BREAKTHROUGH TO OVERCOME THE THROWAWAY SOCIETY: FOCUSING INFLUENCING FACTORS THE PRODUCT WORNNESS AT THE ANTICIPATED REPLACEMENT DECISION STAGE

Miyoung Jeon/ Research Fellow (Corresponding author)
Research Institute of Human Ecology, Seoul National University
222-311, 1, Gwanka-ro, Gwanka-Gwanka-Gu, Seoul, 08826, South Korea

Mobile   : +82 1042867351
Fax   : +82 2 8712506

Sunwoo Kim / Former-lecturer (Corresponding author)
Dept. of Consumer Studies, Seoul National University
222-423, 1, Gwanka-ro, Gwanka- Gwanka-Gu, Seoul, 08826, South Korea

Mobile   : +82 10 99608533
Fax   : +82 2 8712506

Rando Kim /Professor
Dept. of Consumer Studies, Seoul National University
222-423, 1, Gwanka-ro, Gwanka-Gwanka-Gu, Seoul, 08826, South Korea

Mobile   : +82 1090939393
Fax   : +82 2 8712506

ABSTRACT

In an attempt to contribute to the understanding of consumers' expectations on product life span, we explored the product wornness at the anticipated product replacement decision stage. An online survey was conducted to355 individuals in South Korea. Thirty product items were selected to identify which product categories were replaced earlier. As results, this study identified that consumers wanted to replace their products before they were physically worn-out. In addition, the results of this study also showed that the level of wornness at the product replacement decision stage differs depending on consumer characteristics such sage, income, perceived new product launching cycle, perceived price expensiveness, and materialism. A thought ful consideration should be taken for the consumer information provision, development

of government policy and alternative business practices which can contribute to longer use, reuse and recycling of products.

Key Words: Product life span, Product wornness, Product replacement

1. Introduction

Sustainable consumption is defined as consumption that supports abilities of current and future generations to meet their material and other needs, without causing irreversible damage to the environment or loss of function in natural systems(OCSC2000 cited in Jackson et al.2003, p.14).To meet people's needs with the absolute resources scarcity in our planet, there is need to reduce the throughput of products and services based upon the recognition of sufficiency.

One alternative way to reduce the through put of products is to use products less and longer with there cognition of infinite resources. Cooper(2005,p.54-55) suggested very interesting model for product life spans and sustainable consumption, which is noting that businesses' eco- efficient technology and consumers 'slow consumption habit can lead increased product life span. The slow consumption is defined as habits of "slowing the rate at which products are consumed (literally "usedup") by increasing their intrinsic durability and providing careful maintenance".

However, many companies urge consumers to purchase something newer with their planned obsolescence strategy and make quick end-of-life decision their products regardless of their durability (Utaka2000; Waldman1993).Because the companies believe that heir sales growth should be depended on there petitive product replacement in a short span of time, not on the product durability which causes a longer consumption cycle.

In spite of these frustrated situations, empirical study evidence about the consumers' expected product life span and their attitudesisrare (Cooper2005,p.60). It is encouraging to see some researches on the product lifespan or product replacement recently(Cooper2004; Heiskanen1996;Kostecki1998;Thomas2003)The marketing literatures still, however, rarely touch upon the consumer's attitudes on the product life span or durability(Bayus1991; Schor1999), which can lead slow consumption society.

There have been repeated calls for consumers' expected product life span and the triggers for longer product usage habit. Cooper(2005) calls for the research on deeper exploration of consumer values and attitudes affecting shorter product replacement decisions. Van Nes and Cramer (2005) highlighted the importance of understanding consumer's motives to replace products for sustainable design solutions. Guiltinan (2009) also pointed little is known about consumers' durable goods replacement decision making.

In an attempt to contribute to the understanding of consumers' expectation son product life span, this paper explored the product wornness at the anticipated product replacement decision stage and product categories were grouped according to their wornness at the anticipated product replacement decision stage. In addition, the influencing factors on the product wornness were investigated both from consumers' and products' sides.

To investigate dynamics between product items and consumers' characteristics related with the product wornness at the anticipated product replacement decision stage, the empirical study was conducted in Korea. The paper begins with a brief review of extant literature on the product lifespan and the consumers' attitudes on it. Subsequently, it reports critically upon the findings

obtained from an online survey in Korea. Finally, implications and suggestions for further research are drawn. The findings can contribute to the development of educational efforts and policies to help people become more sustainable consumers who can reverse the throwaway society.

2. Literature review
2.1 Research on the product life spans

There are two different approaches to measure the product life span, in the relative and absolute way. The first try is to estimate consumers' product use duration or relative product life span for various purposes. In marketing, the life span of products has been used for the product replacement forecast to estimate the time when the new consumer demands would be evolved (Pennock and Jaeger1964; Smith 1973). Their main focus was the expected duration of use after their purchase to forecast when the product would be replaced. These initial tries were of considerable importance for manufacturers to develop new strategy such as technological innovation or stylistic change but ignored the harmful impact of the early product replacement decision.

Lateron, new researches on the product life span have been raised in the perspective of sustainability, which is focusing on how long consumers use their products but their research objectives are totally opposite to those of marketers. Environmental is ts' main interest show to extend the product lifespan and the occasion for product re use for dematerialization and the sustainable society (OECD1982;Box1983). Cooper(1994)defines the service life as the product's total life in use from the point of sale to the point of discard. One product, however, can be used by several consumers during its whole life span through second hand market. Therefore, it is useful to note that Ruffin and Tippett(1975)proposed a simple estimation of the service life of an appliance under one owner.

For the relative product lifespan from the consumers 'side, the empirical evidence is much rare. The E-SCOPE project is the most representative research on house hold appliances life spans whichwasundertakenintheUnitedKingdomtogenerateaquantitativesurvey ofover800 households in 1998 and a series off ocus groups in 1999 (Cooper and Mayers 2000).

On the other hands, in the industrial ecology area, the product life span has been important information for the estimation of stocks, which is critical for material flow analysis(MFA) and waste management. Herein, the coverage of the lifespan should be holistic, from cradle to grave, which is much closer concept to the absolute physical life span. Murakami et al.(2010) suggested the extended view with focusing on the total length of the product's stay in the system, from the resource extraction, through the production, shipment, possession, use, repair, discard, recycling treatment and ultimately to the final disposal.

Though there had been various approaches to estimate the product life span, it is very difficult to obtain detailed data for the product's entire physical life span (Bayus1998).There is very little published information on how long products last, although estimates appear in two recent report son recycling from Government's Warren Spring Laboratory(Poll1993;Sarson1992).The life span of cars has been estimated at10 years and a Governmentreportquotes6 years for vacuum cleaners and12to14 years for refrigerators (Department of Energy 1990; Groene wegan

andHond1993).But all figures must be treated with caution with the absence of the standardized measure.

2.2 Product wornness & the influencing factors on it

Product wornness can be defined as the usage extent of the product of still usable product at the anticipated product replacement decision stage. Some products may be used until its life is fulfilled but others may be discarded or throw away even though they are still usable. It is hard to find some specific research finding son product wornness at the anticipated product replacement decision stage but there had been a few tries to measure consumer product life spans and the related factors. It is meaningful to goover some tries to measure product life spans because the product wornness is calculated based upon the product lifespan.

There are a few researches on consumer attitudes and behaviours regarding the product wornness and the product replacement decision. Consumers have a tendency not to fulfil whole products 'life according to the research by Evans and Cooper(2003). Consumers' intentions of longer usage were explored using surveyof711householdersin Sheffield, United Kingdom in2000 and a series of in-depth interviews in2002. The research concluded that most people did not encourage products to have along -lifespan.

Business's efforts to create strong attachments to the product may delay the product replacement decision. According to Ax(2001), hand crafted shoes are more likely to be repaired than mass-produced cheap shoes because the involvement of consumers in the production process will make them favour their products more and want to use them longer. But recent fast moving consumer goods companies are reluctant to provide products with a longer life span and rather choose the planned obsolescence strategy to stimulate consumer demands. When thee- SCOPE asked house holders to identify the disadvantages of purchasing longer-lasting appliances, the results revealed that more respondents were deterred by a fear that such items would become "out of date"(30%) than by price (23%) (Cooper2004).

It can be assumed that people with high levels of material is become easily bored with the products they own compared to those who are less materialistic. Materialism has been widely dealt within empirical research, especially after Richins and Dawson(1992) suggested the operational concept and measure of the materialism. The definition of materialism varies according to the researcher, but most agree nits essential attribute: a tendency to recognize that owning material goods plays an important role inone's life(Richins1997).

Interms of the product-related factors, consumers consider product replacement differently depending on the product's characteristics. For example, it can be predicted that the level of product wornness consumer may make a decision for an ew refrigerators. a cellular phone will differ. Product-related variables include product prices, product designs, product launching cycles, technology, etc. (Holton 1958; Monroe1973).

Demo graphic factors such as gender, age and income or socio-economic factor can also influence on the product wornness (Cooper 2004:p.438-439).According to the E-SCOPE survey, men were significantly more concerned about advancing technology than women, who were more price-conscious. This implies that man would seek more technology advanced products

even though their electronic products are still usable. In addition, men expected longer life span for home appliances such as washing machines, dish washers, tumble driers and cooker.

Interms of age, people aged55-64tendedto expect longer lifespan than other age group. Concerning the socio-economic factors, people in groups AB and C1 was concern that appliancesmaybecomeoutofdatewhilepeopleingroupsC2,D, and E were deterred by the cost of purchase and believe products should last longer.

3. Methods

3.1 The survey method and the respondent profile

Online self-administered survey was conductedduring5daysstarting onOctober20,2005in Seoul, South Korea. The email of survey request was sent to the online panel of Embrain Inc., Korean online research agency andthetotal355people completed the survey. People answered the survey got the online points asrewards.55%oftheparticipantswere female. All respondents were between20to39 years,56%intheir 20's and44% in30's.About42% of participants were married and 40%wereofficeworker (See Table 1).

Table 1 Sample characteristics(total n = 355)

Characteristics		n	%
Gender	Male	160	45.1
	Female	195	54.9
Age	20-29 years	200	56.3
	30-39 years	155	43.7
Marital Status	Married	148	41.7
	Not married	207	58.3
Occupation	Office workers	142	40.0
	Sales	20	5.6
	Self-employed	16	4.5
	Professionals	48	13.5
	Students	67	18.9
	Housekeepers	39	11.0
Level of education	High School	29	8.2
	University degree	285	80.3

3.2 The measures

This study started to delve into consumers' desired duration of product use relative to its physically durable years. Our goal is to investigate how much the product categories are worn out at their placement decision stage and the influencing factors on the wornness at the replacement decision stage by product type. The product wornness at there placement decision stage can be different by-product type and by consumers' characteristics as well. To investigate the differences in the wornness by product type,total30 items were selected based on the product

list of the National Survey of Family Income and Expenditure (2000).But consumable goods (e.g., detergent) or gendered products (e.g., cosmetics)were excluded.

We defined the wornness as the usage extent of the still usable product at the anticipated replacement decision stage. To evaluate the level of wornness by product types, consumers' perceived usable years from the purchase to the replacement decision and the official durable years of each product were in corporate. Perceived usable year of each product was measured by asking consumers the following open-end ed question: "when do you want to replace your current product after you purchase it, regard less it is still working?" Respondent's answered this question for each of the thirty products in the form of months, and then them on ths were converted to a year-base unit.

Next, the official durable year of each product was estimated based on the estimate of officially durable years from Survey of the National Minimum Cost of Living (Korea Ministry of Health and Wealth2005). This survey has been conducted every three year by South Korea Government since 1988 to provide the basic data for Korean socialsecurity system. The Consumer Injury Compensation Rules(2004) of Consumer Protection Board were used for electronic goods such as mobile phones, MP3 players, digital cameras, desktop computers, laptops, and automobiles, which were not included in the Survey of the National Minimum Cost of Living.

The wornness rate was calculated as ratio of perceived usable years to officially durable years of each product. These ratio scores ranged from zero to one. If the score is closer to one, consumers will use the product until it is physically worn-out. On the other hand, if the score is closer to zero, we can assume that consumers will consider early product replacement though their product is still durable. Product categories in a lower wornness score can be interpreted as a group highly affected by industries 'through advertising and marketing activities. There is a possibility of wornness score more than 1,if consumers want to use their product longer than its official durable years. But it rarely happens in are a listic situation so we simply assumed that the wornness will be located in between 0to 1.

The usage of ratio is beneficial in two aspects; the wornness level can be comparable among the products and influencing factors on the wornness can be investigated by product types. If we only compare the perceived usable years of each product, it is hard to find distinction between products because the official durable years of products vary from1to10 years and the perceived usable years vary from 1 to 7 years by product type (See table 2).

Except the perceived usable years, all responses to the following questions were developed on a basis of five-point Likert scale. Respondents answered each question for all thirty products. "Perceived price expensiveness" was measured with the item: "how expensive do you think this product is?" Higher scores are more expensive than lower scores. "Perceived launching frequency "was measured by the item: "how frequently do you think the new product is launched?" The higher the scores means the more often launch.

"Perceived design importance" and "Perceived technology importance" were measures by the item respectively: "how do you think the design is important to this product?" and "how do you think the technology is important to this product?" Higher scores mean higher importance than lower scores.

"Materialism" was measured by index of five items: I admire people whow on expensive homes, cars, and clothes, The things Iownsay a lot about how well I'm doing in life, My life would be better if I owned certain things I don't have, Some of the most important achievements in life include acquiring material, and I'd be happier if I could afford to buy more things. Higher scores mean more material is ticleve than lower scores. The five-items cal had an acceptable construct reliability (Cronbach's α = .80).

Table 2 Comparison between the official durable years1 and perceived usable years2 for selected products

Products	Official durable years	Perceived usable years
Closets	10	7
Tables, refrigerators, gas ranges, televisions, wall clocks, watch, beddings	10	5
Dishware, accessories, cars	8	3
Suits	6	2
Telephones, wastebaskets, combs, MP3 players, digital cameras	5	3
Desktops, laptops, bags, wallets	4	2
Shoes, running shoes, umbrellas, mobile phones	3	1
Shirts, pants	2	1
Towels, socks, underwear	1	1

*Officially durable years of each product was based on the Survey of the National Minimum Cost of Living (Korea Ministry of Health and Wealth, 2005) and the Consumer Injury Compensation Rules (Korea Ministry of Strategy an d Finance, 2004).

**Perceived usable years was measured by asking consumers the following open-ended question: "when do you want to replace your current product after you purchase it, regardless it is still working?"

3.3 Statistical method

In the first data analysis step, exploratory factor analysis using the maximum like lihood extraction method and Vari max rotation was executed in order to divide the thirty products into several groups according to the level of wornness. After changing the number of factors from4 to6,itwasfoundthat5wasthemostdesirablenumber.RMSEAwas setto0.08,whichisa reasonable fit according to the guideline of Schermelleh-Engel et al.(2003). In addition, a 90% confidence interval for each factor loading value in the CEFA program was considered to be acceptable.

In the second step, ANOVA were conducted to compare the characteristics of classified product groups, while stepwise multiple regression analysis was conducted to discover the relative impact of variables on the product wornness at the anticipated replacement decision stage. Except factor analysis, all of the other results were analyzed with SPSS12.0software.

4. Results

4.1 Product categories by wornness at their replacement decision stage

In consideration of the products composing the five groups in accordance with the factor analysis, the product items were categorized as follows: fashion accessories, digital instruments and cars, fashion clothing, sundry goods, and durable goods. Fashion accessories are identified as a category with the lowest wornness at the anticipated replacement decision stage with its wornnessscoreof.31,followedindescendingorder by digital instruments and cars(.47),fashion clothing(.52), sundry goods(.55), and durable goods(.60)Consumers tend to replace their products much faster than their officially durable years. Fashion accessories tend to be used only 31% of its durable life and might be kept into drawers without using their 70% of life. Even for the durable goods which have the highest wornness score at, consumers tend to use them only 60% of its officially durable years and want to replace them to a new one.(See Table 3).

Table 3 Factor analysis of the thirty products according to the product wornness level at the anticipated replacement decision stage

Variables	Products	Factor loading	Eigen value	Wornness Mean	SD
Fashion accessories	Accessories	0.48	1.2	.31	.19
	Bags	0.66			
	Wallets	0.65			
	Watch	0.55			
Digital instruments and cars	Mobile Phones	0.59	1.6	.47	.21
	MP3 Players	0.61			
	Digital Cameras	0.67			
	Desktops	0.90			
	Laptops	0.91			
	Cars	0.55			
Fashion clothing	Underwear	0.56	3.2	.52	.23
	Suits	0.53			
	Shirts	0.81			
	Pants	0.85			
	Shoes	0.67			
	Running Shoes	0.61			
Sundry goods	Telephones	0.48	1.1	.55	.21
	Wall Clocks	0.48			
	Dishware	0.50			
	Beddings	0.44			
	Towels	0.42			
	Trash Basket	0.80			
	Combs	0.76			

	Umbrellas	0.63			
	Socks	0.54			
Durable goods	Closets	0.70	3.0	.60	.21
	Tables	0.72			
	Refrigerators	0.81			
	Gas ranges	0.78			
	Televisions	0.71			

RMSEA = 0.08, Chi-square = 965.80

To identify the reason why some categories are more easily replaced be fore they are physically worn-out, five product categories were compared in terms of perceived price expensiveness, perceived launching frequency of a new product, perceived importance of design, and perceived importance of technology. InTable4, all of these 4 variables show significant differences at the level of0.001 among the five product categories.

The fashion accessories, which had the lowest wornness at the replacement decision stage, were perceived as the most design-important(4.30) and the second fastest in the new product launching cycle (3.92).The digital instruments and cars, which had the second lowest wornness score, were perceived as the most expensive in price (4.54), the fastest in a new product launching cycle (4.61), and the most design and technology savvy group (4.30 and 4.84 relatively) among the 5product categories. Fashion clothing was also ranked as the first in the perceived importance of design with the mean score of4.30with fashion accessories and digital instruments and cars.

Sundry goods were ranked as the fifth in all the 4 variables. We can assume that consumers 'involvement in sun dry goods will below erthan that of other categories, with the conception of low price(2.11), less importance in design and in technology (3.16 and2.74 relatively), and long interval between new product launches (2.69). Durable goods were perceived asa category with the longer new product launching cycle(3.38) and the lower design importance(3.83),but ranked as the second in price expensiveness (3.85) and technology importance (4.13).

Table 4 Characteristics of product categories according to the ANOVA

Variables (Five-point Likertscale)	Product categories (factored by the level of wornness at the replacement decision stage)	Mean (order)	SD	F	Duncan

Variable	Product category	Mean(rank)	SD	F-value	Group
Perceived price expensiveness (higher scores are more expensive than lower scores)	Fashion accessories	3.52(3)	.26		a
	Digital instruments and cars	4.54(1)	.25		b
	Fashion clothing	3.40(4)	.52	28.98***	a
	Sundry goods	2.11(5)	.51		c
	Durable goods	3.85(2)	.54		a
Perceived product launching frequency (the higher the scores, the more often launched)	Fashion accessories	3.92(2)	.31		a
	Digital instruments and cars	4.61(1)	.23		b
	Fashion clothing	3.89(3)	.17	31.68***	a
	Sundry goods	2.69(5)	.29		c
	Durable goods	3.38(4)	.62		d
Perceived design importance (higher scores are more important than lower scores)	Fashion accessories	4.30(1)	.20		a
	Digital instruments and cars	4.30(1)	.32		a
	Fashion clothing	4.30(1)	.31	11.46***	a
	Sundry goods	3.16(5)	.58		b
	Durable goods	3.83(4)	.30		a
Perceived technologyimportance (higher scores are more important than lower scores)	Fashion accessories	3.59(3)	.33		a
	Digital instruments and cars	4.84(1)	.02		b
	Fashion clothing	3.60(4)	.25	30.94***	a
	Sundry goods	2.74(5)	.46		c
	Durable goods	4.13(2)	.54		d

(*** $p < .001$)

4.2 Who tends to make an early product replacement decision?

Multiple regression analysis was used to determine the relative influence of variables on the wornness for each product category. Demo graphical characteristic variables were included such as gender, age, marital status, occupation, education, and household income. Women, people in their 30s, unmarried people, office workers, and high school graduates were dealt with as a dummy variable by regarding all of their scores as one point. A selection method was applied to calculate the regression coefficients (See Table5).

When it came to fashion accessories, the most influential factor was the new product launching cycle ($b = –0.27$, $t = –5.06$). The second most influential factor was the perceived price expensiveness ($b = 0.20$, $t = 3.78$). If consumers feel the fashion accessories are launched in a shorter cycle and less expensive, they tend to replace products more often with psychological influence. Subsequent influential factors are occupation ($b = 0.16$, $t = 3.20$), gender ($b = –0.11$, $t = –2.09$) and materialism ($b = –0.10$, $t = –2.08$). Females tended to replace fashion accessories earlier than males while office workers tended to replace their fashion accessories later than people in other occupations. Materialism also contributed to the early replacement decision of fashion accessories.

In the case of digital instruments and cars, the perceived technological importance was the most influential factor ($b = –0.19$, $t = –3.79$). Subsequent influential factors are gender ($b = 0.18$, $t =$

3.31), age ($b= 0.17$, $t= 3.14$) and materialism ($b= –0.15$, $t= –2.85$). Men and people in their 20's tended to replace their digital goods or cars earlier than women and other age groups relatively. If consumers feel that technological innovation is important in the digital goods and cars categories and appreciate materialistic values, they more easily feel psychological worn-out. Men and young generation who are used to digital goods and cars have more intention of early product replacement in this category.

For fashion clothing category, the most influential factor was the new product launching cycle ($b= –0.28$, $t= –5.43$). Subsequent influential factors are age ($b= 0.17$, $t= 3.34$), occupation ($b= 0.14$, $t= 2.72$), perceived price expensiveness ($b= 0.14$, $t= 2.76$) and materialism ($b= –0.11$, $t= –2.31$). If consumers think new fashion clothing will be launched in a shorter cycle and offered in the lower price, they will be eager to buy new fashion clothing regardless of current clothing's physical wornness. Young generation and people of higher level of materialistic value will have a more tendency of early product replacement decision.

For the Sundry goods, the most influential factor was the new product launching cycle ($b= –0.25$, $t= –4.83$). Subsequent influential factors are perceived price expensiveness ($b= 0.21$, $t= 4.08$), household income ($b= 0.14$, $t= 2.77$) and age ($b= 0.12$, $t= 2.32$).

Finally, in the case of durable goods, the most influential factor was the perceived price expensiveness ($b= 0.18$, $t= 3.42$). Subsequent influential factors are materialism ($b= –0.17$, $t= –3.28$), and household income ($b=.11$, $t=2.06$). If consumers perceive durable goods are in lower price and are locked in materialistic value, they will tend to replace their durables earlier.

Table 5 Regression analysis results

	Dependent variables: Product wornness level in each product category at the anticipated replacement decision stage				
	Fashion accessories	Digital instruments &car	Fashion clothing	Sundry goods	Durable goods
Gender	-.11*	.18**			
Age		.17**	.17**	.12*	
Marital status					
Occupation	.16**		.14**		
Education					
Household income				.14**	.11*
Price expensiveness	.20***		.14**	.21***	.18**
Launching frequency	-.27***		-.28***	-.25***	
Design importance					
Technology importance		-19***			
Materialism	-.10*	-.15**	-.11*		-.17**

Constant	.45	1.05	.74	.51	.40
R square	.15	.09	.17	.12	.07
Adjusted R square	.14	.08	.16	.11	.06
F	12.27***	8.88***	14.06***	11.70***	8.44***

(Dummy 1: female, 30-39 years, non-married, office workers, High school)
(* *p< .05, ** p< .01, *** p< .001*)

5. Conclusions

The main findings of this study imply that consumer st end to replace their products faster than they are supposed to be. The ratio of perceived relative lifespan to absolute lifespan was located between0.31 and0.60 according to product categories, which means products are discarded much earlier than their absolute lifespan and cause unbalance in resource usage.

It is surprising that peopleonlyuse30%to60% of their products in the perspective of their official durable years and decide to replace them to another one. A survey by the National Consumer Council found that80% of people consider it essential to have accurate information about durability before buying a major household good, but that around40% consider current provision of the right information fairly poor or very poor(NationalConsumerCouncil1989). Many consumers evidently want better information at the point of sale about the intended life span son the expected life spansofproducts.73% considered information on the expected life spans of appliances to be "very important,"whereas54% were dissatisfied with those currently available.

To give a full life to the discarded or threw-away products, it is important for official consumer advocacy groups to give enough information to consumers about product life spans and its durability. The lack of consumer concern for environmental consequences encourages people to replace their product earlier than its durable years when they contemplate upgrades of durable goods. Manufacturers could provide retailers with better points of sales information for consumers, to enable them to buy on the basis of the cost per unit of service, not simply price or style. Assuming that a self-regulatory approach does not lead to change, one option which has been proposed is for information about product life to be required by law (Ervine1984).Christer and Cooper(2004) suggested that few consumer durables are labelled with their intended life spans, although eco-labels and other n quality labels provide signals, as may the length of guarantees, advertising claims, price, brand reputation, and industry standards.

On top of that more efforts should be created by government and the consumer advocacy groups to provide more information to consumers, both industries and consumers need to be actively involved in the mainstream of the sustainable consumption discourse. A Finnish study by Niva and Timonen (2001)on product purchases points out that consumer slack knowledge about the environment a implications of their purchases and believe it is the responsibility of manufacturers to produce environmentally benign products and of distributors to screen for such qualities, and that consumers have little impact on those activities.

We also found that fashion clothing disposal is influenced by the shorter cycle of new product launching and by the lower price as well, which is in consistent with current fast fashion trend. Many consumers felt fast fashion encouraged a throwaway culture where products and fashion lost intrinsic value, urging consumers to replace and dispose of products before their real life cycle had ended(Morgan et al.2009).As an evidence, a recent study by the Environment Select Committee revealed that the proportion of textile waste being discarded at council refuse collection points in the past4 years has increased from7%to30% by weight (Poulter2008;Shields2008),thus highlighting the fact that consumers are discarding higher volumes of textile waste than before. But there is little awareness of the impact of the disposition of high volumes of textile waste (Domina and Koch 1999;2002).

It is shame that manufacturers create corporate gains at the expense of consumer welfare and the environment and consumers are rather responsive to industries 'psychological obsolescence strategy. The World Business Councilon Sustainable Development suggests that we should "Encourage consumers to prefer eco-efficient, more sustainable products and services"(World Business Council for SustainableDevelopment2000). WBCSD's goal requires not only achieving green design but also implementing effective green marketing by firms and public policy initiatives that offer the right mix of consumer and manufacturer incentives.

Alternative way of using resources should be considered by both industries and consumers. Reuse of the resources can be an option for both. Many consumers dispose of unwanted textiles to charity shops, such as Oxfam, Salvation Army, and Cancer Research, where donation are sorted and sold in their own shop sort waste merchants (Morgan andBirtwistle2009). Recognizing the importance of reducing the volume of textile waste sent to land fills, several department stores or fast fashion companies are conducting charity donation or recycle campaign (Marks and Spencer2008;UNIQLO2011). It is important for consumers to know the impact of their consumption and their sustainable options as well, because consumer awareness of ownership of excessive amounts of clothing can motivate charity donation, along with convenience and altruistic end encies (Morgan and Birtwistle 2009).

In addition, industries can also creater evenue from rental service, not from selling with the emerging collaborative consumption trend. Then industry doesn't have to be obsessed with planned obsolescence strategies for its sales growth while causing disastrous resource waste. We can see increased number of consumers don't feel that they have town a product but are able to share it. If a firm choose storent its goods, it would receive a consistent flow of revenue for several years. But on cea firm sells its durable goods, it is hard to guarantee the vested interest in the value of those goods (Guiltinan 2009).

Another novel idea was proposed forthe change of disposition behavior and the revitalization of the old products by Jacoby et al.(1977). We can think of repainting our home appliances such as refrigerator in some type of body shop to fit in with new decor, just as we are doing for cars, because consumers revalue the product from new way of usage. Some portion of consumers already reform and reuse products as their Do-It-Yourself hobby.

We also identified that materialism was an important influential factor on early replacement. Materialism negatively influenced on the wornness at the product replacement decision in all product categories. The relation ship between materialistic value and sustainable consumption

should be revisited in the modern consumption society. Never before have consumers been exposed to such powerful and persuasive advertising pressure as they are today. Mumford(1966,p.276)pointed out that the desire for the limitless quantities of money has as little relevance to the human welfare. Herman E.Daly (1991,p.44-45)proposed that people should understand the concept of enoughness and the goal of life should be wisdom, enjoyment, cultivation of the mind and soul, and community, not the material itself.

A thoughtful consideration should be taken for the development of consumer education program and government policy which can contribute to longer use, reuse and recycling of products. Companies should try to contribute to sustainable transformation of society beyond business model based upon hardware product sales growth and academic researchers in marketing area need to develop an alternative marketing paradigm for companies who discard their planned obsolescence strategy. Triangulated efforts are required from business industries, government and consumers to create a break through to over come the throwaway society from business industries, government and consumers.

6. Limitations

The above discussion also points to a limitation of this study. First of all, this study worked with the operational definition of the product wornness in order to me a sure it quantitatively and ultimately to show the prevailing effects of business's planned obsolescence strategy. A precaution needs to be taken in interpreting and making use of the results because the product's usable years were measured not by the behaviour but by the intention of people. The results should not be broadly interpreted as people actually behave as such. They should only be received as an under standing of how product replacement decision can be occurred for general characteristics of each product and it would be possible to obtain many more useful and effective results in the future by collecting and analyzing the actual behaviour of people rather than their intention.

Another important limitation is that this research is overlooking the influence of a brand even though there are different variances with in the category of a single product from very expensive brands to very cheap brands. The lack of consideration of brands was an unavoidable choice for the analysis of many various products, but it would be possible in the future to analyze the category of one product in depth in order to determine how a brand influence s psychological obsolescence or early product replacement decision.

Lastly, there needs to be a more thorough analysis of the relationship between the influential factors and the product wornness used in this study. For example, for the relationship between materialism and the product wornness, qualitative interpretation may be more important than quantitative interpretation, like the findings of this study.

Some of tables have been appeared previously in a paper in Korean journals: Journal of Consumer Studies, 18(4), 1–24.

References

Ax,C.(2001).Slowconsumptionforsustainablejobs.InM.CharterandU.Tischner(Eds.),*Sustainables olutions*(pp. 402–409). Sheffield: Greenleaf.

Bayus,B.L.(1988).Acceleratingthedurablereplacementcyclewithmarketingmixvariables.*Journalof Production Innovation Management, 5*,216–266.

Bayus,B.L.(1991).Theconsumerdurablereplacementbuyer.*TheJournalofMarketing,55*,42–51.

Birtwistle,G.,&Siddiqui,N.,&Fiorito,S.S.(2003).Quickresponse:perceptionsofUK fashionretailers*. InternationalJournal of Retail and Distribution Management,31*,118–128.

Cooper,T.(1994).The durability of consumerdurables. *Business Strategy and the Environment*, *3*, 23–30.

Cooper, T., &Mayers, K. (2000). *Prospects for householdappliances*. Halifax: Urban Mines. Cooper,T.(2004).Inadequatelife?evidenceofconsumerattitudestoproductobsolescence. *Journal of Consumer Policy, 27*, 421–449.

Cooper,T.(2005).Slowerconsumption:reflectionsonproductlifespansandthethrowaway society.*Journal of IndustrialEcology, 9*, 51–67.

Daly,H. E. (1991). *Steady-StateEconomics*. Washington D.C.:Island Press.

Department ofEnergy. (1990).*EnergyEfficiency inDomestic ElectricalAppliances*.London: HMSO.

Domina,T.,&Koch,K.(1999).Consumerreuseandrecyclingofpost-consumertextilewaste. *Journal of Fashion Marketing &Management, 3*,346–359.

Domina,T.,&Koch,K.(2002).Convenienceandfrequency ofrecycling:implicationsfor includingtextilesincurbsiderecyclingprograms.*EnvironmentandBehavior,34*,216–238.

Ervine,W.C.H.(1984). Durability,consumersandthesaleofgoodsact.*JuridicalReview*,147–162.

Evans, S.,&Cooper,T.(2003). Wastenot,wantnot?Anexplorationof the effectof consumer behaviourontheservicelife ofthree categoriesofhouseholdproduct.*Proceedingsofthe Chartered Institution ofWastesManagement conference*, Paignton.

Groenewegan,P.,&Hond,D.F.(1993).Productwasteintheautomotiveindustry:Technology and environmental management. *Business Strategyand the Environment, 2*, 1–12.

Guiltinan, J.(2009). Creative destructionanddestructive creations:environmentalethicsand planned obsolescence.*Journal of Business Ethics, 89*, 19–28.

Holton, R.H. (1958). The Distinctionbetween convenience goods, shoppinggoods, and specialtygoods.*TheJournal of Marketing, 23*, 53–56.

Jackson,T.,Michaelis,L.,&Britain,G.(2003),*Policiesforsustainableconsumption:areport tothe sustainable development commission*. Oxford: Sustainable Development Commission.

Jacoby, J.,Szybillo,G. J.,&Busato-Schach, J.(1977).Informationacquisitionbehaviorinbrand choicesituations.*Journal ofConsumer Research,3*, 209–216.

KMHW.(2005).*NationalMinimumCostofLiving*.PolicyReport.Seoul:KoreaMinistryof Health and Wealth.

KMSF.(2004).*ConsumerInjuryCompensationRules*.PolicyReport.Seoul:KoreaMinistryof Strategyand Finance.

MarksandSpencer.(2008).OxfamandM&Smakeamagicmillion.RetrievedAugust11,2008, from http://www. Marksand spencer.com

Monroe,K.B.(1973).Buyers'subjectiveperceptionsofprice.*JournalofMarketingResearch,10*, 70–80.

Morgan,L.R.,&Birtwistle,G.(2009).Aninvestigationofyoungfashionconsumers'disposal habits. *International Journal of Consumer Studies, 33*, 190–198.

Mumford,L.(1966) *TheMyth ofthe Machine*.New York: Harcourt BraceJovanovich.Niva,M.,&Timonen,P.(2001).Theroleofconsumersinproduct-orientedenvironmental

policy: can the consumer be the driving force for environmental improvements?*InternationalJournal of Consumer Studies, 25*,331–338.

Poll,A.J.(1993).*Therecyclinganddisposalofdomesticelectricalappliances.*Stevenage: Warren SpringLaboratory.

Poulter,S.(2008).Theprimarkeffect:throwawayfashionthatcannotberecyclednowmakesup

30percentofthewasteincounciltips. *DailyMail.*Retrieved November25,2008,from http://www.dailymail.co.uk/news/article-1089094/The-Primark-effect-Throwaway-fashion-recycled-makes-30-cent-waste-council-tips.html

Richins, M.L. (1997). Measuring emotions inthe consumption experience. *TheJournal of Consumer Research, 24*,127–146.

Richins,M.L.,& Dawson,S.(1992).AConsumervaluesorientationformaterialismandits measurement:scaledevelopmentandvalidation.*JournalofConsumer Research:An Interdisciplinary Quarterly,19*, 303–316.

Sarson, S. C. (1992).*Therecycling of electronicscarp*. Stevenage: WarrenSpringLaboratory. Schermelleh-Engel,K.,Moosbrugger,H.,&Müller,H.(2003).Evaluatingthefitofstructural

equationmodels:testsofsignificanceanddescriptivegoodness-of-fitmeasures.*Methods of Psychological Research, 8*, 23–74.

Schor, J. B. (1999).*The OverspentAmerican:Why we want whatwedon'tneed*.NewYork: Harper Paperbacks.

Shields, R. (2008). Thelast word on disposablefashion.*The Independent on Sunday, 28*, 12-12.

UNIQLO. (2011).All-ProductRecycling Initiative toStartintheUSfromSept. 1,2011.

RetrievedAUGUST25,2011,fromhttp://www.uniqlo.com/us/corp/pressrelease/2011/08/all-product_recycling.html

Utaka, A. (2000). Planned obsolescence and marketing strategy. *Managerial and DecisionEconomics, 21*, 339–344.

VanNes,N.,&Cramer,J.(2005).Influencingproductlifetimethroughproductdesign.*BusinessStrategy and the Environment, 14*, 286–299.

Waldman,M.(1993).Anewperspectiveonplannedobsolescence.*TheQuarterlyJournalof Economics, 108*, 273–283.

WBCSD.(2000).*Eco-efficiency:Creatingmorevaluewithlessimpact*.Geneva:WorldBusinessCouncilfor Sustainable Development.