Journal of Business Studies Quarterly
2016, Volume 7, Number 3 ISSN 2152-1034

Journal of Business Studies Quarterly jbsq.org

Time-Related Changes in the Purchasing Attitudes and Behaviors of Individuals: A Study on Wearable Technologies

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Abstract

Technological advances are having a significant impact on nearly all aspects of our daily lives. One of the main goals of these technological advances is to make life easier for their users. The fact that the development and dissemination of technologies is taking place at a much greater pace than 20 years ago illustrates that newer technologies are being rapidly embraced by current users. The growing interest in mobile devices over the past few years indicates an increasing user preference for technologies that can be used while on the move, while also signaling that the demand for such technologies will continue to rise in the coming years. Parallel to the development of new tablet and smart phone models, wearable technologies – such as smart watches, smart bracelets, smart glasses, etc. – are also becoming increasingly widespread among users, gradually occupying a more significant place in their everyday lives. The wearable technology sector, which is expected to grow even more vigorously through the combination of internet services with wearable objects/technologies, will continue to attract the attention of both companies and users in the coming years.

Numerous studies report that individuals have been easily able to keep pace with these rapid technological advances, becoming accustomed within a very short period of time to the presence and use of these wearable technologies. In this context, the present study aimed to investigate the changes in the attitudes and purchasing behavior of individuals in Turkey towards wearable technologies by comparing findings (i.e. attitudes and purchasing behaviors) from the time these technologies first emerged with findings from two years later. The main purpose of the study was thus to identify how the different dimensions of the consumers' perception towards wearable technologies influenced, over the course of two years, their attitudes and purchasing behavior for these products. The first stage of the study consisted of a survey conducted in January 2014 with the participation of 417 first- and second-year university students between the ages of 18 and 25, while the second stage of the study consisted of a survey conducted two years later in January 2016 with the participation of 383 third- and fourth-year university students, all of whom took had taken part in the first survey. The study results indicated that the functional, emotional and monetary value dimensions have led to various changes in user attitudes over the two-year period. In addition, according to the 2014 data, the functional, monetary, and social value dimensions had a discernable effect on consumer attitudes, as well as a positive impact on the intention (or willingness) to purchase. According to the 2016 data, monetary and social value were the main dimensions that influenced consumer attitude, both having a positive impact on the intention to purchase.

Keywords: Wearable Technologies, User Attitudes, Functional Benefit, Emotional Attachment.

Introduction

Technological developments are continuing to impact and change the daily lives of people around the world at an ever growing pace, with recent technological advances such as electronic chips, GPS, Wi-Fi systems, the internet, sensors, and nanotechnologies in particular reshaping our world in a hitherto unseen way. One of the products most noticeably influenced by these technological advances are wearable technologies. The combination of internet services with wearable articles – in other words, granting such items the ability to connect to the internet – have given wearable technologies a whole new level of importance. While the literature does not provide a general definition for wearable technologies, they can, in the simplest terms, be described as technological devices that users wear on their bodies (Nugroho, 2013). Wearable technologies have been used for quite some time in the healthcare sector, which continues to be the area where they are the most widely used. With the recent development of hardware and devices designed specifically to be portable, wearable technologies have started to become widespread not only in the area of healthcare, but also in other areas of everyday social life, which has contributed significantly to their growing popularity. Technology companies and university research laboratories have worked extensively on the development of these technologies (Tao, 2005). A brief look at the studies conducted in this field reveals an emphasis on the design of comfortable, reliable, practical, integrated, light, esthetically-pleasing and fashionable products that would help enhance the use and acceptance of wearable technologies by the general population (Fortmann et al., 2013; Kurwa et al., 2008; McCann & Bryson, 2009). It is expected that increasing the sales volume of such wearable technologies will contribute to their seamless integration into daily activities and habits. According to a study by the IDC, the wearable devices market has grown steadily for the eight consecutive quarter by the first quarter of 2015. The study also notes that while 3.8 million wearable technology products were sold in the first quarter of 2014 around the world, this number has reached 11.4 million by the first quarter of 2015 (IDC 2015). Current estimates are that this number will reach 170 million by 2017, and that the wearable technology market will generate nearly $19 billion sales revenues by 2018 (Kurwa et al., 2008). From this angle, it can be clearly seen that wearable technologies will continue to grow in importance in the coming years for individuals and businesses alike. New technologies lead to rapid and marked changes in communication habits, purchasing behavior, interactions between businesses, and many other areas. Such changes can even culminate in a complete transformation of daily practices and activities. Compared to relatively older technologies, it has definitely taken a much shorter timeframe for recent technologies to gain widespread acceptance and use among individuals and businesses. For example, while it has taken nearly 20 years for mainframe computers to be produced and used *en masse*, mobile devices became widely used within only seven years after they were first introduced. Similarly, it has only taken three years for social media platforms to gain a global reach following their initial launch (Kare-Silver, 2011). Nowadays, the timeframe for the widespread acceptance and use of novel technologies can be shorter than a single year. The main purpose of the present study was to investigate whether the attitude and purchasing behavior of users towards wearable technologies exhibited any marked changes over a period of two years.

This study scrutinized the often-stated argument in the literature that users rapidly adapt to new technologies. The present study will thus contribute to the literature by providing empirical data to assess the validity of this widely-held theory. In this context, the study involves a survey that attempts to identify behavioral differences in a given group over a two-year period, beginning at a time when wearable technologies first began to find use in Turkey. In addition, the study also investigates the effect of the functional, social, monetary, and emotional value dimensions on the attitude and purchasing behavior of individuals towards wearable technologies.

2. Wearable Technologies

There is no clear or single definition in the literature for wearable technologies. However, there are some relative terms which have very close meanings, or which are used as synonyms of wearable technologies. These terms include "wearable devices", "wearable computers", "and wearable electronics". Although the terms are different, it can be derived from these definitions share more or less the same meaning, and that they can be used interchangeably (except "wearable computers") (Çiçek, 2015. p. 45). Parallel to the advances in computer technologies of the early 21st century, researchers have also intensified their research on the use of technologies worn directly on the human body. Such studies actually trace their roots back to the 1960s, when studies on the integration of roulette wheels to computers were first carried out by Thorp (1969); these studies later reached a whole new level with the installation of computers to the human body within the frame of various groundbreaking experiments carried out in the 1980s by Mann (1996). Such technological advances involving human-machine integration were carried even further by the discovery electro-textiles, which opened up an entirely new period in wearable technologies (Uğur, 2013). In the extant literature, most studies pertaining to wearable technologies are conducted from a health and textile perspective (Binkley, 2003; Dunne, 2004; Bonato, 2005; Tao, 2005; McCann and Bryson, 2009; Bonato, 2010; Rutherford 2010; Chan et al., 2012). However, there is also an increasing trend for wearable consumer electronics such as smart watches and smart glasses. Despite their increasing popularity as well as growing demand, there are only a few studies on wearable consumer electronics.

The scope of wearable technologies is very broad and amorphous, and determining the characteristics and specifications of wearable technologies is a rather thorny subject. Therefore, attempting to understand the classification of wearable technologies based on their basic characteristics will be very beneficial first step. According to the literature, wearable technologies can be divided into three main categories. These categories are: wearable health technologies, wearable textile technologies, and wearable consumer electronics (Çiçek, 2015, p.46)

Nowadays, leading global companies such as Google, Apple, Samsung, Nike, Qualcomm, and Microsoft are making strategic investments in wearable consumer electronics (Kurwa et al. 2008,). The global wearable technology market is expected to grow from $750 million in 2012 to $5.8 billion in 2018, while the number of wearable devices shipped is expected to rise from about 13 million in 2013 to 130 million in 2018. In this context, it is estimated that the size of the wearable technologies market will increase from $1.4 billion in 2013 to $19 billion in 2018 (Wei, 2014).

3. Conceptual Framework

While the development of computer systems was a significant step towards the creation of portable computer technologies, the most significant milestones in the development of

wearable technologies were the advances in mobile device technologies. Owing to the developments in connection technologies, most wearable mobile devices can now operate using cloud services. Furthermore, small-sized components such as sensors and Bluetooth installed inside wearable devices enable them to connect with smart phones, thus allowing these wearable technologies to function as accessories to these phones. In this context, wearable technologies can be defined as a general term for technological devices worn on the human body.

One of the most comprehensive definitions of wearable technology is "an application-enabled computing device which accepts and processes inputs." Such devices are generally fashion accessories usually worn or attached to the body. The device can either work independently or be tethered to a smartphone, allowing some kind of meaningful interaction with the user. The wearable product can be worn on the body (like a smart patch) or around the body (like a wristwatch or a headband), or installed within the body (like an identification sensor embedded under the skin, or a sensor attached to the heart to monitor cardiac aberrations)" (Kurwa et al., 2008, p. 2). For a product to be considered as a wearable technology, it must also be capable of connecting to other technology products through sensors or other means. Various researchers in the literature also describe the need for wearable technologies to incorporate additional features such as hands-free, augmented reality, sensor enrichment, and effective data transfer technologies (Çiçek, 2015).

In order to be successful in this emerging market, managers and companies need to carefully evaluate the factors that can potentially lead to an increased demand for wearable consumer electronics. Since the wearable consumer electronics are yet at an introductory stage, attitudes towards wearable consumer electronics and intention to purchase can be studied instead, rather than looking at actual consumer behavior. According to the Theory of Reasoned Action, actual behavior is determined by the purchase intention, which in turn, is determined by the attitude towards a particular behavior (Fishbein and Ajzen, 2011) Therefore, factors affecting attitude and the intention to purchase have an indirect effect on actual behavior.

Perceived value, which is an important and strategic concept not only for marketers but also for consumers (Sweeney at al. 1997), refers to the consumer's overall assessment of the utility of a product based on perceptions of what is given and received (Zeithaml, 1988). It is considered as one of the key determinants of attitude and purchase intention. In general, perceived value consists of four dimensions which are monetary value, social value, emotional value and functional value (Sweeney and Soutar, 2001). Emotional value refers to the benefits associated with the emotions triggered by a certain product, while social value refers to the benefit associated with the product's ability to enhance social identity. Monetary/financial value, on the other hand, refers to the perceived benefit associated with short- and long-term decrease in costs/expenses enabled by the product. Finally, functional value refers to the benefit associated with the perceived quality and expected performance of a product.

Many researchers in the literature have investigated in their studies the effect of perceived value and its factors on consumer attitudes and behavior. Yang and Jolly (2009), for instance, have conducted a study on mobile services comparing persons using mobile services in the United States and Korea. Within the frame of this study, the effects of functional, social, monetary, and emotional values on consumer attitudes were investigated separately for each country. Comparisons performed based on the study results indicated that in each country, social value, and monetary value had different effects on attitudes. In another study, Sweeney et al. (1999) examined electronics-selling chain stores to determine the effect of the different dimensions of perceived value on the perception of general value, quality, and risk among customers. The results of this study illustrated that this effect was quite significant. In another

study, Patterson and Spreng (1997) determined that the perceived value has a significant effect on the intention to purchase. A study conducted on students showed that the perceived general value positively affected the intention to purchase (Chang and Wildt, 1994). Another study conducted by Dodds et al. (1991) involving university students again demonstrated that perceived value favorably affected the intention to purchase. A study performed on consumers shopping online similarly noted a positive relationship between perceived value and the intention to purchase (Kaya and Hilal 2012).

Functional value is the benefit associated with the functions, uses and physical performance of a product (Çalışkur, 2014). The existence of this value depends on whether the customers purchasing a product (or service) can actually obtain the physical and/or psychological benefit they expected from it. Many studies in the literature describe emotional value as one of the dimensions of perceived value (Sheth, Newman and Gross, 1991; de Ruyter et al, 1997; Sweeney, Soutar and Johnson, 1999; Sweeney and Soutar, 2001). In the study of Onaran, Bulut, and Özmen (2013), it was observed that functional value did not have a significant effect on customer satisfaction levels. In this context, the first hypothesis of the present study was concerning function value.

H1: The effect that the perceived functional value associated with wearable technologies has on perceived individual attitudes tends to differ over time.

Monetary value is defined as the short- or long-term benefits that stem from a reduction in the usual costs/expenses owing to a particular product or service (Eren and Eker, 2012). According to another definition, monetary value can be considered as the monetary benefit or superiority of a purchased product or service compared to its alternatives (van Riel and Pura, 2005). In their study, van Riel and Pura (2005) determined that monetary value has a significant effect on the intention to purchase. Other studies have similarly demonstrated that monetary value is an important factor that affects the perception of quality and general value. The current study investigated whether the monetary value associated with wearable technologies leads to any differences in perceived attitudes. In this context, the second hypothesis of the present study was formulated as follows:

H2: The effect that the perceived monetary value associated with wearable technologies has on perceived individual attitudes tends to differ over time.

Social value refers to the social effects derived from purchasing a particular product or service – such as social status, or a sense of belonging. Individuals might seek to acquire such value in order to gain acceptance within a social group, or to avoid being alienated. In this context, social value can be described as a perception customers develop towards a product depending on how they think it will contribute to their acceptance within society. Social value has been studied in the literature as one of the dimensions of perceived value (Sheth, Newman and Gross, 1991; Sweeney, Soutar and Johnson, 1999; Sweeney and Soutar; 2001). In a previous study, Öztürk, Şerbetçi, and Gürcan (2014) determined that social value has a noticeable effect on purchasing behavior. In this context, the third hypothesis of the present study was formulated as follows:

H3: The effect that the perceived social value associated with wearable technologies has on perceived individual attitudes tends to differ over time.

Emotional value can be defined as the emotional response developed towards a particular product or service (Onaran, Bulut and Özmen, 2013). For example, if using a wearable technology product stirs emotions among customers, it can then be said that the product has an emotional value. In many studies in the literature, emotional value is described as one of the dimensions of perceived value (Grönroos, 1997; de Ruyter et al., 1997; Sweeney, Soutar and Johnson, 1999; Sweeney and Soutar, 2001). Certain studies report that emotional value also affects customer loyalty (Pura, 2005) and customer satisfaction (Onaran, Bulut and Özmen, 2013). In this study, we investigated whether the emotional value associated with wearable technologies leads to any differences in perceived attitudes.

H4: The effect that the perceived emotional value associated with wearable technologies has on perceived individual attitudes tends to differ over time.

The term "attitude" refers to the collection of positive or negative emotions and dispositions that individuals exhibit towards a particular object, idea, or even behavior (Küçük, 2012). Attitudes tend to pre-shape the behaviors of individuals towards situations and contexts; as such, attitude precedes behavior, and influences the way in which it manifests itself (Kalkan, 2011). For this reason, there is generally a positive relationship between attitude and the intention to use – one that has been described in many studies in the literature (Yang and Yoo, 2004; Kalkan, 2011, Yılmaz et al., 2009). Davis (1989) considers attitude to be a variable that is more important than the other ones affecting the intention to use a particular technology. In this context, the fifth hypothesis of the present study was formulated as follows:

H5: The effect that individual perceptions regarding wearable technologies have on the intention to purchase tends to differ over time.

4. Methods

4.1. Study Purpose

The main purpose of the study was to determine the extent to which the value dimensions associated with the perceptions of individuals towards wearable technology products affected their attitudes and intention to purchase, and how this effect differed over the course of a two-year period. In addition, the study also aimed to investigate how the social, monetary, emotional, and functional value dimensions affected the attitudes and intention to purchase of individuals, and to determine the extent of this effect according to year.

4.2. Sample and Data Collection

To achieve the study purpose, a research model was proposed, and several hypotheses were developed. The population of the current study included potential users of wearable consumer electronics in Turkey. The study was limited to this sample due to restrictions associated with time and costs, as well as the difficulties in reaching the entire population. Potential users of wearable consumer electronics who agreed to take part in the survey formed the basis of the study sample. In this context, questionnaires were administered to convenience samples composed of university students. A study sample based on university students was considered suitable for this study, since they are more inclined to buy new technologies on the market, and are more technology savvy than the older generations who are less interested in

learning about new technological products. The questionnaire was developed based on a review of the literature. The questionnaire form included two sections: The first section included questions regarding demographic characteristics, while the second section included five-point Likert type (1=Strongly Disagree ... 5=Strongly Agree) items for testing the aforementioned study hypotheses. The value scales developed by Sweeney and Soutar (2001) were also used within the frame of the study. The first stage of the study consisted of a survey conducted in January 2014 with the participation of 418 first- and second-year university students between the ages of 18 and 25. The second stage of the study was conducted two years later in January 2016 with the participation of 383 third- and fourth-year university students, all of whom had taken part in the first stage of the study. The study sample thus consisted of a total of 418 + 383 = 801 students, predominately comprising students surveyed on two occasions.

4.3. Data Analysis

This study first analyzed the validity and reliability of the scales used to evaluate the variables. After testing the validity and reliability of the scales, we then tested the study hypotheses. The older and newer data (i.e. data from January 2014 and January 2016) regarding wearable technologies were compared using the structural equation model.

The validity analysis was performed using both exploratory factor analysis and confirmatory factor analysis. The exploratory factor analysis was used first to test the structural validity of the study scales. Due to having low and non-significant ($p>0.05$) factor loads, and/or a high correlation with the error terms of questions associated with other variables, the variables FV1, FV5, EV5, SV1, and PI3 were removed from the scales. Although items MV3-MV2, EV3-EV4, and PI1-PI2 were determined to influence one another, these items were kept in the scales, and correlation was permitted between their error terms. After the aforementioned items were removed from the scales, the goodness of fit values were found to be quite high for both types of data (2014 data: GFI:0.909, AGFI:0.882, NFI:0.891, CFI:0.934, X2/sd:2.318, RMSEA:0,056; 2016 data: GFI:0.903, AGFI:0.874, NFI:0.896, CFI:0.938, X2/sd:2.277, RMSEA:0.058). The Cronbach's alpha coefficient, which was calculated to test the reliability of the scales, was determined to be above the critical threshold of 0.70. This indicated that the scales were reliable.

Table 1. Cronbach's Alpha Coefficients

	2014	2016
Factor Structures	Cronbach's Alpha	Cronbach's Alpha
Functional Value	0.706	0.716
Monetary Value	0.784	0.821
Emotional Value	0.855	0.843
Social Value	0.844	0.891
Attitude	0.858	0.877
Purchase Intention	0.875	0.887

4.3.1. Comparison of the Structural Equation Model with the Perception towards Wearable Technologies According to Year

This section tests whether the effect that functional, social, monetary, and emotional value dimensions, which are also sub-dimensions of the perceived value associated with wearable technologies, have on attitude differed over the course of the two-year period. In

addition, we will also perform comparisons to determine whether the effect of the attitude factor on the purchasing behavior has changed over the two-year period.

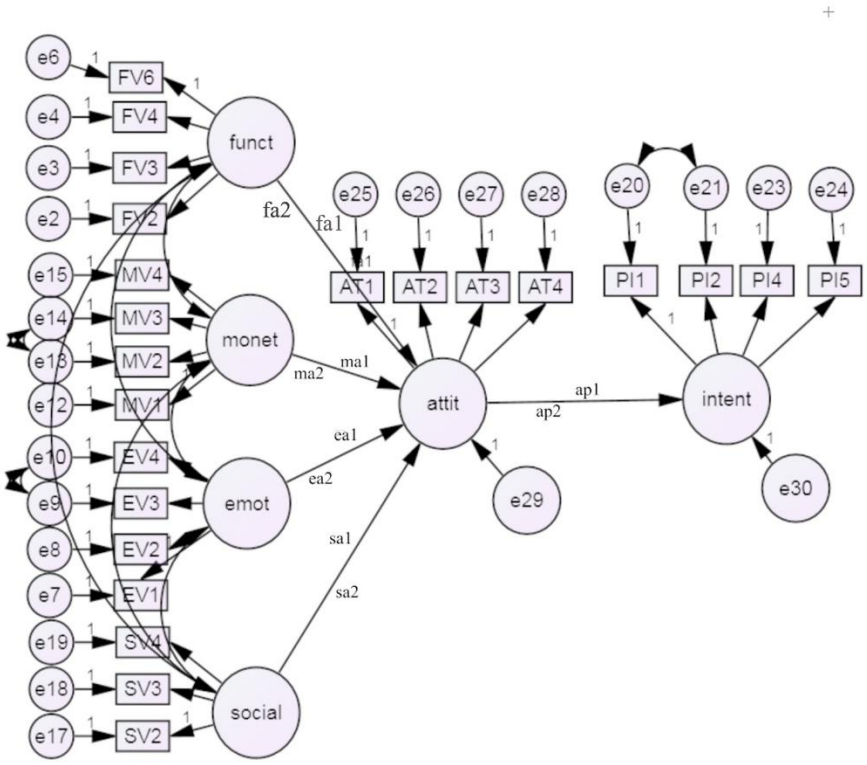

Figure 1. Illustration of the attitude and behavior effects associated with wearable technologies in 2014 and 2016

In the structural equation model, the multi-group comparison method involves the comparison of the same model based on data collected in two different ways. This study compared the data obtained from two different periods. The first step consisted of testing whether both groups (or data sets) confirmed the structural model. As shown in Table 2, both groups showed a decent goodness of fit.

Table 2. Goodness of Fit Indices

	2014	2016	Accepted Value
χ2 value (CMIN)	483.131	499.608	0
χ2/sd (CMIN/DF)	2.237	2.313	<5
Goodness of fit index (GFI)	0.91	0.9	1
Adjusted goodness of fit index (AGFI)	0.885	0.871	1
Normalized fit index (NFI)	0.892	0.892	1
Comparative fit index (CFI)	0.937	0.935	1
Root Mean Square Error of Approximation (RMSEA)	0.055	0.059	RMSEA<0.08

After determining the fit between the data and the model, the two periods were evaluated differently to determine whether the effects included in the model were confirmed. To observe the effect of the functional value, monetary value, social value, and emotional value on attitude, and the effect of attitude of the purchase intention, the non-standardized regression coefficients were determined for both types of data. These non-standardized regression coefficients are shown in Table 3.

Table 3. Non-Standardized Regression Coefficients of the Model

			Estimate		S.E.		C.R.		P	
			2014	2016	2014	2016	2014	2016	2014	2016
attit	<	funct	0.356	0.029	0.101	0.118	0.101	0.245	***	0.806
attit	<	monet	0.017	0.127	0.048	0.043	0.048	2.937	0.724	0.003
attit	<	emot	0.508	0.763	0.07	0.08	0.07	9.502	***	***
attit	<	social	0.116	0.053	0.052	0.043	0.052	1.237	0.025	0.216
intent	<	attit	0.938	0.785	0.066	0.065	0.066	12.038	***	***

After testing the fit of the study model with the data (as well as the effects the models have) for both years, we attempted to determine whether these effects tended to differ between these two periods. As shown in the model in Figure 1, the tested effects were defined in AMOS. The effect of the functional value on attitude was designated as “fa1” for the year 2014, and “fa2” for the year 2016. Similarly, for the year 2014, the effect of the monetary value on attitude was designated as “ma1;” the effect of the social value on attitude was designated as “sa1;” the effect of the emotional value of attitude was designated as “ea1;” and the effect of attitude on the purchase intent was designated as “ap1.” For the year 2016, these effects were designated as “sa2,” ”ma2,” ”ea2,” and “ap2,” respectively.

The perception and attitudes of individuals towards wearable technologies in different years were compared based on data sets collected two years apart. The Z values matrix results, also known as the pairwise parameter comparison results, were then interpreted. The difference between the coefficients of the two groups were evaluated using the Z test, and then compared with the values on the Z table. With a confidence interval of 95% and a significance level of 0.05, the Z value on the table was 1.96. Based on a comparison between the two groups, if a difference greater than 1.96 is identified, it can then be said that the difference between the two is significant (Kaya and Özen 2012). After this, the non-standardized coefficients were compared to determine which one had a stronger effect. The pairwise parameter comparison matrix illustrating the difference between the effects observed two years before and after are shown in Table 4.

Table 4. Z Values of the Differences in Effect with Respect to Year, as Identified in Model Comparisons Regarding the Perception of Wearable Technologies

	fa1	ma1	ea1	sa1	ap1
fa2	2.1**	2.079	-3.144	2.753	-3.561
ma2	-0.094	-1.695*	-7.958	-0.558	-9.463
ea2	3.487	4.632	-2.389**	5.542	-2.897

sa2	0.672	-0.167	-6.782	0.934	-8.054
ap2	5.493	8.195	0.094	9.154	-0.141

An evaluation of Z values in Table 4 indicates that values for fa1 and fa2, ma1 and ma2, and ea1 and ea2 were greater than 1.96. As such, it was determined that the effect of the functional value, monetary value, and emotional value on attitude tended to differ according to year. On the other hand, the effect of social value on attitude, and the effect of attitude on the purchase intent did not change according to year.

The non-standardized coefficients were compared in order to determine which one of the effects determined to change over time actually had the largest effect/impact. Standardized coefficients are useful parameters for interpreting the relative effects of independent variables on the same set of dependent variables within a given sample (Bogazzi, 1980). However, standardized coefficients are not suitable when comparisons are performed between different samples, and may lead to erroneous results in such cases. As non-standardized coefficients are determined by performing calculations based on the original scale of each variable, they are generally used to define the absolute effects of variables, and can be used for comparing similar models between different samples (Diamantopoulos, 2000, Kline 2005). According to Kline (2005), if non-standardized coefficients for the same parameters are significantly different from one another between two sample groups, it can then be said that there is a significant intergroup difference with respect to that parameter. Based on these considerations, non-standardized coefficients were utilized in comparing effects determined to have significant differences between them. Based on the collected data, it was determined that the effect of the functional value on attitude was 0.356 in 2014, and 0.029 in 2016. On the other hand, the effect of the monetary value on attitude was 0.017 in 2014, and 0.127 in 2016. The effect of the emotional value on attitude was 0.508 in 2014, and 0. 763 in 2016. An evaluation of the changing effects revealed that the functional value had a higher coefficient in 2014 than in 2016. On the other hand, monetary value and emotional value exhibited an exact opposite behavior, with monetary and emotional values having a higher coefficient in 2016 than in 2014. As such, the functional value was determined to have a stronger effect on attitude in 2014 compared to 2016. Meanwhile, the monetary value and emotional value were determined to have a stronger effect on attitude in 2016 compared to 2014. Based on these findings, hypotheses H1, H2, and H4 were determined to be valid, while hypotheses H3 and H5 were invalid.

5. Conclusion and Considerations

Recent advances in information technologies are rapidly transforming both social lives and the work environment. Over the past 30 years, digital technologies have developed at an astounding pace (De Kare-Silver, M. 2011), triggering dramatic changes in communication habits, purchasing behavior, the interaction between businesses, and many other aspects of everyday life. Similarly, developments in internet technologies also have a significant impact on the daily lives of individuals. Owing to developments in internet and connection technologies, devices can now remotely connect to the internet and to one another in different environments, which not only grants them significant mobility, but also facilitates the daily lives of individuals in many respects. Within the scope of this study, we examined wearable technologies, one of these novel technologies that hold significant potential.

This study compares individuals' attitudes and purchase intents between two periods that are two years apart, the first corresponding to a time wearable technologies were being introduced for the first time, and the second corresponding to a time when these technologies were beginning to become more common. We investigated whether the effect of the functional, monetary, social, and emotional values, which are dimensions of the perception of value, on the attitude and purchase intent of individuals towards wearable technologies changed according to year. Within the scope of the study, we also used a model to test the extent to which the functional, monetary, social, and emotional values affected the attitude and purchase intention of individuals. Results relating to the functionality of wearable technology products have shown that in 2014, these such products were considered to be more functional. It was noted that as the availability and diversity of these products increased over time, the opinions of individuals regarding wearable technologies changed as well, with fewer individuals in 2016 considering these products to be functional. The effect of monetary value on attitudes relating to wearable technology products was different between 2014 and 2016, with the effect in 2016 being greater. These changes in attitude could be due to changes in the financial situation of the participating individuals, or to changes in the costs of these products in parallel to an increase in the diversity of wearable technologies. It was observed that the effect of social value on attitude was also different between 2014 and 2016. It was determined that in 2016, the social value individuals attached to wearable technologies had a stronger effect on their attitudes compared to the period two years prior. The recent increase in the diversity of wearable technologies has contributed to increasing the use of such products by younger individuals, while also reinforcing these younger individuals' acceptance in social environments.

Testing the developed model showed that the effect of the functional, monetary, and social values on attitude have changed compared to 2014, and that attitude has a positive effect on the purchase intention. According to the data for 2016, monetary and social values positively affected attitude, which in turn positively affected the intention to purchase.

This study reevaluated the theory that as technology becomes widespread in the daily lives of individuals, the penetration and establishment of these technologies nowadays takes place within a very short period of time as opposed to several years as it once used to. Based on the obtained results, it was determined that the perception and attitudes of individuals towards a technological product could indeed change over a period of two months.

It is often described that the growing diversity and popularity of wearable technology products with internet capabilities with constitute an important change in our daily lives. While the healthcare sector is the area where wearable technologies are currently the most used, developments with these technologies will allow their extensive use in other sectors, as well. Furthermore, it is expected that these technologies will be rapidly and easily adopted by individuals, and that they will find extensive use in both social life and work-related activities.

6. Limitations and Future Studies

The first limitation of the present study was that while there are numerous factors affecting the attitude and purchase intention of individuals, this study focused exclusively on the effect of the monetary, social, emotional, and functional value factors/dimensions on the attitude and purchase intention. There are actually many other factors that are known to affect the purchase intention, and which are widely used and accepted in the literature; such factors could be added to the study model, and the effect of various mediating variables could also be investigated within the scope of the study model. The limited number of factors in the present

study thus represented an important limitation. A second limitation for the study was the use of the convenience sample method due to the difficulty in reaching the entire study population. It was not possible for the sample to represent the entire population, and for this reason, the generalization of the study results is not possible. In addition, due to budget constraints, the study was performed exclusively with university students. Consequently, the study could not be carried out with a larger sample; this represents yet another limitation of this study. To allow this study to serve as a reference and basis for other researchers, the study methods should be repeated in different regions and with different age groups and larger samples, and comparisons should also be performed between the results obtained for different groups and samples.

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