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The Effect of Logo Color and Design on Mobile Application Preferences: A Study on Google Play and App Store

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Abstract:
Today the globalization of mobile technologies accelerated the mobile application development. Mobile applications helping people in education, sport, tourism, banking sectors. People connect via bluetooth, WIFI, GSM to internet or other devices use them and collect needed information. Moreover, applications assist us in communication, shopping, media-entertainment and different other areas, help us to solve time-consuming work. Improvement of technology strive vendors and developers to launch new, especially IOS and Android applications. There are lots of free and paid applications on the market which available to consumers. Consumers can review, buy, download, use their applications and write feedback to them in the market.
The aim of the study is to determine if the color and design of mobile application logo affect the online application buying behavior of university students. In addition to it, to find if this influence differs according to demographic variances such as: gender, age, education and mobile application preference. The purpose of this study has been investigated through questionnaire. The universe of this research was taken the students in Istanbul. The questionnaire study was conducted among the students of Istanbul Aydin University and around 271 answers were collected. Moreover, collected data analyzed using the SPSS 21 program.

Keywords: Mobile application, consumer behavior, application's logo, color, design, shape.

1. Introduction

For the first time mobile applications were so simple. The first mobile applications were calendars, calculators, alarm clocks and so on. Improving technology strive application creators to think and built the modern applications which serve us in different issues. Obviously, mobile technology that we use today push forward the evolution of online applications (Pocatilu, 2010, Pentina, et al., 2016). Mobile applications make easy our life , even help us to solve our time-consuming issues. Mobile technologies stimulated the improvement of operating systems. Modern years there are two main operating systems that available in most mobile devices. They are IOS and Android OS. Developers think and create various types of applications which are suitable for these operating systems.Everyday lots of consumers enter mobile markets, review and download these applications. Developers create different alluring logos for their applications, which attract consumers with their color and design. Color has got great influence on visual attributes, recognition of objects. It is obvious that color of product influences the choice of individuals and brand image. Color creates positive and negative thought about products. The perception of colors differs by consumers, customers and whole world people according their gender, religion, culture and ethnicity. The color choice of individuals is learned behavior and changes year by year. In addition, the design of product has specific influence on consumer behavior.

This research is written about the impact of color and shape on consumersonline application buying behavior. The research based on survey which held between university students in Istanbul Aydin University. 271 students answered survey questions. Collected data analyzed with SPSS 21 program. The hypotheses which determined in advance tested with Mann-Whitnet U and Kruskal-Wallis H nonparametric tests.

2. Theoretical Background

2.1. Mobile Applications

Mobile applications are launching in small devices which are easy to use and portable. Huge number of people with the help of mobile applications taking the advantage of internet, keeping touch with friends, family, browsing internet, shopping or doing business. Moreover, some businesses earning money though these applications(Islam, Islam, & Mazumder, 2010). First mobile devices had very simple mobile applications. The improvement of mobile devices and technologies push forward the developers and vendors to create

new applications. It is not doubt that, mobile applications increase the features of devices, letting consumer to do specific tasks (Seyed Ebrahim, Ezzadeen, & Alhazmi, 2015).

Mobile devices are basic computers with battery, CPU, memory, screen, input and output interfaces. Mobile devices are using waves to communicate with various frequencies over networks. According to Mayron, (2015)smart mobile devices are fascinating technology that allow people use their platform to overcome various tasks. Mobile devices include not only smartphones but also digital cameras, netbooks, media players, game consoles and handled computers. Almost each person owns one of them and uses. People choose these devices according to their characteristics, identity and individiuality (Traxler & Campus, 2009). Today's mobile devices allow us to connect other people, find needed information, connect other devices even store information in device memory.Shiraz, Gani, Khokhar, & Buyya, (2013) stated that the improvement in mobile technology area allow smartphones compute future and use other devices. People want to use different applications in their smartphones. Although, technology improved significant in recent years smart mobile devices can't perform better because of their parameters such as battery, memory and so on. The most important feature of the mobile device is its size and capacity for transportation. In this case smartphones are in the first place, they fit easily in pocket and handbag. They include lots of functions and transportation of these devices extremely easy (Aslan & Aslan, 2013).

In March of 2012 the Pew Internet and American Life Project had a research over American adults and found that 88 % of U.S. adults bought cell phones and half of them smartphones. Today smartphones are one of the part of human life. (Filieri & Lin, 2017). Before mobile phones had requirements such as phone calls, digital phone book, pick up button. But now smartphones offer much more and they are little computers which people can put in their pockets. Now phones take a considerable part in human life like communication device (Lane et al., 2010).According to Lay-Yee, Kok-Siew & Yin-Fah (2013) smartphones are mobile technologies which can send and get messages or to call or receive voicecalls. Initially the smartphones were perceived for business use because of their cost, but now smartphones spread all over the world. Now smartphones allow consumers to socialize and better engage by using their platform and applications (Sarwar & Soomro, 2013). Today's smartphone covered with touchscreen panel, and have a few buttons. Users can make voice and video calls, take photo and video, navigate GPS, send e-mails, play built in games and run different applications by using smartphones.

A tablet computer commonly shortened to tablet, is something between computer and smartphone. Tablet includes features of both devices in it. Tablets are small computers because they work as computer and the main difference from smartphone is its screen's wide range (Singh, Singh & Kumar, 2012). According to Farance et al., (2015) the main aspect that people prefer tablets than smartphones is their screen size. Although smartphones meet a lot of needs of users, they have other disadvantages such as weak battery and small screen size.Nowadays 2 main tablets types are in the market, Apple IPad and Android OS tablets. Instead of other tablets Apple tablets powered with IOS system. Tablets don't have mouse and they work in touch control, they provided with touchscreen which range from 5 to 14 inches (Lee, Lee & Chan-Olmsted, 2017). Tablets provided with Wi-Fi technology so users can connect to the internet. Even some tablets have 3G and 4G wireless mobile telecommunication technology. The software of tablets is on IOS or Android operating systems (Lee, Lee & Chan-Olmsted, 2017).Although, tablets and smartphones have common features, tablets have some advantages than smartphones. Tablets are good for playing games because of their wide screen. Tablets equipped with powered batteries than smartphones, so tablets are able work 8-9 hours (Singh, Singh & Kumar, 2012). Another positive feature of this device is smart readers, users can read documents with better quality in tablets.

Operating system (OS) is of the needed software element of any processor-based technology. Devices can't perform their task without operating system. Furthermore, OS uses software and hardware of device and realize various tasks which are illustrate on the screen of this device (Okediran et al., 2014). OS runs a range of programs at the same time, providing perfect performance of them. It is not doubt, that operating system is responsible for the administration of the memory of devices. Generally, users don't have a direct contact with OS, so, the interaction between the OS and user is provided by the apps which downloaded from app store(Jindal & Jain, 2012). Android OS is computing platform that designed for tablet, smartphones and other devices. Today most of the smartphones work with the Android OS. Android launched in 2003 by Andy Rubin who established the Android Incorporation. Later, Android was bought and improved by Google. This OS is based on Linux Kernel, which provides advanced computer processing (Narmatha & KrishnaKumar, 2016).In 2008 the first smartphone based on Android OS were sold and in 2010 this OS was leading smartphone platform. In 2012 Android owned 59% of market share in the world(Nosrati, Karimi & Hasanvand, 2012). The apps of Android OS are written with the using of Java programming (Okediran et al., 2014). Nowadays, an application market of Android – Play Store is a great opportunity for developers to introduce their app creations to millions of consumers (Jindal & Jain, 2012). IOS software system developed by Apple Inc. Originally, IOS developed for IPhone in 2007, however, now it supports IPad, IPod Touch and Apple TV also (Jaiswal & Kumar, 2014). In 2008 Apple introduced Apple Store to IOS. From that time users can browse and download apps to their devices. Normally applications are free or paid. Some of applications have inn-app purchases, which means you should pay a little money when using some features of apps. The revenues generated from downloaded apps is dividing between application developer and Apple corporation following 70% to 30% (Jaiswal & Kumar, 2014).

2.2. Consumer Behaviour

The word "consumer" is a common word. Normally, consumer is a physical person who buys items, things, products, services because of personal use. Consumer is a person who makes the decisions to buy products or consumer is an individual who pays significant money to consume something. In many cases the consumer is the same person who makes the decision and buys the item. However, there are too many cases when the consumer and purchaser are different individuals. A case of buying laptops for child is one of them (Noel, 2009). It means, parents are purchasers who buy laptop, but consumer is a son or daughter who uses the laptop. According to

Kardes, Cronley & Cline (2010)consumers divide to two types, individual (final) consumer and organizational consumer. A person or a family is an individual consumer but government agencies and organizations are organizational consumers. Al-jaraisy (2008) stated that individual consumer is a person or individual who buys things or services to satisfy his own needs or family needs. The main point is that individual consumer purchase things and services to consume and satisfy needs but not to resell these things. Compared with final consumer organizational consumers buy things or services not only to resell them to others but also to produce new things or products. Moreover, the organizations buy equipment in order to run their businesses (Kardes Cronley & Cline 2010). According to Khan (2006) "All of us are consumers". All durable, speciality, industrial goods are the consumable goods that we buy, use in order satisfy our daily needs. The social classes, income, motivation, personality and many other internal and external factors influence us to buying processes. Consumer behavior is the main sector that organizations should explore very well (Noel, 2009). This is the key to consumers and way to understand what to produce, how much produce and for whom to produce.

Some people thinks that "consumer behavior" is only a buying of things, services and consuming it. But this phrase is much more about it. Consumer behavior begins before buying goods and services with the determining of need. According to Khaniwale (2015) consumer behavior includes all acting and feelings when buy any product or service. According to Kardes, Cronley & Cline (2010) there are two – traditional and modern ways to explain the definition of consumer behavior. Traditional buying behavior is learning only buying processes, while understanding consumer behavior learns not only purchasing action but also the decision making, evaluating and impact on consumer decisions. According to Solomon et al. (2006) consumer behavior "is the process that individuals purchase, use dispose the products to satisfy their desires". As we see, consumers are those people who are spending their resources to use different products or services. According to Lake, (2009) consumer behavior is number of steps such as determining, making decision, purchasing and so on that individuals, persons, consumers have to pass in order to satisfy their needs. There are lots of different reasons to study the consumer behavior. Number of people are learning the consumer behavior. For instance, a marketer learning it to improve sales of organization, a student learns it in university, a designer learns it to create a better advertisement.

Moreover, consumer behavior helps to increase the performance of business, effect the individuals, explains, simplify and helps customers to make decisions in their purchases (Khan, 2006). In order to improve a business performance companies, huge holdings learn consumer behavior. It is important to understand consumers, their buying, thinking, decision making processes and factors that impact their decisions in purchasing processes. This helps organizations to better understand their customers and people, how to market the available products to them. In addition, with the studying consumer behavior they know what to produce or develop for customers. They develop marketing strategies and plans in order to increase company's sales (Kardes, Cronley & Cline 2010).

Decision is the action of choosing something between two or more alternatives. People make different decisions in everyday life, which changes their life in future. There is a simple model of consumer-related decision making (Khan, 2006).

i. Economic man model: The people that include to this kind of model are rational decision makers.
ii. Passive man model: Unlike the economic man model, the consumers that belong to passive man model are irrational purchasers.
iii. Cognitive Man Model: Consumer describes here like problem solver. So, consumer searching the information and evaluating it. When consumer finds sufficient information, he makes decision.

According to Hawkins & Mothersbaugh, (2010) the phrase consumer decision describes a person that rationally evaluating the services, products, brands which will satisfy his need with least cost. Moreover, in some cases the decisions made on brands style, price or characteristics, however sometimes consumers make decisions on emotions or feelings. And consumers purchase the products because it makes them feel good or like it.

Traditional decision-making process consist from 5 stages. They are: need/problem recognition, information search, evaluation of alternatives, purchasing, post- purchasing behavior.

a) Need/Problem recognition. This is the first step of traditional decision making. Problem recognition occurs when a person sees a significant difference between recognized and desired level or what is perceived and actual state. In other words, the individual understands the difference between the real situation and the situation that he wants to be (Kardes Cronley & Cline 2010). According to Khan (2006) the existence of consumption opens a way to problem recognition. Al-jaraisy (2008) believes that needs, wants and opportunities are stimulating the consumer for problem recognition. Like a main aspect of problem recognition stimulus helps consumer to determine the need. Moreover, stimulus takes its source from friends, neighbors and from other surroundings. Also, different advertisements, commercials are the source of stimulus. Our feelings such as: hunger, pain as well as included to this source.

b) Information search. As the consumer defined the problem or his need the next step is the searching of the information about the product or service (Khan, 2006; Al-jaraisy, 2008). Moreover, the information may be limited or sufficient. There are many cases that consumers have a lot of information about the product which simplifies the evaluating process or in opposite the lack of information make difficult to take decisions in evaluating step.

c) Evaluation of alternatives. Once we searched the information and collected it now we should evaluate it and choose the needed one to us. Evaluation of alternatives varies from product to product, as well as from consumer to consumer. Moreover, the main features that help the consumer in evaluating process is price, color, quality, safety, options, style, warranty, durability and other features of the product (Al-jaraisy, 2008; Lake, 2009).

d) Purchasing. This is the choosing one alternative and making the purchase. In some cases, consumers select brand that make discount at purchasing time. Moreover, the purchase influences by different factors such as amount of information, limit or the friends, family members absence during purchasing (Al-jaraisy, 2008). In addition, the information provided by salesman is another strong factor. Sometimes finalizing one purchase opens way to another purchasing. For instance, when we buy laptop it can make us to buy printer, mouse or other gadgets for the laptop.

e) Post-purchasing behavior. This is the final step of traditional decision-making process. This step does not exist in low-involvement purchases, however in high-involvement purchases this stage take a lot of time for thinking (Lake, 2009). Consumer thinks if she made the right choice or not.

Consumer buying decision is effected by internal and external factor. Therefore, it is very necessary for marketers to learn this factors in order to know how consumers act when purchasing, and what makes them to change decisions. Marketers say that there are 4 main factors that influence consumers behavior. They are sosial factors, cultural factors, psychological factors and personal factors.

Cultural factors are the essential external effect on individual's wants and needs (Durmaz, 2014).Culture is the all-including strength which forms of person's personality. Culture influences the consumer's behavior, as well as effects person's purchases. According to Lake (2009) while the marketers and organizations know the culture of their customers it will better and easy to serve them, and effect their purchases. Goodrich and Mooij (2013) stated that culture is the sum of norms and standards. Culture changes every day and every year. According to Kacen & Lee (2002) if the organization sets goal to become a leader in market it should design and produce goods according to the culture of the country where it sells products. Huge companies change, cancel or renew some kind of products because of the culture of countries that they make sales. Sometimes the same product of the company may bring a lot of profit in one country while it can make less profit in other country because of the difference in the culture (Khan, 2006).

Reference groups, family as well as roles and status are important subheadings of social factors. Reference group include family, friends, coworkers, colleges. These people influence us when we make purchases, helping us in selecting the goods, services. According to Al-jeraisy, (2008) reference group is sum of persons with common rules which impact people in purchasing period. Reference groups can be big society or small group like individual's family. Family is one of the most powerful group which can affect person's buying actions. Mirzaei & Ruzdar, (2010) defined that family members, social organizations, professional institutions all include to reference groups. According to Schiffman & Kanuk (2009) shopping groups, virtual groups, friendship groups are the different kinds of social groups. Some groups have got direct impact on individuals. Such type groups are membership groups. It means if we have continuous interaction with any group it is the membership group for us. In addition, the neighbors, classmates, coworkers are our membership group (Al-Azzam, 2014).

According to Sarker, Bose, Palit, & Haque (2013) the main personal factor which impact consumers purchase behavior are: age, personality, economic situation, lifestyle. A manager in one company buys and wears branded clothes, while a normal worker buys cheap ones and don't care about brands. Or young and old people wear in different styles. Furthermore, it depends on their feature of think, interests, age, lifestyle and other personal factors. Personality very important concept because it helps to divide consumers in groups properly their psychological characteristics. Marketers can't change people's personality, so they learn them by dividing to these segments, and target these persons to market their products better (Sarker et al., 2013). Every person has different wants according to their age. Individuals purchase a lot of products, services and their age, life style influence these purchases. Furthermore, the tastes, choices and desires change with the changing of age (Ramya & Mohamed Ali, 2016).Anyway, young and old people don't have the same tastes. According to Fratu (2011) age is powerful discriminator of consumer behavior.

The major psychological factors that influence person's purchasing decisions, choices are motivation, perception, learning, beliefs and attitudes. Purchasing of one service or good depends on how individual perceives it, if something motivates to buy it (Khaniwale, 2015). According to Hemanth & Shruthi (2013) marketers don't have enough control over these factors, that's why they take a significant attention on psychological factors. Solomon, Bamossy, Askegaard, & Hogg (2006) stated that motivation occurs when need is determined. When need is determined and activated a consumer strive to act in a particular way in order to reduce the need. Perception is the way how people see and perceive the environment, acts and other things. We are using our sense organs to perceive these things. According to Khaniwale (2015) perception is the process by which a person find and analyze the information for using it. Two different persons can watch the same advertisement and perceive it in different ways. Because individuals get and perceive the news, information according to their values, needs. People learn from their past experience, from another people. They use the information they learned in their purchasing behavior. The application's logo color and design are related to perception as well. Moreover, the most influential studies made in similar literature can be seen in the Table 1 below:

Subject	Studies
Color	(e.g. Akcay, 2012; Amsteus et al., 2015; Aslam, 2006; Deng et al., 2010; Elliot & Maier, 2014; English-Zemke, 1988; Grossman & Wisenblit, 1999; Shi, 2013; Singh, 2006; Tornetta et al., 2013; Yazdandoust Mofarah et al., 2013)
Design	(Bloch, 1995; Machado, de Carvalho, Torres, & Costa, 2015; Orth & Malkewitz, 2008; Pittard, Ewing, & Jevons, 2007; Veryzer, 1999; Walsh, Page Winterich, & Mittal, 2010)

Table 1: Studies on Color and Design

According to the studies found in the literature, conceptual model of the study and the hypotheses can be seen below:
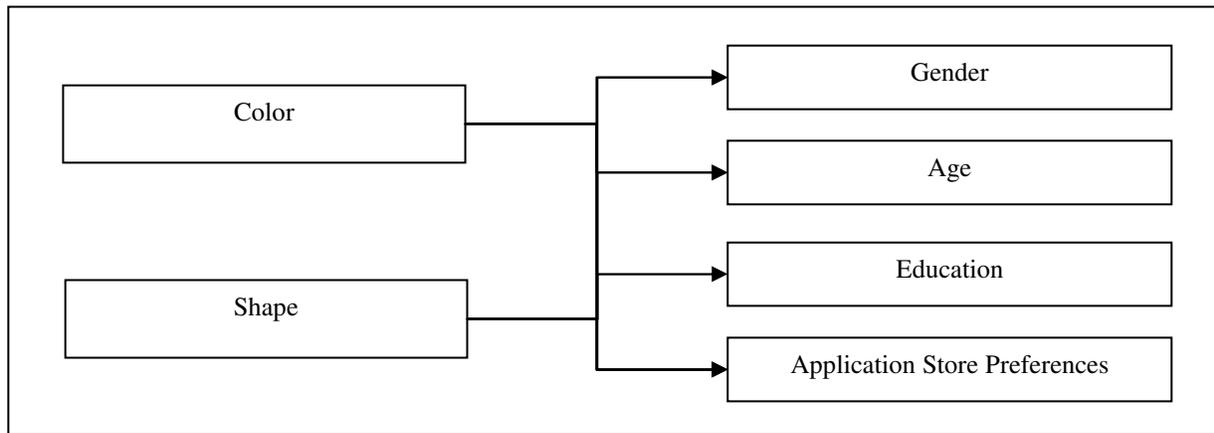
Figure 1: Model of the study

→ H$_1$: The effect of application's logo color differs according to gender on buying decisions.
→ H$_2$: The effect of application's logo color differs according to age on buying decisions.
→ H$_3$: The effect of application's logo color differs according to education on buying decisions.
→ H$_4$: The effect of application's logo color differs according to application store preferences of students on buying desicions.
→ H$_5$: The effect of application's logo design differs according to gender on buying decisions.
→ H$_6$: The effect of application's logo design differs according to age on buying decisions.
→ H$_7$: The effect of application's logo design differs according to education on buying decisions.
→ H$_8$: The effect of application's logo design differs according to application store preferences of students on buying desicions.

3. Research Metedology and Findings

The topic of the research is "The Effect of Logo Color and Design on Mobile Application Preferences: A Study on Google Play and App Store". The main aim of this research is to find out whether application's logo color and shape effectsonline application buying behaviours of the university students. And does this influence differ according to gender, age, educational status and applications store preference variables.

The universe of this study is university students in Istanbul city. When the population is defined the researcher shoud define if he will conduct the survey between all representatives of universe or some of them. As this research's population is about 1500,000 people(approximately number of university students in Istanbul), considering the size of universe researcher chose using sample. It is the faster and cheaper way of collecting information. Sampling is choosing a few part of the population to do a survey in order to investigate the whole population. There are some ways of sampling. The way that researcher chose is convenience sampling. It is the non-random sampling choosing the people that is easiest to recruit. The convenience sampling method is the easy, simple, fast and inexpensive. Sample size defined 271 people with the level of confidence 90% and 5% allowable error.

There were 2 ways of data collection in this research. The first and main data were collected by prepared questionnaire without having the answers in advance. The prepared questionnaire consists of 25 questions. First 7 of the questions were demographic questions which gather information about gender, age, education, income, applicant's favorite color, marital status and application store use. Furthermore, the rest 18 questions were likert scale questions which measure the influence of color and design on respondent's buying decisions. Distribution of questionnaires and data collection procedured face to face with students. The secondary data was collected by using books, articles, journals, researches, internet resources. Collected data analyzed with the help of SPSS 21 program.

In order to calculate the reliabilty of collected data the cronbach's alpha reliability test were used. The coeffecent of the cronbach alpha ranges between 0 and 1. In social sciences normally the coeffecent should be above the point 0.7. If the coeffecent of cronbach's alpha closer to 1, it means the reliability of data is higher. The given table below shows the reliability coefficients of our data.

Construct	Number of Variables	Cronbach Alpha
Coeffecent of Color Related Variables	9	0.861
Coeffecent of Design Related Variables	9	0.900
Total	18	0.926

Table 2: Reliability

Demographic Profile	Frequencies	Percent
Gender		
Female	109	40.2
Male	162	59.8

Age		
18 and below	2	0.7
18-25	221	81.5
26-35	41	15.1
36-45	6	2.2
46-55	1	0.4
56 and above	0	0
Educational Status		
Associate Degree	3	1.1
Bachelor	195	72.0
Master	64	23.6
PhD	9	3.3
Application Store Preference		
App Store	164	60.5
Google Play	107	39.5

Table 3: Main Demographic Characteristics of Responses

In order to test the hypotheses there were Mann-Whitney U and Kruskal-Wallis H tests used. **Mann-Whitney U test** is the non-parametric substitute test to the independent sample t-test. It is a non-parametric test which compare two sample means coming from the same population, and used to test if there is equality between two sample means. Kruskal-Wallis H test is a nonparametric test which is used to determine is there meaningful difference among 3 or more groups of variables. Kruskal-Wallis H test is developed version of Mann-Whited U test and it is nonparametric substitute to the One-Way Anova test.

➢ H_1: The effect of application's logo color differs according to gender on buying decisions.

	Gender	N	Mean Rank	Sum of Ranks	Z	Sig.
Effect of color according to gender	Female	109	147.92	16123.00	-2.130	0.033
	Male	162	127.98	20733.00		
	Total	271				

Table 4: The Mann-Whitney U test of color effect according to gender

The Table 4 shows the resuls of Mann-Whitney U test. It is shown that the value of Z is -2.130. The test results p=0.033; p<0.05 illustrates that H_1 is accepted. And the effect of application's logo color differs according to gender on buying decisions.

➢ H_2: The effect of application's logo color differs according to age on buying decisions.

	Age	N	Mean Rank	X^2	Sig.
Effect of color according to age	18 and below	2	119.75	6.638	0.156
	19 – 25	221	131.91		
	26 – 35	41	149.33		
	36 – 45	6	181.33		
	46 – 55	1	254.50		
	56 and above	0	0		
	Total	271			

Table 5: The Kruskal-Wallis H test of color effect according to age

The table above describes the Kruskal-Wallis H test results of color influence on buying decisons according to age of respondents. The value of chi-square is 6.638. As X^2=6.638; p=0.156 and p>0.05 the test rejects H_2. It means the effect of application's logo color does not differ according to age on buying decisions.

➢ H_3: The effect of application's logo color differs according to education on buying decisions.

	Education	N	Mean Rank	X^2	Sig.
Effect of color according to education	Associate Degree	3	189.00	9.009	0.029
	Bachelor	195	127.68		
	Master	64	155.45		
	PhD	9	160.22		
	Total	271			

Table 6: The Kruskal-Wallis H test of color effect according to education

Table 6 illustates the Kruskal-Wallis test results of color effect according to education. According to the table the value of chi-square is 9.009. The results show that $X^2=9.009$; p=0.029. The H_3 is accepted because p<0.05 and the effect of application's logo color differs according to education on buying decisions.

➢ H_4: The effect of application's logo color differs according to application store preferences of students on buying desicions.

	Application Store	N	Mean Rank	Sum of Ranks	Z	Sig.
Effect of color according to application store	App Store	164	137.09	22482.00	-0.293	0.770
	Google Play	107	134.34	14374.00		
	Total	271				

Table 7: The Mann-Whitney U test of color effect according to application store preferences of students

Table above explains the results of Mann-Whitney U test of color effect related to application store preferences. According to the results Z=-0.293; p=0.770, as p>0.05 the H_4 hypothesis rejected.

➢ H_5: The effect of application's logo design differs according to gender on buying decisions.

	Gender	N	Mean Rank	Sum of Ranks	Z	Sig.
Effect of design according to gender	Female	109	145.84	15896.50	-1.764	0.78
	Male	162	129.38	20959.50		
	Total	271				

Table 8: The Mann-Whitney U test of design effect according to gender

Table 8 illustrates the results of Mann-Whitney U test of impact of design on purchasing decision according to gender. The value of Z is -1.764 and p=0.078. The value of p that we get is higher than acceptance(p>0.05), therefore H_5 hypothesis is rejected.

➢ H_6: The effect of application's logo design differs according to age on buying decisions.

	Age	N	Mean Rank	X^2	Sig.
Effect of design according to age	18 and below	2	183.25	2.400	0.663
	19 – 25	221	133.71		
	26 – 35	41	148.24		
	36 – 45	6	119.08		
	46 – 55	1	147.00		
	56 and above	0	0		
	Total	271			

Table 9: The Kruskal-Wallis H test of design effect according to age

The table above described the test results of Kruskal-Wallis which is examined between design and age variables. The test results are $X^2=2.400$ and p=0.663. The value of p is higher that acceptance (0.05), that is why H_6 hypothesis is rejected. According the test the effect of application's logo design does not differ according to age.

➢ H_7: The effect of application's logo design differs according to education on buying decisions.

	Education	N	Mean Rank	X^2	Sig.
Effect of design according to education	Associate Degree	3	166.33	14.077	0.003
	Bachelor	195	127.42		
	Master	64	165.08		
	PhD	9	105.11		
	Total	271			

Table 10: The Kruskal-Wallis H test of design effect according to education

By investigating Table 10 it is obvious that the value of chi-square is 14.077. Following this $X^2=14.077$; p=0.003. As p<0.05 the H_7 hypothesis is accepted. From this point of view the effect of application's logo design differs according to education on students purchasing behaviour.

➢ H_8: The effect of application's logo design differs according to application store preferences of students on buying desicions.

	Application Store	N	Mean Rank	Sum of Ranks	Z	Sig.
Effect of color according to application store	App Store	164	136.71	22420.00	-0.191	0.848
	Google Play	107	134.92	14436.00		
	Total	271				

Table 11: The Mann-Whitney U test of design effect according to application store preferences of students

Analysing the Mann-Whitney U test describing in the table above it became clear that the value of Z is -0.191. However the value of p(p=0.848) is above acceptance(p>0.05) which means that H_8 is rejected. Mann-Whitney U test shows that the effect of application's logo design does not differ according to students' preferences in application stores.

4. Conclusion, Limitations and Recommendations for Future Studies

Based on the findings, the study showed that most of the hypotheses rejected. It proves that most of the students don't pay significant attention on logo's color and design depending on their demographic status. However, the research finds out that there are some cases when color and design of application's logo influence students' buying behavior. In order to get meaningful results and to measure the influence of color and design similar researches should be investigated in the future.

Analysing the tables the following results were gathered:

- H_1 is accepted. As reported by Mann-Whitney U test the effect of application's logo color differs according to gender on buying decisions.
- H_2 is rejected. As reported by Kruskal-Wallis H test the effect of application's logo color does not differ according to age on buying decisions.
- H_3 is accepted. As reported by Kruskal-Wallis H test the effect of application's logo color differs according to education on buying decisions.
- H_4 is rejected. As reported by Mann-Whitney U test the effect of application's logo color does not differ according toapplication store preferences of students on buying desicions.
- H_5 is rejected. As reported by Mann-Whitney U test the effect of application's logo design does not differ according to gender on buying decisions.
- H_6 is rejected. As reported by Kruskal-Wallis H test the effect of application's logo design does not differ according to age on buying decisions.
- H_7 is accepted. As reported by Kruskal-Wallis H test the effect of application's logo design differs according to education on buying decisions.
- H_8 is rejected. As reported by Mann-Whitney U test the effect of application's logo design does not differ according toapplication store preferences of students on buying desicions.

This research has got some limitations. Research based on only App Store and Google Play mobile applications. participants of research were only students. The research population limited only with students of Istanbul city. The research can be conducted between different people with different statuses. The same reseach may apply in different countries, even comparing the results of this thesis. The main variables which were taken to determine the influence of color and design on gender, age, education and app store preference. However, it can be other demographic variables such as marital status, income as well. Furthermore, by taking the same features like color and design similar researches could be explore to study consumers' buying behavior.

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