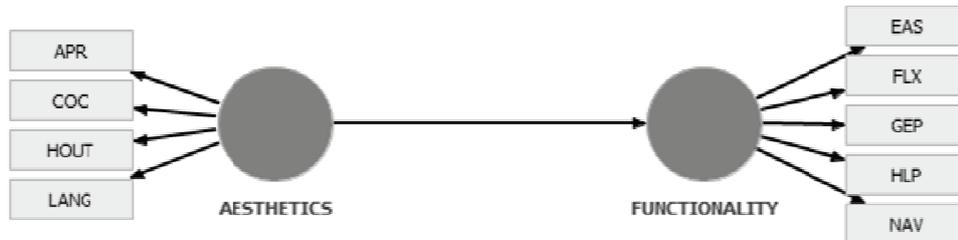
### Aesthetics

- Consistency of colors (COC)
- Appearance of web site (APR)
- Simplicity of the language (LANG)
- Harmony of outlook (HOUT)

### Functionality

- Ease of use (EAS)
- Guidance and Error prevention (GEP)
- Grouping- site navigation (NAV)
- Flexibility (FLX)
- Help function (HLP)

**Figure 1:** Outlook of aesthetics and functionality



In the survey sheet, it is 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). The survey conducted on 41 people by using Google Survey.

### 3. DATA ANALYZE AND RESULTS

The data is analyzed using Partial Least Squares (PLS) structural equation factor analyze model. Structural Equation Model (SEM) is a comprehensive statistical approach for testing hypotheses about relations between latent variables (i.e. Aesthetics and Functionality) and their observed variables. SEM is formally defined by two sets of linear equations called the inner model and the outer model. The inner model specifies the relationships between unobserved or latent variables, and the outer model specifies the relationships between latent variables and their associated observed or manifest variables (Temizer & Türkyılmaz, 2012).

PLS procedure uses two stage estimation algorithms to obtain weights, loadings, and path estimates. In the first stage, an iterative scheme of simple and/or multiple regressions contingent on the particular model is performed until a solution converges on a set of weights used for estimating the latent variables (aesthetics and functionality) scores. Once the outer weights are estimated, final results of the latent variables are calculated as weighted mean of manifest variables. The second stage involves the non-iterative application of ordinary least squares regression for obtaining path coefficient (relation) between aesthetics and functionality (Temizer & Türkyılmaz, 2012).

SmartPLS software is used for estimation of the proposed UX model. 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.

The relationships between latent variables and their manifest variables are given in Table 1.

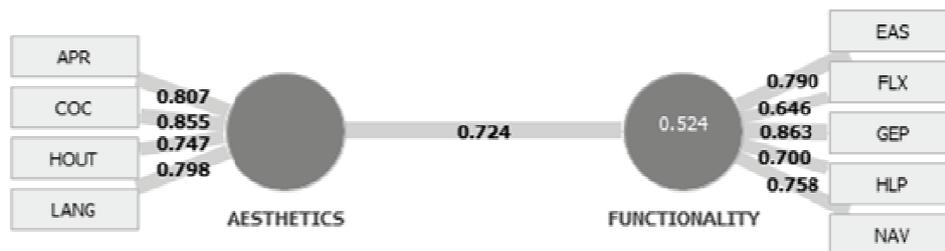
**Table 1:** The outer model estimation

Latent variable	Manifest variable	Outer weight	Loadings	Latent variable	Manifest variable	Outer weight	Loadings
Aesthetics	APR	0,335	0,807	Functionality	EAS	0,391	0,790
	COC	0,314	0,855		FLX	0,190	0,649
	HOUT	0,249	0,747		GEP	0,311	0,863
	LANG	0,345	0,798		HLP	0,217	0,700
					NAV	0,197	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.

**Figure 2:** PLS Model of two factors



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. Further, the R-square measure of this regression model is 0.524 which can be considered as satisfactory.

After finding the inner and outer weighted values of all components, their weighted means are calculated and they are all moved in a separate table which also shows their belonging factors. By using this new table, a two-sample t-test is conducted in Minitab software to evaluate these two groups by means difference.

**Table 2:** Two Sample T-Test

	N	Mean	St Dev.	SE Mean
<b>AESTHETICS</b>	41	3,875	0,866	0,14
<b>FUNCTIONALITY</b>	41	3,747	0,843	0,13

95% CI for difference: (-0,247; 0,504)

T-Test of difference = 0 (vs ≠): T-Value = 0,68 P-Value = 0,498 DF = 79

The result data above give the conclusion of all the data collected. For factor 1 (aesthetics) the mean is calculated as 3,875 while the average mean of factor 2 (functionality) is 3,747. This shows that aesthetic values are slightly more important than functionality values by the users' opinions.

One significant feature of this study was to be able to find out users' real thoughts and insights about aesthetics and functionality aspects without using these two words to prevent prejudgments. Also the aim was disproving the existing prejudgment about aesthetics and functionality which says aesthetics is not as important as functionality. We wanted to prove that actually in deep inside of human thoughts, aesthetics is as important as functionality and plays an important role in decision making and user satisfaction. This result does not mean that functionality is not important at all. The fact that the difference between the means are very little shows us they both important to create a valuable user experience which support our hypotheses.

#### 4. CONCLUSION

This study was designed to demonstrate the importance and role of aesthetics on interface design as much as functionality and even more than functionality in decision making by exploiting Jakob Nielsen's web site heuristics and also estimating the relation between aesthetics and functionality. First the reliability of our survey is tested and seen that the each component of two factors (aesthetics and functionality) are related to their factors and are significant. It was expected the values of

aesthetics would be as important as functionality if it is specified to sub-elements. The results also supported our thesis which proved that interface aesthetics are highly related with user opinions and may affect the decisions they make. Besides the strong relation between these two factors tells that they support each other, so it can be concluded that 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). Contrary, a beautiful design motivates people to learn and understand the system easier and it brings a well functionality.

As 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.

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