sustainability

MDPI

Article

What Affects Garment Lifespans? International Clothing Practices Based on a Wardrobe Survey in China, Germany, Japan, the UK, and the USA

Kirsi Laitala * and Ingun Grimstad Klepp

Consumption Research Norway (SIFO), Oslo Metropolitan University, 0130 Oslo, Norway; ingunk@oslomet.no
* Correspondence: kirsil@oslomet.no; Tel.: +47-6723-5632

Received: 24 September 2020; Accepted: 30 October 2020; Published: 3 November 2020

Abstract: Increasing the length of clothing lifespans is crucial for reducing the total environmental impacts. This article discusses which factors contribute to the length of garment lifespans by studying how long garments are used, how many times they are worn, and by how many users. The analysis is based on quantitative wardrobe survey data from China, Germany, Japan, the UK, and the USA. Variables were divided into four blocks related respectively to the garment, user, garment use, and clothing practices, and used in two hierarchical multiple regressions and two binary logistic regressions. The models explain between 11% and 43% of the variation in clothing lifespans. The garment use block was most indicative for the number of wears, while garment related properties contribute most to variation in the number of users. For lifespans measured in years, all four aspects were almost equally important. Some aspects that affect the lifespans of clothing cannot be easily changed (e.g., the consumer's income, nationality, and age) but they can be used to identify where different measures can have the largest benefits. Several of the other conditions that affect lifespans can be changed (e.g., garment price and attitudes towards fashion) through quality management, marketing strategies, information, and improved consumer policies.

Keywords: clothing lifespans; sustainability; use phase; consumer behavior; wardrobe survey; fashion consumption

1. Introduction

The clothing industry is one of the highest producers of pollution in the world and causes severe damage to the environment [1–3]. While a lot of effort is focused on improving the production phase, there is little done to improve consumer practices (use phase). Existing life cycle assessments (LCAs) of clothing show that decisions made in the use phase contribute significantly to overall environmental impacts [4–7]. Increasing clothing lifespans is one of the most efficient ways of reducing the environmental impacts of clothing, through reductions in replacement frequency which prevents waste and also reduces production and transport. This has been documented and understood for a long time; for example, the waste hierarchy lists prevention as its top priority [8]. However, there is only limited research that has focused on clothing lifespans and which specific factors affect the length and active wear of a garment, and where potential gains exist.

A better understanding of the various aspects of the use phase of clothing is needed for environmental accounting tools such as LCAs [9], and for the work towards targeted environmental improvements based on relevant policy instruments. There is a lack of systematic, empirical knowledge about the lifetime of garments considering their different characteristics. There is a crucial need to understand how garment lifespans can best be measured, and even predicted, and which properties of clothing influence the garment use, and the related environmental impacts.

The research question in this article is: Which factors contribute to garments lifespans? Initially, we introduce a more precise understanding of lifespans and build on a taxonomy based on previous consumer research on the aspects that impact garment lifespans. This is followed by a methodology section, where data from the international wardrobe survey is introduced, conducted in China, Germany, Japan, the United Kingdom, and the United States. In the results section, we present survey findings related to various ways of measuring clothing lifespans, and which factors affect the length of the lifespan. We conclude by answering the articles main research propositions, and by identifying which of the areas/impacts identified would benefit from further research.

2. Theoretical Background

We build on the theory of clothing lifespans developed by Klepp et al. [10]. In this theory, lifespans are understood as a combination of three different aspects, all three of which have independent value. The three can be measured in the number of years, the number of times used (wears), and the number of users, and will be referred to as lifespan in years, wears, and users throughout the paper. We will further develop a taxonomy of aspects that affect the lifespans based on literature that has studied at least one of the three different aspects of lifespans.

To date, garment lifespans have most commonly been measured by age in years, which is understood as the time a garment is owned, from when it was acquired until it goes out of use or is disposed of [10].

Figure 1 gives a summary of previous literature reviews, from studies that report the lifespan length in years of use [4]. These studies are mainly based on consumer surveys [11–17] but include some wardrobe and inventory studies [18,19]. Average lifespan including all the garment categories was four years, but it varied greatly between different garments types.

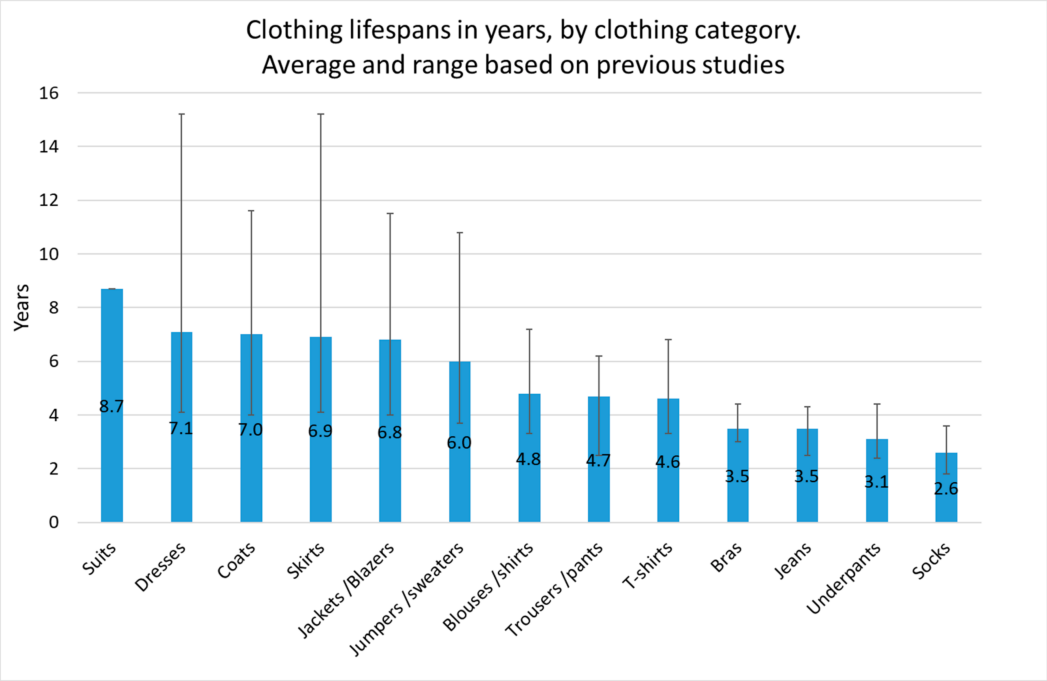

Figure 1. Summary of garment lifespans from various studies, given in years. Average and range values are given, except for suits which had only one source. Lifespan here is not the total age of preowned clothes, but only the time they were kept by the individual owners surveyed. Prepared based on [20].

More recent studies have started to use a different unit of measurement to indicate lifespan, which relates to active use of items and the number of times the garment is worn, but there are significantly

less of these than those which measure years of ownership. Cooper et al. [14] estimated the total number of wears of five different garment types, estimating that knitwear is worn 111 times, shirts 58 times, jeans 233 times, socks 90 times and t-shirts 83 times. This study was based on estimations and did not include various aspects that impact lifespans. The data indicated that if consumers were asked directly how many times a specific garment was worn (including previous and future wears), the average result was 76 wears. When calculating the number of wears based on reported wearing frequency, the figure was higher; 105 wears.

The number of times a garment is worn, and the related environmental impacts are also linked strongly to garment care, including choices related to laundering, dry-cleaning, drying, and ironing, and their requirements for energy, water, and detergent consumption. Since most research on clothing use is based on consumer studies where the current user reports their personal garment use, it is difficult to get information on the total lifespan of garments which have more than one user. Therefore, the knowledge gained about the number of users is very important for estimating total garment lifespan and impacts [10].

While product type is an important indicator in the lifespan of garments, significant variation exists because of garment characteristics and different user groups. A consumer survey in the UK showed that while the type of clothing was significant, some user groups are more likely than others to keep their clothes in active use longer [13]. These include men, older people, people with lower income, higher socio-economic groups, those with more garments in their wardrobes, and those who purchase longer-lasting clothing intentionally. Consumers' values were also important, as lower active use is correlated strongly with consumers who place higher importance on fashion and brands, while longer active use phases of clothing correlated with consumers who purchase garments that are better quality and better value for money. Active use also differed depending on the purpose for which clothes are purchased. Formal clothing bought for specific occasions outside of work (such as weddings or funerals) had the longest lifespans measured in years, while casual wear had shorter lifespans.

Gwozdz et al. [16] analysed clothing consumption behaviours in Germany, Poland, Sweden, and the U.S. They found that when differentiating by purchasing behaviour there were five distinct consumer segments. In addition to demographic differences (nationality, gender, and income), other important aspects were consumers' general lifestyle, values and attitudes towards brands and sustainability, as well as actual reported behaviour related to the acquisition, wearing frequency, maintenance, and disposal. The majority of consumers were those who have lower incomes, acquire most of their clothing from low budget brands and buy few garments in total (e.g., "low-consumption–budget brands"). This segment kept their clothes longer and wore them more times between washes. However, they were also less likely to send their garments for reuse for a second life. On the other end of the scale, consumers in the "high premium" segment purchased more garments, kept them for less time and wore them fewer times between washes. However, their end-of-life (EOL) practices were more likely to be environmentally responsible, as they were more likely to send them for reuse or recycling.

Two similar studies, one conducted in Canada [21] and another in South Korea [22], showed that several indicators influence whether consumers donate or sell clothing for reuse, and these were similar for both countries. The likelihood of reuse decreases if clothing is severely damaged or is a cheap fast-fashion garment instead of a more expensive, designer brand garment, or if the garment is identified as casual wear (jeans or t-shirt) instead of formal wear (dress). Consumers were more likely to mend garments if they are only slightly damaged.

Wardrobe studies of clothing disposed in Norwegian households (including children's clothing, which was not included in any of the above-mentioned studies) showed that several aspects impacted the average lifespans [12,18]. Children and teens used their clothing for about two years less than adults, and those above the age of 51 used their clothing for the longest, and men kept their clothing longer than women. The way a garment was acquired was important for its lifespan, as items received as gifts were used for less time. Garments intended for reuse were used for less time than those to be put into the rubbish bin. The reason for disposal also influenced the length of the garment lifespan,

as those disposed of due to changes in fashion trends or taste were generally kept longer than garments disposed of due to wear and tear. Fibre content was also significant, which was confirmed by a later study where we showed that woollens were used longer, on average, than similar garments made from other fibre types [4].

Research has shown that wear and tear is an important reason for the clothing disposal [23–26] and that an increase in durability will also extend the potential length of a garment's lifespan. However, other properties of the products are also significant. Their social value varies, for example, some products have a greater aesthetic value when they are new, while others may remain the same or increase over time. The logic in fashion is that new clothing has a high value that quickly diminishes as they get outdated. Some clothing, like vintage items or folk costumes, can increase in value over time [27,28]. By researching "reasons for disposal", the impact of such properties on clothing lifespans can be evaluated.

Consumer demographics have a noteworthy impact on the use period of clothing. Children and adolescents have a greater need for new clothes because they are still growing physically, and the situation of their life is often subject to change [29]. Expectations regarding the need for women to vary their clothing between different settings increase the amount of clothing they purchase compared to men [30]. Poor fit is one of the main reasons for the disposal of women's clothing [23]. Clothing with a flexible fit can be used longer than other clothing [31,32]. This may apply, for example, to knitted versus woven clothing, and other clothing which is stretchy or clothing with inbuilt resizing features.

People with low income report longer clothing lifespans, probably because of the financial restrain on their purchasing decisions. Relationship and employment status can also impact clothing needs. Working life is an area where clothing decisions are important [26], and in many jobs, uniforms are used, which reduces the need for private clothing [33,34]. An important factor for clothing selection is garments for any occasion which requires a particular dress code at a specified place and time (e.g., work or a function such as a wedding) [35]. This includes categories such as sportswear, casual, business-casual, business, and formal [36].

The occasions consumers take part in influences the number of times a garment can be worn. Cooper et al. [31] include examples such as bridal wear, dinner jackets, evening wear, party dresses, and high-quality suits, which are all worn infrequently and stored, unworn, for long periods. The climate of the country users live in also influences the length of the garment lifespan. Seasonal clothing, such as a warm sweater, will have more use opportunities to be worn in colder climates.

Other aspects that can impact garments lifespans include users' values, mending skills (e.g., repair and alteration) [37], and dressing habits (e.g., active-wear in everyday life). Laundering practices also impact lifespan length, as frequent or inappropriate laundering can cause wear and tear [38] which reduces lifespans [39].

This literature has shown that many aspects impact garment lifespans, but there is a lack of knowledge on how much each factor contributes, and if there is a difference in the importance between them for the different ways of measuring lifespans. We have combined these various factors that influence lifespans (years, wears, and users) to construct a Taxonomy. We will use this to study the factors' relative importance for significance for longevity. The aspects have been divided into four categories: consumer/user demographics (user), use, garment attributes, and consumer behaviour related to clothing practices (Figure 2). This structuring gives a theoretical starting point for our analysis that is presented in the next section.

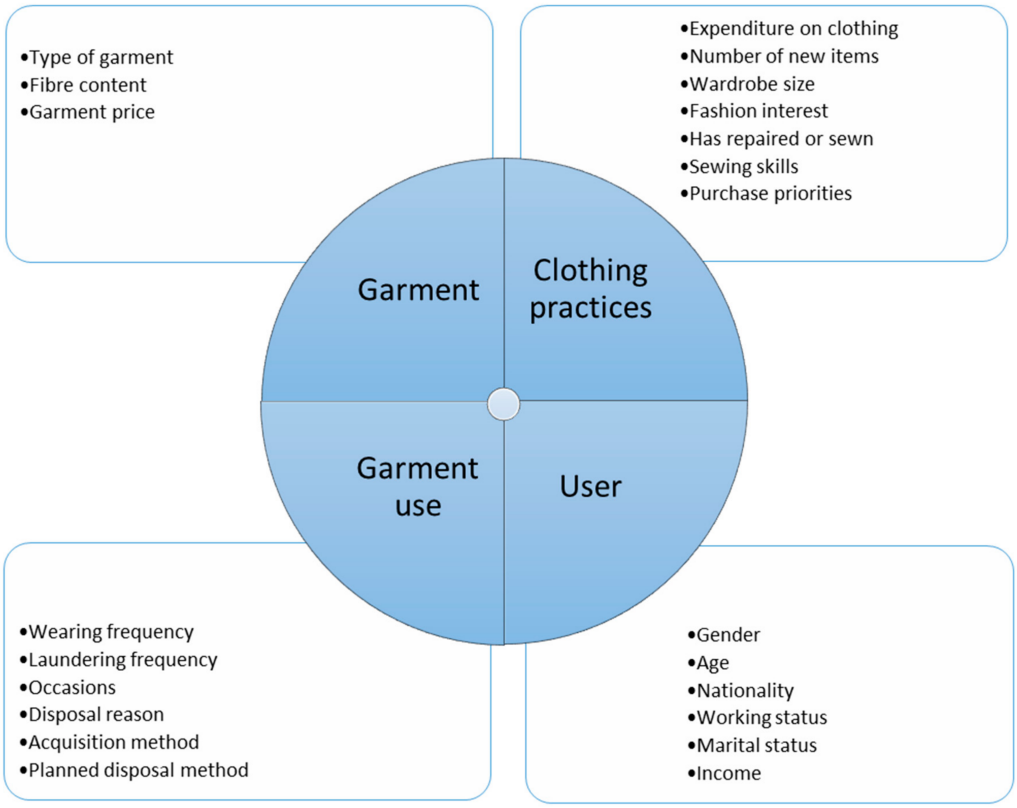

Figure 2. Taxonomy of factors that contribute to clothing lifespans.

3. Method

This paper is based on a consumer survey conducted online from December 2018 to January 2019. The survey was administrated by AC Nielsen's Australian office in cooperation with local branch offices. It focuses on five countries with large clothing markets: China, Germany, Japan, the UK, and the USA, with over two hundred respondents from each country answering a comprehensive, web-based survey on their wardrobe contents. Questions included the number of items owned in specific categories, and for a selection of these items, details such as clothing lifespan, length of active use, wear occasions, materials and laundering practices were also requested. The questionnaire is attached in Appendix A.

The participants were between 18 and 64 years old (working age), representing the different demographics and genders within the surveyed countries based on a pre-stratified sample. The respondent demographics for each country and the average/total are given in Table 1. The data was sorted in two ways, by "per respondent" (N = 1111), and "per garment" (N = 53,461).

The data in China was collected differently to that of the other countries to enable comparison of more similar consumer groups, in terms of living standards, in the five countries, while also using the same design as at the 2012 study [4,11,40]. With this in mind, the data from China was collected from Tier 1 and 2 cities (Beijing, Shanghai, Guangzhou, Shenyang, Taiyuan, Nanjing, Hefei, Fuzhou, Changsha, Chengdu, and Xi'an) instead of the whole country. This led to a lower average age for Chinese respondents. China also has a higher proportion of respondents who work full time and less who are divorced, separated, or widowed.

Yearly income and monthly expenditure on clothing were reported in the local currency, and in the final analysis, they were grouped into three categories (low, medium, and high) based on country trisects. Garment prices were converted to US dollars in the analysis and divided into four categories.

The number of clothing categories assessed in detail in the survey was limited to a list of "focus categories" for males and females. These are listed in Table 2. Item-specific questions were also limited

to a maximum of 10 items per focus categories (meaning a respondent only had to answer for ten items per category regardless of how many they actually owned). For selecting which items to answer for, they were asked to try to evaluate a wide variety of items of different materials, or for different occasions. The analysis is based on these garments in focus categories.

Table 1. Respondents' background variables/demographics.

		China	Germany	Japan	UK	USA	Total
Number of respondents	N	230	224	224	213	220	1111
Number of garments	N	10,595	11,705	12,022	9384	9755	53,461
Gender distribution	Men (%)	48.3%	49.6%	50.0%	46.5%	47.7%	48.4%
	Women (%)	51.7%	50.4%	50.0%	53.5%	52.3%	51.6%
Age group	18–29 years (%)	43.5%	20.1%	20.1%	21.6%	19.5%	25.1%
	30–49 years (%)	48.7%	44.2%	48.2%	51.6%	36.4%	45.8%
	50–64 years (%)	7.8%	35.7%	31.7%	26.8%	44.1%	29.1%
Marital status	Single (%)	22.6%	33.0%	44.6%	26.8%	27.3%	30.9%
	Married or living with a partner (%)	76.5%	54.9%	48.7%	64.8%	58.6%	60.8%
	Divorced, separated, or widowed (%)	0.4%	11.2%	6.3%	8.0%	14.1%	7.9%
Average household size	Number of people	3.5	2.3	3.0	2.8	2.7	2.8
Employment status	Full time (%)	88.3%	53.6%	50.4%	47.9%	44.1%	57.2%
	Part time/casual (%)	1.3%	20.5%	23.2%	24.4%	15.0%	16.7%
	Seeking work (%)	0.0%	4.5%	2.2%	4.2%	5.9%	3.3%
	Home duties/not seeking work (%)	1.7%	4.0%	13.8%	14.6%	17.3%	10.2%
	Student (%)	6.5%	7.1%	7.6%	3.3%	3.2%	5.6%
	Retired (%)	2.2%	10.3%	2.2%	4.7%	14.1%	6.7%

Table 2. Garments in focus.

Accessories	Formal Wear	Casual Wear	Casual Next-to-Skin	Underwear	Sportswear
• Scarfs, shawls, pashminas and stoles	• suits (2pc) • pants and trousers • skirts (F) • dresses (F) • jackets and blazers • overcoats and raincoats	• jumpers, sweaters and cardigans • pants and trousers • skirts (F) • dresses (F) • jackets and blazers • overcoats and raincoats	• t-shirts and polo shirts • singlets and tanks (F)	• socks and stockings (F) • thermal tops undershirts • thermal leggings and underpants	• sports t-shirts and tops • sports singlets and tanks

(F)—this category only includes female respondents.

The analysis was conducted with SPSS statistical software. Statistical tests for significance given as follows: * $p < 0.050$; ** $p < 0.010$; and *** $p < 0.001$.

3.1. Building Models for Regression Analysis

3.1.1. Dependent Variables

Based on our theoretical approach (Section 2), we constructed dependent variables for measuring lengths of clothing lifespans by number of years, the number of wears and number of users [10]. The first variable, "*DEP1-Years*", indicates the total garment age measured in years, and is based on the survey question, "When did you buy or acquire this clothes item or accessory?". Answers varied from, "in the last 6 months" to "more than 30 years ago" (coded as 3 months, and 35 years, respectively). For estimating the total lifespan, the average current age is multiplied by two. This way of estimating the possession span will not be correct for the individual garments, but it will be a close estimate for the average of the total number of garments.

The second variable, which measures the number of wears "*DEP2-Wears*", is based on two survey questions: "How many times have you worn this item?" and "How many times do you expect to wear this item in the future?" The highest response category, "more than 200 times" was coded as 250 wears. When the current and planned number of wears were combined, the values of this variable vary from between 0 and 500 wears. These two ways of measuring lifespans were analysed with a hierarchical (sequential enter method) multiple regression.

The third variable is based on the number of users, including garments that have had a previous owner, or that owners plan to deliver for reuse. These two dependent variables are thus "*DEP3a-Preowned*" and "*DEP3b-Planned reuse*". These are based on questions about the method of acquirement and the planned disposal method (sell or donate). As these variables are binary, we chose to use a binary logistic regression to analyse the impact of various predictors.

3.1.2. Independent Variables

Independent variables are introduced in 4 blocks based on the theoretical background. The first block represents garment specific properties (variables 1–3), the second is the demographics of the user (variables 4–9), followed by garment use (variables 10–15), and finally the general clothing practices of the user (variables 16–22). For categorical variables, dummy coding was used to be able to compare each level of a variable to the omitted (reference) level. The reference category was chosen based on it being the most common value, or in cases where this was not applicable, as the one with lowest lifespan values. For simplicity, ordinal variables with more than five categories were treated as numeric (nominal) variables. This applies to variables 11, 19, and 22. Appendix B includes descriptive statistics for these variables.

In the linear regression analysis in models 1 and 2 the predictors were coded and entered as follows:

1. Type of garment (suits, trousers/pants, skirts/dresses, t-shirts/polos/singlets, jumpers/pullovers, blazers, overcoats, scarfs/pashminas, thermal underwear, or sportswear. Socks and stockings were used as the reference group).
2. Fibre content (wool and wool blends, silk, synthetics, regenerated cellulose, or unknown fibre content. Cotton and cotton blends were used as the reference group).
3. Garment price (10–39 USD, 40–99 USD, and over 100 USD. Reference group are those which cost below 10 USD).
4. Gender (0 = male, 1 = female).
5. Age group (30–49 years and 50–64 years compared to reference group 18–29 years).
6. Nationality (German, Japanese, UK, and USA. China were used as the reference).
7. Employment status (0 = non-working, student or part time, 1 = working full time).
8. Marital status (0 = single, divorced, separated, 1 = married/living with partner).
9. Income in three groups, trisects of each country (middle and high compared to low income).
10. Wearing frequency (number of wears per year) (based on how often the garment was worn either whole year-round or seasonally).

11. Laundering frequency (number of wears before laundering) (0 = after every wear, 1 = after every 2–3 wears, 2 = after every 4–5 wears, 3 = after every 6–10 wears, 4 = after every 11–19 wears, 5 = after every 20–29 wears, and 6 = after every 30 or more wears).
12. Occasion used (work, formal social occasion, casual social occasion, training/doing sports, religious, sleeping, gardening/painting/other dirty household chores, not in active use, or other/unknown occasion. Everyday use and around the home used as the reference group).
13. Preowned (0 = no previous owner, 1 = garment had previous owner)
14. Assumed disposal reason (the style is not in fashion anymore, it doesn't fit me properly, I don't like the colour or style anymore, not enough space in my wardrobe for new items, I don't need the garment anymore, other/unknown reason. General wear and tear were used as a reference group).
15. Planned disposal method (donate to charity, give to friends/family, recycle at home, sell, other/unknown. Put in the rubbish bin was used for reference).
16. Monthly expenditure on clothing (broken into three groups—middle and high, where low expenditure is the reference).
17. The number of new clothing items purchased last year (from less than 5 to over 50, coded as from 2.5 to 70).
18. Wardrobe size (number of garments, varied from 35 to 663).
19. Fashion interest (measured based on the level of agreement to the statement "I change fashion by season"—from 0 = completely disagree up to 4 = completely agree).
20. Has repaired or sewn clothing last 12 months (0 = no, 1 = yes).
21. Sewing skills (measured in two ways: "Can use sewing machine"—0 = no, 1 = yes, or "Can sew by hand"—0 = no, 1 = yes).
22. Purchase priorities (respondents had to evaluate 11 garment attributes when buying smart casual or formal wear—rated from completely unimportant (0) to most important. The highest grade (6) applies if the factor was chosen as most important for both garment categories. The aspects included were fashion, price, fit, fabric quality, fibre content, country of manufacture, design/style, sustainable/environmentally friendly production, ethical production, colour, and designer brand).

This gives 71 variables in total. Due to this high number, we used the adjusted R^2 to estimate the model fit.

The same order is used in the logistic regressions for DEP3a and DEP3b with some exceptions. The variable "preowned" was not included in "DEP3a-Preowned", and the variable "planned disposal method" is not included in "DEP3b-Planned reuse", as the dependent and independent variables are based on the same question. Garment age in years and the total number of wears were introduced as predictors in the third block instead.

During the development of models, variables that did not contribute significantly to any of the regressions, or had high collinearity, were excluded. The robustness of the models was tested with model variation by adding, removing, and changing some of the regressors. Examples of these changes included removing variables that were no longer significant in the final block of the models, adding variables that were initially excluded due to their small contribution, changing nominal variables to categorical variables and vice versa (such as wardrobe size in trisects for small/average/large instead of number of garments), and using different reference groups for categorical variables (such as fashion as disposal reason instead of wear and tear). These changes did not impact largely to the core regressions coefficients that retained their direction. The adjusted R^2 of models 1 and 2, and pseudo R^2 values (Cox and Snell and Nagelkerke values) of models 3a and 3b changed on average 1.3 percentage points, and 1.7 percentage points at most. This indicates sufficient structural validity.

4. Results

4.1. Garment Lifespans Measured in Years

The average current garment age (including all focus categories) was 2.6 years, indicating that total expected lifespan is likely to be double, 5.2 years (N = 46,857 garments). This estimation includes only the current user (not previous owners if the garment was preowned or would be reused).

A significant regression model was found ($F(71, 22{,}525) = 91.941$, $p < 0.001$), with an adjusted R^2 of 0.222, which indicates the model explains 22.2% of the variation in garment lifespans measured in years. The contribution of each block is presented in Table 3. The first model (garment information only) explains 5% of the variation. By adding demographic information about the user, the rate increases to 11.6% ($\Delta R^2 = 0.066$), and by adding use related variables, the rate increases to 17.4% ($\Delta R^2 = 0.059$). Finally, by including user's clothing practices, the rate increases to 22.2% ($\Delta R^2 = 0.049$). Therefore, all four blocks contribute significantly and add between 4.9 and 6.6 percentage points to the final model. The demographics of the user come out as the largest contributor mainly due to the importance of national differences, but the disparities between the four blocks are not that large indicating that all four aspects are important.

The individual variables' contribution to the final, complete model (Block 4) is evaluated based on part correlations and standardised beta values. The model shows that the ten most important single predictors are:

1. Number of wears before laundering: Garments that are washed less frequently (worn more times before washing) have longer lifespans. Those that are washed less often than after every 30 wears have lifespans of up to 4.8 years longer than those washed after every wear.
2. Nationality (country): Clothing is kept for a shorter time in China than in the other included countries. The difference is largest when compared to Japan where clothing is kept longest (2.7 years longer), followed by the US (2.4 years), Germany (2.2 years) and finally the UK (1.8 years). However, Chinese respondents include only those living in large cities and do not represent the average Chinese citizens.
3. Wardrobe size as the number of garments: For every ten garments increase in garments owned, the total average clothing lifespan increases by one month.
4. The number of new clothing items purchased in the last 12 months: For every ten additional items purchased per year, the expected lifespan is reduced by five months, which is the opposite to those with large wardrobes, indicating greater purchases being associated with higher turnover.
5. The number of times worn during an active year of wearing: Increase in wearing frequency decreases the lifespan measured in years, on average 10 more wears reduces the garment lifespan by 2 months.
6. Fashion interest: The more strongly the respondent reacted to the statement "I change fashion by season" (0 = completely disagree, 4 = completely agree), the shorter the clothing lifespan (each step reduced lifespan by 7.8 months). Those that completely agree have garment lifespans 2.6 years shorter than those that disagree with the statement completely.
7. Garment price: Garments at low mid-range pricing (10–39 USD) are used almost 5 months longer than the lowest groups (below 10 USD), those at higher mid-range (40–99 USD) 10.5 months longer, and the most expensive garment group (over 100 USD) are used 2 years longer than the cheapest garments.
8. Occasion: The most common garment use category was the reference group of garments used as "every day and around the home". Garments for all other occasions have longer lifespans, besides workwear, but the difference between workwear and everyday clothing is not significant after controlling for other variables. Garments used for dirty household chores were the oldest reported, followed by those no longer in active use.

9. Likely disposal reason: When the users were asked to indicate the most likely reason for disposal of specific garments, wear and tear was the most common (about half). Therefore, this category was used as a reference. Garments that are no longer needed are kept the longest (difference 2.1 years longer), followed by those that are to be disposed of due to lack of space (nine months longer). Garments that do not fit are about 8 months older and those which the user dislikes are about six months older. Garments to be disposed of due to fashion are about three months older, but this difference is not significant in the final model.
10. Monthly spending on clothing: The more money spent on clothing the shorter the garment lifespan (lowest trisect is 1.2 years longer than the highest, and 6 months longer than the middle trisect).

Many other variables also contribute significantly. Older consumers generally have older garments, with those aged over 50 keeping 1 year 3 months longer (on average) than garments belonging to the youngest age group (18–29).

The fibre content of garments also contributes significantly. Cotton was used as the reference, as the highest portion of garments in the study were made of cotton, and they have the shortest average lifespan. Silk garments have the longest lifespans (2.2 years more than cotton), followed by wool (1.2 years longer than cotton), and lastly, man-made fibres (synthetics 5.5 months more and regenerated cellulose fibres 9.7 months more than cotton).

These are not average descriptive statistics for the groups compared, but part of a regression where all the other reported variables are included and controlled for. They will change based on which variables are included in the final model.

Variables that do not contribute significantly to the final model are retained for comparison of the variables between the different models. This can be justified, as we wish to control for background variables such as gender, avoid omitted variables bias, and because there are no high correlations between the variables in the model (all Pearson's correlations below 0.7). The level of collinearity is low (highest VIF 3.1), largest Cooks' distance of 0.005, and only 0.8% of cases have standard residual above 3.

Table 3. Summary of four blocks that build the first Model DEP1 total garment age measured in years—* $p < 0.050$; ** $p < 0.010$; *** $p < 0.001$, ns = not significant, $p \geq 0.05$.

	Model 1: Garment			Model 2: User			Model 3: Use			Model 4: Practices		
	B	**SE B**	**Beta**	**B**	**SE B**	**Beta**	**B**	**SE B**	**Beta**	**B**	**SE B**	**Beta**
(Constant) Garment age in years	2.181	0.140	***	−0.102	0.239	(ns)	0.783	0.269	**	3.078	0.465	***
Garment type												
Suits vs. socks/stockings	3.525	0.320	0.087 ***	3.372	0.310	0.083 ***	1.850	0.307	0.046 ***	1.6	0.299	0.038 ***
Trousers, pants vs. socks/stockings	2.401	0.223	0.092 ***	2.185	0.216	0.084 ***	1.200	0.216	0.046 ***	1.0	0.211	0.037 ***
Skirts, dresses vs. socks/stockings	2.711	0.227	0.100 ***	2.863	0.228	0.106 ***	1.564	0.229	0.058 ***	1.3	0.223	0.049 ***
T-shirts, polos, singlets vs. socks/stockings	2.239	0.185	0.105 ***	1.924	0.180	0.090 ***	1.168	0.179	0.055 ***	1.1	0.173	0.050 ***
Jumpers, pullovers vs. socks/stockings	2.803	0.230	0.102 ***	2.373	0.224	0.086 ***	0.963	0.227	0.035 ***	0.7	0.221	0.025 **
Blazers vs. socks/stockings	3.121	0.260	0.097 ***	2.887	0.252	0.089 ***	0.831	0.259	0.026 **	0.7	0.252	0.022 **
Overcoats vs. socks/stockings	3.222	0.271	0.097 ***	3.301	0.263	0.100 ***	0.935	0.275	0.028 **	0.7	0.269	0.021 **
Scarfs, pashminas vs. socks/stockings	3.645	0.281	0.097 ***	3.352	0.273	0.089 ***	0.708	0.289	0.019 *	0.7	0.282	0.019 *
Thermal underwear vs. socks/stockings	1.057	0.283	0.027 ***	1.238	0.274	0.032 ***	0.096	0.268	0.002 (ns)	0.3	0.262	0.007 (ns)
Sportswear vs. socks/stockings	1.293	0.252	0.039 ***	1.556	0.243	0.047 ***	0.268	0.259	0.008 (ns)	0.4	0.253	0.011 (ns)
Main fibre category												
Wool and wool blends vs. cotton and cotton blends	1.569	0.160	0.072 ***	1.814	0.156	0.083 ***	1.202	0.153	0.055 ***	1.234	0.149	0.056 ***
Silk vs. cotton and cotton blends	1.750	0.486	0.024 ***	2.601	0.470	0.035 ***	2.170	0.456	0.030 ***	2.189	0.443	0.030 ***
Synthetics vs. cotton and cotton blends	1.282	0.160	0.055 ***	0.983	0.156	0.042 ***	0.618	0.152	0.026 ***	0.458	0.148	0.020 **
Regenerated cellulose vs. cotton and cotton blends	0.715	0.321	0.015 *	1.416	0.312	0.029 ***	0.858	0.302	0.018 **	0.811	0.293	0.017 **
Unknown/other fibre vs. cotton and cotton blends	2.692	0.198	0.091 ***	1.896	0.194	0.064 ***	0.380	0.230	0.013 (ns)	0.133	0.225	0.005 (ns)
Garment price												
10–39 USD vs. <10 USD	0.070	0.163	0.004 (ns)	0.372	0.159	0.022 *	0.195	0.160	0.012 (ns)	0.409	0.156	0.025 **
40–99 USD vs. <10 USD	−0.026	0.187	−0.001 (ns)	0.685	0.185	0.036 ***	0.361	0.191	0.019 (ns)	0.871	0.188	0.046 ***
Over 100 USD vs. <10 USD	1.661	0.219	0.075 ***	2.143	0.221	0.097 ***	1.595	0.230	0.072 ***	2.039	0.229	0.093 ***
Gender (0 = male, 1 = female)				−0.146	0.117	−0.009 (ns)	−0.181	0.114	−0.011 (ns)	−0.361	0.118	−0.022 **
Age group												
30–49 years vs. ≤29 years				0.747	0.131	0.046 ***	0.645	0.128	0.040 ***	0.103	0.127	0.006 (ns)
50–64 years vs. ≤29 years				2.576	0.150	0.143 ***	2.379	0.148	0.132 ***	1.238	0.151	0.069 ***
Nationality												
Germany vs. China				3.024	0.171	0.154 ***	2.894	0.172	0.147 ***	2.233	0.184	0.114 ***
Japan vs. China				3.389	0.172	0.174 ***	3.098	0.181	0.159 ***	2.677	0.197	0.138 ***
UK vs. China				2.443	0.179	0.114 ***	2.494	0.181	0.117 ***	1.802	0.191	0.084 ***
USA vs. China				3.419	0.181	0.163 ***	3.249	0.183	0.155 ***	2.446	0.196	0.116 ***

Table 3. *Cont.*

	Model 1: Garment	Model 2: User			Model 3: Use			Model 4: Practices		
Employed (0 = No, 1 = Yes)		−0.976	0.122	−0.059 ***	−0.796	0.120	−0.048 ***	−0.299	0.120	−0.018 *
Married (0 = No, 1 = Yes)		0.114	0.114	0.007 (ns)	0.271	0.110	0.016 *	0.628	0.109	0.037 ***
Income										
Middle vs. low		−1.455	0.138	−0.087 ***	−1.302	0.134	−0.078 ***	−0.938	0.133	−0.056 ***
High vs. low		−0.969	0.148	−0.058 ***	−0.856	0.144	−0.051 ***	−0.318	0.145	−0.019 *
Wearing frequency Number of wears per year					−0.022	0.001	−0.115 ***	−0.018	0.001	−0.094 ***
Number of wears before laundering					0.840	0.043	0.153 ***	0.792	0.042	0.144 ***
Main use occasion										
Work vs. home					−0.115	0.149	−0.006 (ns)	0.0	0.145	−0.001 (ns)
Formal social occasion vs. home					0.185	0.175	0.007 (ns)	0.5	0.171	0.019 **
Casual social occasion vs. home					0.040	0.150	0.002 (ns)	0.1	0.146	0.005(ns)
Sport/training vs. home					1.316	0.267	0.035 ***	1.3	0.259	0.035 ***
Religious occasion vs. home					4.440	0.540	0.051 ***	4.2	0.525	0.048 ***
Sleeping vs. home					3.561	0.496	0.044 ***	3.7	0.482	0.045 ***
Dirty household chores vs. home					5.668	0.582	0.059 ***	5.6	0.565	0.059 ***
Not in active use vs. home					5.703	0.343	0.106 ***	5.4	0.333	0.100 ***
Other or unknown occasion vs. home					1.677	0.280	0.050 ***	1.6	0.274	0.047 ***
Preowned (0 = no, 1 = yes)					0.723	0.199	0.023 ***	0.633	0.195	0.020 **
Likely disposal reason										
Fashion vs. wear and tear					−0.497	0.179	−0.019 **	0.24	0.177	0.009 (ns)
Poor fit vs. wear and tear					0.536	0.165	0.022 **	0.66	0.161	0.027 ***
Dislike of colour/style vs. wear and tear					0.150	0.186	0.006 (ns)	0.52	0.182	0.019 **
Lack of space vs. wear and tear					0.513	0.274	0.012 (ns)	0.78	0.267	0.018 **
Don't need it anymore vs. wear and tear					1.817	0.183	0.065 ***	2.05	0.178	0.073 ***
Unknown vs. wear and tear					−0.740	0.258	−0.025 **	−0.56	0.253	−0.019 *
Planned disposal route										
Donate to charity vs. bin					−0.538	0.144	−0.031 ***	−0.488	0.141	−0.029 **
Give/donate to family/friends vs. bin					−0.981	0.194	−0.038 ***	−0.790	0.189	−0.030 ***
Recycle at home vs. bin					0.412	0.197	0.014 *	0.287	0.192	0.010 (ns)
Sell vs. bin					−0.001	0.253	0.000 (ns)	0.008	0.247	0.000 (ns)
Other/don't know vs. bin					0.752	0.222	0.030 **	0.540	0.217	0.021 *

Table 3. *Cont.*

	Model 1: Garment	Model 2: User	Model 3: Use	Model 4: Practices		
Monthly spending on clothing						
Middle vs. low				−0.502	0.130	−0.030 ***
High vs. low				−1.234	0.157	−0.071 ***
Number of new clothing items last 12 months				−0.044	0.003	−0.094 ***
Wardrobe size as number of garments				0.009	0.001	0.103 ***
Fashion interest (0 = completely disagree, 4 = completely agree)				−0.651	0.049	−0.092 ***
Repaired or sewn clothing last 12 months (0 = no, 1 = yes)				0.171	0.129	0.009 (ns)
Can use a sewing machine (0 = no, 1 = yes)				0.255	0.116	0.015 *
Can sew by hand (0 = no, 1 = yes)				0.054	0.113	0.003 (ns)
Clothing purchase priorities from 0 to 6. Important:						
Designer brand				−0.199	0.041	−0.037 ***
Price				0.262	0.041	0.042 ***
Fabric quality				−0.064	0.050	−0.009 (ns)
Fibre content				0.074	0.046	0.012 (ns)
Country of manufacture				0.261	0.043	0.047 ***
Important: Design/Style				−0.039	0.048	−0.006 (ns)
Sustainable production				−0.057	0.049	−0.010 (ns)
Ethically produced				−0.336	0.049	−0.059 ***
Fit				0.074	0.045	0.011 (ns)
Colour				−0.077	0.062	−0.008 (ns)
In fashion				−0.327	0.044	−0.057 ***
R^2	**0.051**	**0.117**	**0.176**	**0.225**		
Adjusted R^2	**0.050**	**0.116**	**0.174**	**0.222**		
Delta R^2	**0.051**	**0.066**	**0.059**	**0.049**		
Delta F	**67.456 *****	**153.199 *****	**70.221 *****	**74.440 *****		

4.2. Garment Lifespans Measured in Number of Wears

We asked the respondents to estimate the number of times they had worn the garment, and how many times they assumed they would continue wearing it. On average, the items had been worn 34.8 times and were assumed to be worn 46.3 times more in the future, giving a total of 80 wears.

A significant regression equation was found (F (71, 20,002) = 94.330, $p < 0.001$), with an adjusted R^2 of 0.248, which indicates that the model explains 24.8% of the variation. The first model (garment properties) explains only 3% of the variation in the number of wears of garments. By adding demographic information about the user, the explanation rate increases to 6.1% (ΔR^2 0.035). Further, by adding information about the use, the explanation increases significantly to 21% (ΔR^2 0.150). Finally, by including user's clothing practices, the explanation rate increases to 24.8% (ΔR^2 0.039). Therefore, block 3 (garment use) is by far the most significant contributor, while other blocks explain about 3–4% of the variation in garments wears.

As this model includes the same independent variables as the first model, the collinearity statistics are the same. However, this model has a slightly higher share of residuals, as 1.9% of cases have a standard residual above three. Cooks distance is only 0.002, so we assume that these cases do not cause problems to the model.

When looking at the contributions of the individual variables in the final model (block 4) where all variables are included and controlled for, the most important single predictors are:

1. Wearing frequency per year: This is the most important predictor of the total number of wears, as expected.
2. The number of wears before laundering: The estimated lifespan reported as the number of wears increases by 16 for each higher bracket reported. Garments that are washed after each wear are used 94 times less than those that are washed less often than after every 30 wears.
3. High garment price: Garments that cost over 100 USD are estimated to be worn 31 times more than those that cost under 10 USD.
4. Clothing purchase priorities: Largest contributions can be seen from those that evaluate fabric quality as important, as the difference in the number of wears between those that evaluate it from completely unimportant to most important is up to 38 wears. Other priorities that contribute positively to a larger number of wears are price and garment fit, which both contribute 33 additional wears, followed by prioritising of design/style (19 wears). The opposite effect can be seen on those that report that brand is important, and they wear garments 33 wears less than those that respond that brand is completely unimportant to them. Other priorities that contribute negatively to the number of wears are importance of fashion (30) and fibre content (10).
5. Nationality: Compared to Chinese respondents, those from Germany and the UK use their garments 22 times more, US 8 more wears, and Japanese 6 more wears, after having controlled for other variables.
6. Occasion: Garments used at formal social occasions are used 24 fewer times than those worn at home. Garments used the most times are those for sleeping (16 times more than home wear), followed by home wear. Other occasions that contribute significantly to the model are garments used at religious occasions (−16), not in active use (−12), casual social occasions (−12), and workwear (−7). Clothing used for dirty household chores or clothing for sports do not contribute significantly.
7. Garment type: Socks and stockings are reported to be worn most times, and in comparison, all other included garment groups are worn fewer times; suits—34, blazers—29, skirts/dresses—20, jumpers/overcoats—20, scarves—16, trousers—14, thermal underwear—11, sportswear—7. The difference in the number of wears between socks and t-shirts/polos/singlets is no longer significant when other variables were included in the model.
8. User's age: This is a significant contributor, indicating that and 50–64 years old use their clothing 14 times less than those below 29.

9. Sewing skills: Those that report knowing how to sew use their clothing 12 more times than those who do not know how. Surprisingly, the impact is opposite for those that say they have repaired or sewn clothing the past 12 months, as they have on average 12 wears less.
10. Disposal reasons: Garments that are assumed to be disposed of due to wear and tear are worn the most times. Garments to be disposed of due to changes in fashion are worn at least times (−17 wears). This is followed by lack of space (−15 wears), dislike (−12 wears), and those no longer needed (−6 wears).

Other variables also contribute significantly (Table 4). Women wear garments 10.8 times less than men. This difference was larger before the introduction of the other predictors to the model. Those that spend more money on clothing per month wear it fewer times.

Table 4. Summary of four blocks that build the Model DEP2- Total number of wears by current user. * $p < 0.050$; ** $p < 0.010$; *** $p < 0.001$, ns = not significant, $p \geq 0.05$.

	Model 1: Garment			Model 2: User			Model 3: Use			Model 4: Practices		
	B	SE B	Beta	B	SE B	Beta	B	SE B	Beta	B	SE B	Beta
(Constant) Number of wears	95.7	1.902	***	91.6	3.310	***	57.2	3.540	***	23.3	6.149	***
Garment type												
Suits vs. socks/stockings	−38.5	4.362	−0.075 ***	−39.5	4.302	−0.077 ***	−35.8	4.034	−0.070 ***	−34.1	3.953	−0.066 ***
Trousers, pants vs. socks/stockings	−5.7	3.037	−0.017 (ns)	−6.6	2.988	−0.020 *	−15.6	2.843	−0.047 ***	−14.0	2.787	−0.042 ***
Skirts, dresses vs. socks/stockings	−45.2	3.086	−0.132 ***	−38.0	3.153	−0.111 ***	−19.1	3.012	−0.056 ***	−19.8	2.950	−0.058 ***
T-shirts, polos, singlets vs. socks/stockings	−10.2	2.525	−0.038 ***	−10.9	2.489	−0.040 ***	−3.9	2.349	−0.015 (ns)	−3.6	2.293	−0.013 (ns)
Jumpers, pullovers vs. socks/stockings	−14.3	3.129	−0.041 ***	−18.3	3.098	−0.052 ***	−17.8	2.980	−0.051 ***	−19.7	2.915	−0.056 ***
Blazers vs. socks/stockings	−22.1	3.540	−0.054 ***	−24.2	3.491	−0.059 ***	−31.5	3.400	−0.077 ***	−29.4	3.333	−0.072 ***
Overcoats vs. socks/stockings	−2.6	3.684	−0.006 (ns)	−0.6	3.651	−0.001 (ns)	−20.2	3.623	−0.048 ***	−20.2	3.554	−0.048 ***
Scarfs, pashminas vs. socks/stockings	2.4	3.827	0.005 (ns)	2.3	3.778	0.005 (ns)	−17.0	3.802	−0.036 ***	−16.2	3.726	−0.034 ***
Thermal underwear vs. socks/stockings	−23.4	3.851	−0.047 ***	−18.5	3.795	−0.038 ***	−14.9	3.530	−0.030 ***	−10.5	3.464	−0.021 **
Sportswear vs. socks/stockings	−16.3	3.432	−0.039 ***	−14.1	3.373	−0.034 ***	−12.1	3.407	−0.029 ***	−6.6	3.341	−0.016 *
Main fibre category												
Wool and wool blends vs. cotton and cotton blends	−16.5	2.180	−0.060 ***	−15.5	2.155	−0.056 ***	−10.7	2.011	−0.039 ***	−7.8	1.967	−0.028 ***
Silk vs. cotton and cotton blends	−20.2	6.622	−0.022 **	−11.1	6.520	−0.012 (ns)	3.1	6.000	0.003 (ns)	4.7	5.854	0.005 (ns)
Synthetics vs. cotton and cotton blends	9.7	2.179	0.033 ***	8.4	2.167	0.028 ***	9.4	2.002	0.032 ***	6.3	1.961	0.021 **
Regenerated cellulose vs. cotton and cotton blends	−7.5	4.376	−0.012 (ns)	0.1	4.321	0.000 (ns)	4.7	3.972	0.008 (ns)	2.4	3.878	0.004 (ns)
Unknown/other fibre vs. cotton and cotton blends	7.9	2.694	0.021 **	0.6	2.686	0.002 (ns)	5.1	3.031	0.014 (ns)	7.4	2.978	0.020 *
Garment price												
10–39 USD vs. <10 USD	−5.7	2.222	−0.027 *	−4.6	2.202	−0.022 *	7.8	2.106	0.037 ***	9.1	2.060	0.043 ***
40–99 USD vs. <10 USD	−4.1	2.542	−0.017 (ns)	1.5	2.568	0.006 (ns)	15.1	2.515	0.063 ***	19.3	2.486	0.080 ***
Over 100 USD vs. <10 USD	13.5	2.985	0.048 ***	18.4	3.057	0.066 ***	26.7	3.028	0.096 ***	30.7	3.030	0.110 ***
Gender (0 = male, 1 = female)				−15.5	1.616	−0.074 ***	−6.2	1.503	−0.030 ***	−10.8	1.556	−0.052 ***
Age group												
30–49 years vs. ≤29 years				1.2	1.816	0.006 (ns)	−0.5	1.679	−0.002 (ns)	−4.2	1.676	−0.021 *
50–64 years vs. ≤29 years				3.2	2.078	0.014 (ns)	−3.3	1.947	−0.015 (ns)	−13.8	1.995	−0.060 ***
Nationality												
Germany vs. China				37.0	2.366	0.149 ***	24.5	2.268	0.099 ***	21.7	2.429	0.087 ***
Japan vs. China				27.4	2.381	0.111 ***	11.5	2.381	0.047 ***	5.7	2.601	0.023 *
UK vs. China				43.4	2.482	0.160 ***	29.2	2.377	0.108 ***	21.7	2.525	0.080 ***
USA vs. China				15.8	2.514	0.059 ***	13.3	2.405	0.050 ***	8.3	2.588	0.031 **

Table 4. *Cont.*

	Model 1: Garment	Model 2: User			Model 3: Use			Model 4: Practices		
Employed (0 = No, 1 = Yes)		−5.1	1.697	−0.025 **	−4.3	1.575	−0.021 **	2.0	1.591	0.010 (ns)
Married (0 = No, 1 = Yes)		−3.9	1.577	−0.018 *	−3.5	1.453	−0.016 *	−2.2	1.439	−0.010 (ns)
Income										
Middle vs. low		−12.4	1.913	−0.059 ***	−7.9	1.765	−0.037 ***	−6.0	1.758	−0.028 ***
High vs. low		−15.6	2.047	−0.073 ***	−9.9	1.889	−0.047 ***	−7.3	1.923	−0.034 ***
Wearing frequency Number of wears per year					0.7	0.017	0.281 ***	0.7	0.017	0.294 ***
Number of wears before laundering					16.5	0.560	0.237 ***	15.6	0.550	0.224 ***
Main use occasion										
Work vs. home					−10.3	1.955	−0.040 ***	−7.4	1.913	−0.028 ***
Formal social occasion vs. home					−30.1	2.300	−0.095 ***	−24.5	2.254	−0.077 ***
Casual social occasion vs. home					−13.2	1.972	−0.048 ***	−11.7	1.927	−0.043 ***
Sport/training vs. home					2.3	3.509	0.005 (ns)	0.9	3.426	0.002 (ns)
Religious occasion vs. home					−19.5	7.104	−0.018 **	−15.5	6.943	−0.014 *
Sleeping vs. home					11.5	6.526	0.011 (ns)	15.9	6.371	0.015 *
Dirty household chores vs. home					1.9	7.653	0.002 (ns)	4.6	7.471	0.004 (ns)
Not in active use vs. home					−8.6	4.506	−0.013 (ns)	−11.9	4.400	−0.017 **
Other/unknown occasion vs. home					−16.7	3.680	−0.039 ***	−6.9	3.626	−0.016 (ns)
Preowned (0 = no, 1 = yes)					−11.8	2.617	−0.030 ***	−7.4	2.576	−0.019 **
Likely disposal reason										
Fashion vs. wear and tear					−28.6	2.360	−0.087 ***	−17.2	2.342	−0.053 ***
Poor fit vs. wear and tear					−8.8	2.168	−0.028 ***	−2.5	2.134	−0.008 (ns)
Dislike of colour/style vs. wear and tear					−18.7	2.450	−0.055 ***	−12.3	2.404	−0.036 ***
Lack of space vs. wear and tear					−21.6	3.605	−0.039 ***	−15.0	3.533	−0.027 ***
Don't need it anymore vs. wear and tear					−8.9	2.402	−0.025 ***	−5.8	2.352	−0.016 *
Unknown vs. wear and tear					−5.2	3.393	−0.014 (ns)	3.6	3.343	0.010 (ns)
Planned disposal route										
Donate to charity vs. rubbish bin					−5.8	1.895	−0.027 **	−7.4	1.859	−0.034 ***
Give/donate to family/friends vs. rubbish bin					−12.3	2.546	−0.037 ***	−9.3	2.496	−0.028 ***
Recycle at home vs. rubbish bin					10.4	2.593	0.028 ***	8.7	2.539	0.023 ***
Sell vs. rubbish bin					9.6	3.330	0.020 **	5.2	3.266	0.011 (ns)
Other/don't know vs. rubbish bin					15.6	2.923	0.049 ***	15.6	2.866	0.048 ***

Table 4. *Cont.*

	Model 1: Garment		Model 2: User		Model 3: Use		Model 4: Practices		
Monthly spending on clothing									
Middle vs. low							−7.5	1.717	−0.036 ***
High vs. low							−6.9	2.081	−0.031 ***
Number of new clothing items last 12 months							0.0	0.042	0.005 (ns)
Wardrobe size as number of garments							−0.01	0.008	−0.012 (ns)
Fashion interest 0 = completely disagree, 4 = completely agree)							−2.0	0.649	−0.022 **
Repaired or sewn clothing last 12 months (0 = no, 1 = yes)							−12.3	1.707	−0.051 ***
Can use a sewing machine (0 = no, 1 = yes)							12.1	1.529	0.055 ***
Can sew by hand (0 = no, 1 = yes)							11.8	1.497	0.057 ***
Clothing purchase priorities from 0 to 6. Important:									
Designer brand							−5.6	0.536	−0.083 ***
Price							5.5	0.542	0.070 ***
Fabric quality							6.3	0.656	0.069 ***
Fibre content							−2.2	0.605	−0.028 ***
Country of manufacture							−0.4	0.567	−0.006 (ns)
Design/Style							3.1	0.633	0.036 ***
Sustainable production							−1.0	0.647	−0.013 (ns)
Ethically produced							−0.6	0.650	−0.009 (ns)
Fit							5.4	0.590	0.062 ***
Colour							−1.0	0.826	−0.009 (ns)
In fashion							−4.9	0.576	−0.068 ***
R^2	**0.027**		**0.062**		**0.212**			**0.251**	
Adjusted R^2	**0.026**		**0.061**		**0.210**			**0.248**	
Delta R^2	**0.027**		**0.035**		**0.150**			**0.039**	
Delta F	**30.472**	***	**68.904**	***	**165.211**	***		**55.007**	***

4.3. Number of Users

We do not have complete data for the number of users for each garment, as we only asked how it was acquired and how it is planned to be disposed of. We do not know if garments have had more than one previous owner, and whether the items delivered to reuse will be actually reused, and by how many more users.

Most garments were purchased new (75%), followed by those received as presents (10%). There were 3.7% that were received from someone else who no longer wanted them, and another 3.7% were bought second-hand. Less than 2% were self-made/tailored. This indicates that 7.4% of garments were pre-owned.

The most common disposal choice was planning to donate to charity (34%), followed by disposal to the rubbish bin (30%), give to family/friends (11%), recycle at home (8.4%), and only 4.8% were planned to be sold. This indicates that half of the garments are planned to have subsequent users. Combining these results, 4.3% of garments are likely to have three users.

4.3.1. Preowned Garments

A binary logistic regression model was built for evaluating which variables contribute most to the model that predicts whether garments are preowned or not (Table 5). The overall model indicates a good fit (chi-square value 2266.01 with 77 degrees of freedom, $p < 0.001$, N = 18764), which was confirmed with the Hosmer and Lemeshow Test ($p > 0.05$). The model explains between 11.4% and 36.0% of the variations when estimated with pseudo R^2 values (Cox and Snell and Nagelkerke values). The model identifies 95.5% correctly, which is a minor improvement from the zero block which identified 95.3%. However, the true positives identified by the model increased from 0 to 58%.

Table 5. Summary of Model Dep3a: Logistic regression analysis for variables predicting whether the garment has had a previous owner (new garment = 0, preowned = 1).

	β	S.E. β	Wald's χ	df	p	e^{β} Odds Ratio
Garment type: Pairs of socks, stockings			168.760	10	0.000	
Suits—Jacket + Trousers/Skirt	1.663	0.275	36.663	1	0.000	5.274
Pants, trousers	1.899	0.212	80.062	1	0.000	6.679
Skirts, dresses	2.196	0.216	103.488	1	0.000	8.989
T-shirts, polo shirts, singlets, tanks	1.264	0.192	43.360	1	0.000	3.540
Jumpers, pullovers, sweaters, cardigans	2.269	0.216	110.343	1	0.000	9.666
Jackets, blazers	2.438	0.235	107.168	1	0.000	11.445
Overcoats, coats, raincoats	2.691	0.249	117.139	1	0.000	14.747
Thermal underwear	1.265	0.247	26.162	1	0.000	3.543
Sports T-shirts, tops, singlets, tanks	1.701	0.232	53.590	1	0.000	5.478
Scarfs, shawls, pashmina's, stoles	1.392	0.270	26.611	1	0.000	4.023
Fibre content Cotton and blends			42.017	5	0.000	
Wool and blends	0.514	0.109	22.363	1	0.000	1.672
Silk	−0.223	0.487	0.210	1	0.646	0.800
Synthetic	−0.384	0.132	8.435	1	0.004	0.681
Regenerated cellulose	0.414	0.240	2.986	1	0.084	1.513
Other/Unknown	0.302	0.342	0.777	1	0.378	1.352
Garment price Cheap (<9.9 USD)			555.847	3	0.000	
Medium–low (10–39 USD)	−2.079	0.109	360.841	1	0.000	0.125
Medium–high (40–99 USD)	−3.205	0.155	427.524	1	0.000	0.041
Expensive (>100 USD)	−3.791	0.204	346.696	1	0.000	0.023

Table 5. *Cont.*

	β	S.E. β	Wald's χ	df	p	e^{β} Odds Ratio
Gender (0 = male, 1 = female)	−0.189	0.107	3.112	1	0.078	0.828
Age group			86.738	2	0.000	
18–29 years						
30–49 years	−0.703	0.097	52.852	1	0.000	0.495
50–64 years	−1.079	0.128	71.486	1	0.000	0.340
Country			330.626	4	0.000	
China						
Germany	1.460	0.192	57.702	1	0.000	4.306
Japan	1.859	0.209	79.239	1	0.000	6.420
UK	2.515	0.184	186.215	1	0.000	12.364
USA	2.988	0.182	269.946	1	0.000	19.836
Employed (0 = no, 1 = yes)	0.061	0.103	0.352	1	0.553	1.063
Married (0 = no, 1 = yes)	0.093	0.093	0.999	1	0.318	1.098
Income group			5.980	2	0.050	
Low						
Medium	−0.100	0.115	0.763	1	0.382	0.905
High	−0.314	0.136	5.302	1	0.021	0.730
Wearing frequency Number of wears per year	−0.008	0.001	34.409	1	0.000	0.992
Number of wears before laundering			51.293	6	0.000	
0 = After every wear						
1 = 2–3 wears	0.718	0.112	41.342	1	0.000	2.050
2 = 4–5 wears	0.725	0.132	30.358	1	0.000	2.065
3 = 6–10 wears	0.553	0.186	8.815	1	0.003	1.739
4 = 11–19 wears	0.628	0.264	5.649	1	0.017	1.875
5 = 20–29 wears	0.971	0.312	9.696	1	0.002	2.641
6 = Every 30 wears or less often	0.982	0.262	14.102	1	0.000	2.670
Wear occasion:			21.805	9	0.010	
Every day and around the home						
Work occasion	−0.044	0.124	0.129	1	0.720	0.957
Formal social occasion	0.130	0.128	1.033	1	0.310	1.139
Casual social occasion	−0.001	0.118	0.000	1	0.990	0.999
Sport/training occasion	−0.131	0.233	0.318	1	0.573	0.877
Religious occasion	0.731	0.304	5.776	1	0.016	2.077
Sleeping	0.234	0.387	0.365	1	0.546	1.264
Dirty household chores	0.996	0.358	7.757	1	0.005	2.707
Not in active use	0.727	0.420	2.992	1	0.084	2.069
Other/Unknown occasion	−0.636	0.384	2.737	1	0.098	0.530
Likely disposal reason:			54.365	6	0.000	
Wear and tear						
Not in fashion any more	0.767	0.123	38.853	1	0.000	2.153
Poor fit	0.482	0.119	16.278	1	0.000	1.619
Dislike the colour or style	0.348	0.151	5.342	1	0.021	1.416
Lack of space	−0.448	0.273	2.696	1	0.101	0.639
Don't need it any more	0.168	0.160	1.107	1	0.293	1.183
Other/unknown	−0.392	0.378	1.079	1	0.299	0.675

Table 5. *Cont.*

	β	S.E. β	Wald's χ	df	p	e^{β} Odds Ratio
Disposal route Rubbish bin			54.759	5	0.000	
Donate to charity	−0.067	0.122	0.298	1	0.585	0.935
Give/donate to family/friends	0.341	0.137	6.217	1	0.013	1.406
Recycle at home	0.214	0.168	1.621	1	0.203	1.239
Sell	0.941	0.168	31.314	1	0.000	2.564
Other/Don't know	−0.611	0.311	3.854	1	0.050	0.543
Lifespan in years	0.016	0.007	4.748	1	0.029	1.016
Total number of wears	−0.003	0.001	23.868	1	0.000	0.997
Monthly spending on clothing: Low			2.136	2	0.344	
Medium	0.167	0.126	1.765	1	0.184	1.182
High	0.209	0.152	1.907	1	0.167	1.233
Number of new clothing items purchased last 12 months	−0.003	0.003	1.187	1	0.276	0.997
Wardrobe size	0.001	0.001	3.591	1	0.058	1.001
Fashion follower (0 = completely disagree, 4 = completely agree)	0.134	0.042	10.212	1	0.001	1.144
Has repaired or sewn clothing last 12 months (0 = no, 1 = yes)	0.752	0.136	30.805	1	0.000	2.122
Can use sewing machine (0 = no, 1 = yes)	−0.031	0.089	0.123	1	0.726	0.969
Can sew by hand (0 = no, 1 = yes)	0.005	0.093	0.003	1	0.955	1.005
Priorities when buying clothing: Designer brand	0.103	0.034	9.357	1	0.002	1.108
Price	−0.131	0.036	13.012	1	0.000	0.877
Fabric quality	−0.186	0.042	19.420	1	0.000	0.830
Fibre content	0.109	0.039	8.011	1	0.005	1.116
Country of manufacture	−0.100	0.037	7.247	1	0.007	0.905
Design/Style	0.023	0.043	0.301	1	0.583	1.024
Sustainable production	0.189	0.041	21.309	1	0.000	1.208
Ethically produced	−0.054	0.040	1.838	1	0.175	0.948
Fit	−0.094	0.038	6.285	1	0.012	0.910
Colour	−0.057	0.048	1.421	1	0.233	0.945
In fashion	−0.248	0.035	50.114	1	0.000	0.781
Constant (Preowned)	−4.025	0.434	86.080	1	0.000	0.018

The single most significant predictor for garments having previous owners is the price. That is, garments that cost over 100 USD are 46 times less likely to be preowned than those that cost less than 10 USD. This is understandable, as most second-hand garments are cheaper than new ones, and about half of the preowned garments in the study were hand-me-downs from friends and family, which are often given for free.

After that, nationality is the second most important predictor. The Chinese have the lowest rates of preowned clothing, and the odds of a garment being pre-owned are 20 times higher for Americans than the Chinese, followed by 12 times for Brits, 6 times for Japanese, and 4 times for Germans.

The third most important predictor is the type of garment. Coats are most likely to be second-hand (15 times more likely than socks/stockings), followed by jackets, jumpers, skirts/dresses, pants/trousers, suits, sportswear, scarfs, t-shirts, and finally thermal underwear which is still 3.5 times more likely to be preowned than socks.

When it comes to fibre content, there is a significant difference between cotton and wool products, and cotton and synthetics. Woollen garments are the most likely to have been preowned (1.7 times more likely than cotton), while synthetics are 1.5 times less likely to be purchased second-hand than cotton garments.

User's age is also a significant predictor. Those above 50 are about 3 times less likely to have second-hand clothing than those below 30.

The difference between the lowest and highest income groups is also significant. Those with the highest income are 1.4 times less likely to have preowned clothing than those in the lowest income group. Differences between the middle and lowest group are not significant.

As expected, garments that are washed less often are more likely to be preowned. This is likely to be related to the types of garments, as outerwear is reused more often than next-to-skin products.

Most of the use occasions do not contribute significantly when compared to home wear, but clothing for dirty household chores are about 2.7 times more likely preowned.

Furthermore, the reason garments are assumed to be disposed of contributes significantly to the model. Preowned clothes are 2.2 times more likely to be disposed of due to fashion changes, 1.6 times more likely due to poor fit, and 1.4 times more likely due to dislike of style/colour than due to wear and tear.

The likely disposal route contributes significantly to the model, and preowned clothes are 2.6 times more likely to be sold again, and 1.4 times more likely to be given to friends/family than to be put in the rubbish bin at home.

Users that change fashion by the season are more likely to have preowned clothing.

Having repaired or made clothing in the last 12 months increases the chances of having preowned clothing by 2.1. This seems logical, as having older clothes increases the chances of them having to be repaired.

Users' priorities in clothing acquisition have a significant but minor impact on the model. Those that give high priority to fashionable clothing are 1.3 times less likely to have preowned garments, whereas those that prioritize sustainable production are 1.2 times more likely to have second-hand clothing.

Garment age in years, number of times worn and wearing frequency all contribute significantly to the model, but the impact is minor (odds ratio close to one).

Predictors that do not contribute significantly to the final model include gender, employment and marital status, monthly spending on clothing, sewing skills, and size of the wardrobe.

4.3.2. Planned Reuse

A binary logistic regression model was built for evaluating which predictors contribute to the likelihood of garments being delivered for reuse (Table 6). Overall model indicates a good fit (chi-square value 7440.89 with 73 degrees of freedom, $p < 0.001$, N = 18764). The model explains between 32.7% and 43.9% of variations when estimated with pseudo R2 values (Cox and Snell and Nagelkerke values). The model is 77% correct, which is a significant improvement from the zero block that identified 56.6% correctly.

The Hosmer and Lemeshow test showed a poor model fit (sig < 0.05), but as it has been discussed by several authors [41,42] that the test is less suitable for large data sets and may reject model incorrectly. Therefore, the logistic regression was repeated with five random subsets of the cases, and the Hosmer and Lemeshow Test showed a good model fit in all five cases ($p > 0.05$).

The most important predictor in the model for reuse is the type of garment. Socks/stockings are least likely to be delivered for reuse, while coats are most likely (10 times higher odds). These are followed by jumpers, jackets, skirts/dresses, scarfs, suits, trousers, t-shirts/polos, sportswear, and finally thermal underwear.

Table 6. Summary of Model 3b: Logistic regression analysis for variables predicting whether a garment is planned to be sent for reuse (0 = to rubbish bin or unknown destination, 1 = to sold or donated to reuse).

	β	S.E. β	Wald's χ	df	p	eβ Odds Ratio
Garment type:			655.253	10	0.000	
Pairs of socks, stockings						
Suits—Jacket + trouser/skirt	2.034	0.116	305.257	1	0.000	7.647
Pants, trousers	1.933	0.091	452.168	1	0.000	6.909
Skirts, dresses	2.084	0.102	414.520	1	0.000	8.035
T-shirts, polo shirts, singlets, tanks	1.485	0.082	327.360	1	0.000	4.417
Jumpers, pullovers, sweaters, cardigans	2.229	0.104	462.804	1	0.000	9.290
Jackets, blazers	2.140	0.111	372.558	1	0.000	8.499
Overcoats, coats, raincoats	2.300	0.119	370.821	1	0.000	9.969
Thermal underwear	1.165	0.103	126.792	1	0.000	3.205
Sports T-shirts, tops, singlets, tanks	1.368	0.101	184.265	1	0.000	3.928
Scarfs, shawls, pashmina's, stoles	2.041	0.125	264.730	1	0.000	7.702
Fibre content			9.883	5	0.079	
Cotton and blends						
Wool and blends	0.140	0.057	6.060	1	0.014	1.151
Silk	0.046	0.171	0.073	1	0.787	1.047
Synthetic	−0.015	0.054	0.080	1	0.777	0.985
Regenerated cellulose	−0.010	0.100	0.009	1	0.924	0.990
Other/Unknown	−0.283	0.178	2.517	1	0.113	0.753
Garment price			228.830	3	0.000	
Cheap (<9.9 USD)						
Medium–low (10–39 USD)	0.619	0.063	96.333	1	0.000	1.857
Medium–high (40–99 USD)	0.991	0.076	167.752	1	0.000	2.693
Expensive (>100 USD)	1.378	0.095	212.332	1	0.000	3.966
Gender (0 = male, 1 = female)	−0.208	0.046	20.450	1	0.000	0.812
Age group			79.146	2	0.000	
18–29 years						
30–49 years	−0.305	0.047	42.038	1	0.000	0.737
50–64 years	−0.515	0.059	75.484	1	0.000	0.597
Country			1474.812	4	0.000	
China						
Germany	0.792	0.069	133.222	1	0.000	2.209
Japan	−1.591	0.075	452.057	1	0.000	0.204
UK	0.729	0.073	98.549	1	0.000	2.074
USA	0.836	0.073	129.597	1	0.000	2.307
Employed (0 = No, 1 = Yes)	−0.162	0.050	10.459	1	0.001	0.851
Married (0 = No, 1 = Yes)	0.028	0.044	0.397	1	0.529	1.028
Income group			12.292	2	0.002	
Low						
Medium	0.127	0.054	5.517	1	0.019	1.135
High	−0.016	0.058	0.073	1	0.786	0.984
Wearing frequency	−0.001	0.001	2.532	1	0.112	0.999
Number of wears per year						
Number of wears before laundering			18.209	6	0.006	
0 = After every wear						
1 = 2–3 wears	0.173	0.048	12.889	1	0.000	1.189
2 = 4–5 wears	0.054	0.059	0.831	1	0.362	1.056
3 = 6–10 wears	0.215	0.081	7.126	1	0.008	1.240
4 = 11–19 wears	0.228	0.118	3.759	1	0.053	1.257
5 = 20–29 wears	0.148	0.140	1.118	1	0.290	1.160
6 = Every 30 wears or less often	0.066	0.119	0.306	1	0.580	1.068

Table 6. *Cont.*

	β	S.E. β	Wald's χ	df	p	eβ Odds Ratio
Wear occasion: Every day and around the home			111.033	9	0.000	
Work occasion	0.301	0.053	32.798	1	0.000	1.351
Formal social occasion	0.349	0.064	29.390	1	0.000	1.418
Casual social occasion	0.037	0.055	0.446	1	0.504	1.038
Sport/training occasion	−0.111	0.089	1.561	1	0.212	0.895
Religious occasion	0.797	0.282	8.002	1	0.005	2.220
Sleeping	−0.845	0.192	19.445	1	0.000	0.430
Dirty household chores	−0.891	0.213	17.540	1	0.000	0.410
Not in active use	0.029	0.217	0.018	1	0.893	1.030
Other/unknown occasion	−0.023	0.169	0.018	1	0.892	0.977
Likely disposal reason: Wear and tear			471.186	6	0.000	
Not in fashion any more	0.988	0.064	240.047	1	0.000	2.686
Poor fit	0.716	0.062	135.212	1	0.000	2.046
Dislike the colour or style	0.729	0.065	125.424	1	0.000	2.072
Lack of space	0.840	0.099	71.831	1	0.000	2.316
Don't need it any more	0.591	0.069	73.910	1	0.000	1.805
Other/unknown	−0.934	0.128	52.876	1	0.000	0.393
Preowned (0 = no, 1 = yes)	0.284	0.095	8.935	1	0.003	1.328
Lifespan in years	−0.011	0.004	10.447	1	0.001	0.989
Total number of wears	−0.002	0.000	50.690	1	0.000	0.998
Monthly spending on clothing: Low			17.427	2	0.000	
Medium	0.118	0.053	4.993	1	0.025	1.125
High	0.258	0.063	16.959	1	0.000	1.294
Number of new clothing items purchased last 12 months	0.000	0.001	0.123	1	0.726	1.000
Wardrobe Size	0.000	0.000	0.813	1	0.367	1.000
Fashion follower (0 = completely disagree, 4 = completely agree)	−0.010	0.020	0.234	1	0.629	0.990
Has repaired or sewn clothing last 12 months (0 = no, 1 = yes)	−0.085	0.053	2.630	1	0.105	0.918
Can use sewing machine (0 = no, 1 = yes)	0.180	0.045	16.062	1	0.000	1.197
Can sew by hand (0 = no, 1 = yes)	−0.089	0.043	4.395	1	0.036	0.915
Priorities when buying clothing: Designer brand	0.064	0.016	16.420	1	0.000	1.066
Price	0.040	0.018	5.208	1	0.022	1.041
Fabric quality	0.079	0.021	14.159	1	0.000	1.082
Fibre content	−0.106	0.018	35.031	1	0.000	0.899
Country of manufacture	0.046	0.017	7.571	1	0.006	1.047
Design/Style	−0.159	0.021	58.271	1	0.000	0.853
Sustainable production	0.011	0.019	0.362	1	0.547	1.012
Ethically produced	0.003	0.019	0.034	1	0.854	1.003
Fit	0.025	0.019	1.867	1	0.172	1.026
Colour	0.027	0.026	1.114	1	0.291	1.028
In fashion	−0.017	0.018	0.986	1	0.321	0.983
Constant (planned reuse)	−2.157	0.218	97.872	1	0.000	0.116

Clothing price is another of the most important predictors for reuse. Garments that have cost over 100 USD are almost four times more likely to be intended for reuse than garments that cost less than 10 USD.

Nationality is also a significant predictor for reuse. Clothes in Japan are least likely to be delivered for reuse (almost five times less likely than in China), while clothing in Germany, UK, and the US are about twice as likely to be sent for reuse than in China.

Concerning garments' fibre content, the only significant difference can be seen between cotton and wool, as woollen garments are slightly more likely to be sent for reuse (1.2 times more).

Based on the assumed disposal reason for garments, their condition contributes significantly to whether they will be passed on to the next user. Garments disposed of due to wear and tear are the least likely to be sent for reuse (except for group the that had unknown disposal reasons). Garments disposed of due to changes in fashion trends are most likely to be sent for reuse, followed by garments disposed of due to lack of space, dislike of colour or style, or poor fit. The odds of reuse are about twice as high for disposal reasons other than wear and tear.

User's age group is also a significant predictor. Clothing owned by those over 50 is 1.7 times less likely to be sent for reuse than clothing from those below 30.

Gender is also significant, but with only a minor contribution. In the final model after other variables were controlled for, men's clothing is 1.2 times more likely to be sent for reuse than women's clothing.

Those working full time are slightly less likely to send clothing for reuse than students, part-time workers, or other non-working people. The effect of income is minor, and the difference between the lowest and highest income groups is not significant.

Compared to home wear, clothing for dirty household chores or sleeping are less likely to be sent for reuse, while clothing for religious occasions is most likely to be reused, although this is a very small clothing group. This is followed by clothing for formal social occasions and workwear.

If a garment was preowned it increases the odds of it also being sent for reuse by 1.3.

Garment age in years and number of wears are also significant, but the contributions are minor, with slightly less likelihood for reuse for older and more worn garments.

The amount of money spent on clothing is a significant predictor. Those in the highest spending group are 1.3 times more likely to send clothing for reuse than those in the lowest spending group.

Sewing skills have only a minor contribution, but interestingly in two different directions. Knowing how to use a sewing machine contributes positively, while hand sewing skills contribute negatively, although both impacts are minor.

Most of the acquisition priorities did not contribute significantly to the model, except for prioritising designs/style or specific fibres, which contributed negatively to reuse intention, and designer brand, price, fabric quality, and country of manufacture, which contributed positively.

Variables that are not significant in the final model were marital status, wearing frequency, laundering frequency, wardrobe size, number of clothing purchases, how interested the user is in following fashion, and if the user has repaired clothing.

5. Conclusions

This article shows it is possible to study garment lifespans through a wardrobe survey and gain understanding into the relative importance of factors affecting lifespans. Clothing lifespans have been measured in three different ways, how long (years), how many times (wears) and by how many consumers (users) the garments were used. Independent contributing variables were divided into four blocks related to the garment, user, garment use and clothing practices. The four blocks differ in importance depending on the way clothing lifespan is measured (Table 7). Garment related properties are the most significant for predicting the number of users, while garment use was most indicative of the number of wears. For the number of years, all four aspects were important, but user demographics gave a slightly higher contribution to the model than the three other blocks.

Table 7. Summary that indicates how important the different blocks of predictors are in contributing to the four models as Δr^2.

Model	Model 1: Years	Model 2: Wears	Model 3a: Preowned Garments		Model 3b: Planned Reuse	
	R^2	R^2	Cox and Snell R^2	Nagelkerke R^2	Cox and Snell R^2	Nagelkerke R^2
Model fit as r^2 or pseudo r^2	22.2%	24.8%	10.9%	34.6%	32.1%	43.0%
1 Garment	5.1%	2.7%	5.2%	16.6%	17.2%	23.0%
2 User	6.6%	3.5%	3.1%	9.7%	11.6%	15.6%
3 Garment use	5.9%	15.0%	2.1%	6.6%	3.2%	4.4%
4 Clothing practices	4.9%	3.9%	1.0%	3.1%	0.7%	0.9%

We identified several factors affecting lifespans. The most important predictors are nationality, use occasions, laundering frequency, garment price, disposal reason, garment type, user's age, fibre content, wearing frequency, and monthly spending on clothing. However, there are several other significant variables, and the importance of these varies between the models.

Some of the aspects that affect the lifespans of clothing are conditions that cannot be easily changed, such as the characteristics of the owner (e.g., age, nationality, and income). Knowledge of these conditions can nevertheless be useful because they indicate which changes give the largest impacts. Chinese respondents reported wearing clothing fewer times, kept it for shorter periods and were less likely to use second-hand garments than respondents from Germany, Japan, UK, or USA. This was partly explained by the sampling, where only large cities were included; thus, they were a younger population with a larger portion working full time (both attributes which significantly impact results). Additionally, previous research has indicated that Chinese consumers, in general, have a strong resistance towards second-hand clothing consumption [43]. Japanese respondents had the oldest garments but were least likely to donate for reuse, while Americans were most likely to purchase preowned clothing. This is likely to be related to the infrastructure available. Having clothing collection systems readily available makes it easier to donate clothing for reuse, and likewise having well-functioning markets for used clothing or established practices for private reuse (such as receiving hand-me-downs from friends or relatives), makes it easier to acquire used items. Ensuring a long lifetime through reuse has long been an important environmental strategy, and several circular business models are using this approach [44]. Our results are in line with past research and point out the importance of not overlooking the potential of reuse within family and friends.

Several aspects of the clothing itself affect their lifetime. Socks and stockings are worn the most times but have the shortest lifespans in years and are least likely to be preowned or donated for reuse. This is the opposite for outerwear like coats, which are among the oldest garments in the wardrobe and the most likely to be reused. The fibre content of the garments contributed to differences in lifespans. The oldest garments in the wardrobe were most often made of silk and wool, and a larger share of wool garments were preowned, and woollen garments were more likely to be sent for reuse.

Price is also important, and higher prices predict longer lifespan because of longer use, more wears and more users. Garment prices vary by garment category, but also within categories because of factors like the materials that are used, the brand, the quality and production costs, such as country of manufacture. Price is a simple way to compare products that has the potential to impact durability, but additionally the price can also play a role in how consumers value and take care of garments. Price is an important economic incentive that can be influenced by the industry through adjusting the costs of production and the profit levels, but also through politics, such as subsidies and taxes.

Disposal reasons indicated that the physical strength of garments is important and can also be increased through a commitment to quality in the industry and/or through measures that strengthen consumers right to complain. Another significant indicator for lifespans that the industry can work to improve was poor garment fit, where improvements in pattern grading and size labelling are key issues [32,45].

Garments with lower washing frequencies have many environmental benefits [46]. In addition to environmental savings from reduced laundering, they are worn longer and more times, while also being more likely to be preowned. Results suggest that frequent laundering causes wear and tear, giving additional motivation to increase efforts to reduce washing frequency and promote gentler cleaning methods.

5.1. Limitations

The survey targeted five key consumer markets: China, Germany, Japan, the UK, and the USA. The wardrobe and consumer habits identified by the data are representative of these markets only and are not representative of consumers worldwide.

Using quantitative survey methods has its limitations. Many responses could only be given in specific categories, such as the number of wears where the highest category was "over 200 wears" for past and future wears. To calculate the average number of wears, this category was coded to 250 times; thus, the maximum total value became 500 wears. This is likely to be too low for garments that are in active use for many years, but only about 2% of the garments were in this category.

Another limitation concerns the questions of future use, as it is likely difficult for the respondents to foresee how long they will keep the garments, or why they are going to dispose of them. Therefore, the uncertainty related to variables is likely higher than those concerning past use.

The survey was extraordinary long, and despite measures taken to avoid respondent wear out, it is possible that some respondents did not consider their answers as carefully at the end of the survey as at the beginning. Some careless responses were excluded during the quality control of the data.

5.2. Future Research Directions

Some of our results seem to be a bit contradictory, such as the relationship between repairing clothes and being able to sew. Increased knowledge about the importance of consumers' habits, knowledge and skills for longevity is likely to explain these ambiguities and should be studied further.

The models explain between 11% and 43% of the variation in clothing lifespans. This shows that there are still other aspects that are important and were not assessed in the survey. These are likely to include aspects such as whether the user likes the garment and if it is flattering when worn. There is also likely to be a high degree of randomness related to the entirety of wardrobe (e.g., what other alternatives the user has for various occasions). Future research should aim to identify which other factors are important.

5.3. Implications

Several of the conditions that affect lifespans can be changed through policy instruments such as improved consumer rights and financial incentives, as well as work with consumer attitudes and education. This applies particularly to attitudes towards fashion which seem to be an especially important factor for the length of garments' lifespans. Attitudes can be changed and created, and the industry itself is an important driver, through advertising and marketing. Increasing clothing durability and intrinsic value over time will therefore be an important aim for the industry to counteract unnecessary replacement of clothing.

Author Contributions: Conceptualization, K.L. and I.G.K.; formal analysis, K.L.; investigation, K.L.; methodology, K.L.; writing—original draft, K.L. and I.G.K.; writing—review and editing, K.L. and I.G.K. All authors have read and agreed to the published version of the manuscript.

Funding: This work was supported by Australian wool growers and the Australian government through Australian Wool Innovation Limited (AWI), contract number 4500012208, and the Research Council of Norway, project number 303080.

Acknowledgments: We would like to thank Nielsen AG for conducting the survey, and Stephen Wiedemann from Integrity Ag & Environment, Angus Ireland and Sam Ropert from AWI, Roy Kettlewell from Kettlewell Consulting, and Torvald Tangeland from SIFO, OsloMet, for commenting on the article draft.

Conflicts of Interest: The founding sponsor AWI financed and approved the publication but did not influence the representation or interpretation of the reported research results. The Norwegian Research Council had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

Appendix A. Questionnaire

Only questions used in this paper are included.

WARDROBE AUDIT

SCREENING

Q1	In which country do you live? [Single Answer]	Code	Route
	China	1	
	Germany	2	
	Japan	3	
	UK	4	
	USA	5	
	None of these	6	Terminate
Q2	Which of the following age groups do you belong to? (Single Answer]	Code	Route
	Under 18 years	1	CLOSE
	18–24 years	2	
	25–29 years	3	
	30–34 years	4	
	35–39 years	5	
	40–44 years	6	
	45–49 years	7	
	50–54 years	8	
	55–59 years	9	
	60–64 years	10	
	65 and over	11	CLOSE
	Prefer not to say	12	CLOSE
Q3	Are you . . . ? [Single Answer]	Code	Route
	Male	1	
	Female	2	
Q7	Are you involved or responsible for washing and dry cleaning your clothes? [Single Answer]	Code	Route
	Yes, I am solely responsible	1	
	Yes, I share this household chore with someone else at home	2	
	No, I am not involved/responsible	3	CLOSE

Q8	On average, approximately how much do you spend per month on clothing including workwear, sportswear, underwear and accessories e.g., ties, scarfs and gloves, but excluding shoes? If you have in mind a yearly expenditure please calculate the monthly expenditure by dividing the yearly amount by 12. [Single Answer] PROBE Please select the option which is closest if you are unsure (Options given in local currencies)	Code (154)	Route

INSTRUCTION

Please read this instruction carefully before you start. You will be asked about all the clothes items and accessories that you own and have in your wardrobe or cupboard. You can disregard clothes items and accessories that may be in your wardrobe/cupboard but do not belong to you. Please take this survey with you to where you keep your clothes so that you can complete the survey as you are answering the questions about your clothes items.

Please bear in mind to cover all clothes items and accessories you own and have, including items that may be elsewhere than in your wardrobe (i.e., laundry, drying rack, dry cleaner, storage, or stored at someone else's home etc) at the time you are completing this survey.

Thank you. Your participation in this study is highly appreciated.

		Q10a	Q10bNos.
Q10a	MALE RESPONDENTS Which of the following clothes items and accessories do you have? We assume you have underwear and socks. Please select all the items that you have in the list below. Please select all that apply. [Multiple Answer] Deep dive categories are highlighted in green		
Q10b	For each clothing item and accessory you have, can you please indicate how many of each do you have?		
	Suits—Jacket + Trouser	01	
	Ties	02	
	Shirts (Work/Formal)	03	
	Shirts (Casual/Everyday)	04	
	Pants/Trousers (Work/Formal)	05	
	Jeans	07	
	Other Casual Pants/Trousers	06	
	Shorts	08	
	T-shirts/Polo shirts	09	
	Jumpers/Pullovers/Sweaters/Cardigans	10	
	Jackets/Blazers (Work/Formal)	11	
	Jackets/Blazers (Casual/Everyday)	12	
	Overcoats/Coats/Raincoats (Work/Formal)	13	
	Overcoats/Coats/Raincoats (Casual/Everyday)	14	
	Robes/Cloaks	15	
	Pyjama Sets	16	
	Pyjama Tops	17	
	Pyjama Pants/Shorts/Boxers	18	
	Ski/Snowboard Pants	19	

	Sports Tracksuits	20	
	Sports Track Pants/Tights/Shorts	21	
	Sports T-shirts/Tops	22	
	Sports Singlets/Vests	23	
	Sports Sweatshirts/Hoodies	24	
	Scarfs/Shawls	25	
	Hats/Beanies/Berets/Caps	26	
	Pairs of Socks	27	
	Pairs of Gloves/Mittens	28	
	Thermal Tops and warm undershirts	29	
	Thermal Leggings and warm long underpants	30	
	Underwear Briefs/Trunks/Boxers	31	
	Underwear Vests/Singlets	32	
	Ethnic Clothing/Ethnic Wear (e.g., kurta, hakama, jeogori, paji, uwagi etc)	33	
	FEMALE RESPONDENTS		
Q27a	Which of the following clothes items and accessories do you have? We assume you have underwear and socks. Please select all the items that you have in the list below. [Multiple Answer]	Q27a	Q27bNos.
	Deep dive categories are highlighted in GREEN		
Q27b	For each clothes item and accessory you have, can you please indicate how many of each do you have?		
	Suits − Jacket + Trouser/Skirt	01	
	Blouses/Shirts/Tops (Work/Formal)	02	
	Blouses/Shirts/Tops (Casual/Everyday)	03	
	Pants/Trousers (Work/Formal)	04	
	Jeans	10	
	Shorts	11	
	Other Casual Pants/Trousers	05	
	Skirts (Work/Formal)	06	
	Skirts (Casual/Everyday)	07	
	Dresses (Work/Formal)	08	
	Dresses (Casual/Everyday)	09	
	T-shirts/Polo shirts	12	
	Singlets/Tanks	13	
	Jumpers/Pullovers/Sweaters/Cardigans	14	
	Jackets/Blazers (Work/Formal)	15	
	Jackets/Blazers (Casual/Everyday)	16	
	Overcoats/Coats/Raincoats (Work/Formal)	17	
	Overcoats/Coats/Raincoats (Casual/Everyday)	18	
	Robes/Cloaks	19	

	Pyjama Sets	20
	Pyjama Tops	21
	Pyjama Pants/Shorts	22
	Chemises/Baby dolls/Night dresses	23
	Ski/Snowboard Pants	24
	Sports Tracksuits	25
	Sports Track Pants/Tights/Shorts	26
	Sports T-shirts/Tops	27
	Sports Singlets/Tanks	28
	Sports Sweatshirts/Hoodies	29
	Scarfs/Shawls/Pashmina's/Stoles	30
	Hats/Beanies/Berets/Caps	31
	Pairs of Socks/Stockings	32
	Pairs of Gloves or mittens	33
	Thermal Tops and warm undershirts	34
	Thermal Leggings and warm long underpants	35
	Underwear Briefs	36
	Underwear Bras	37
	Maternity Dresses	38
	Maternity Skirts	39
	Maternity Pants/Shorts	40
	Maternity Jumpers/Pullovers/Sweaters/Cardigans	41
	Maternity T-shirts/Polo shirts/Tops/Singlets	42
	Ethnic Clothing/Ethnic Wear (e.g., kimono, hanbok, chima jeogori, sari etc)	43

You will now be asked about items of clothing you own in the different categories you indicated previously. If you own less than 10 items in the category you will be asked for each of the items you own. If you own more than 10 items in the category you will be asked to evaluate 10 items—please try to evaluate a wide variety of items that are made of different materials or may be used for different occasions.

Q11	FOR EACH GARMENT IN Q10b/Q27b What fabric is this clothes item or accessory? Please refer to the garment care label for your answer. [Single Answer]	Code
	100% Cotton	1
	Cotton Blends (i.e., cottons mixed with other synthetics or natural fibres)	2
	100% Wool	3
	Merino Wool	4
	Wool Blends (i.e., Wool mixed with other synthetic or natural fibres)	5
	Cashmere	6
	Silk	7

	Polyester/nylon/acrylic/polypropylene/polyamide	12
	Viscose/rayon/modal/lyocell/acetate	13
	Denim/Jeans fabric	09
	Other	10
	Don't know	11
Q12	FOR EACH GARMENT IN Q10b/Q27b When did you buy or acquire this clothes item or accessory? [Single Answer]	Code
	In the last 6 months	1
	7–11 months ago	2
	1 year ago	3
	2 years ago	4
	3–4 years ago	5
	5–10 years ago	6
	11–15 years ago	7
	16–20 years ago	8
	21–25 years ago	9
	26–30 years ago	10
	More than 30 years ago	11
	Don't know/Cannot remember	12
Q13	FOR EACH GARMENT IN Q10b/Q27b. ONLY ASK FOR ITEMS 1–5 Which of the following best describes how this item was acquired? [Single Answer]	Code
	Bought new	1
	Bought second hand	2
	It was given to me as a present	3
	It was given to me as the other person no longer wanted it	4
	I made it myself	5
	Someone else made it for me	6
	Other	7
	Don't know	8
Q14	FOR EACH GARMENT IN Q10b/Q27b. ONLY ASK FOR ITEMS 1–5 ONLY ASK IF CODE 1 OR CODE 2 AT Q13 How much did you pay for this item? Please insert amount in local currency. An approximate amount is OK (Respondent to enter approximate amount) [Single Answer]	Code
	Don't know/Can't remember	8
Q15	FOR EACH GARMENT IN Q10b/Q27b. ONLY ASK FOR ITEMS 1–5 On what occasion do you wear this clothes item or accessory most often? If it is used for multiple occasions, please give the most frequent occasion only. [Single Answer]	Code
	Work occasion	1
	Formal social occasion	2

	Everyday and around the home	3	
	Casual social occasion	4	
	Religious occasion	6	
	For Sleeping	9	
	When training/doing sports	10	
	For gardening/painting/other dirty household chores	11	
	Other occasion	7	
	The item is not in active use	12	
	Don't know	8	
Q16	FOR EACH GARMENT IN Q10b/Q27b. Do not show question if code 8,12 at Q15. ONLY ASK FOR ITEMS 1–5 On what other occasions do you wear this clothes item or accessory? Please select all that apply. [Multiple Answer]	Code	
	Work occasion	1	
	Formal social occasion	2	
	Everyday and around the home	3	
	Casual social occasion	4	
	Religious occasion	6	
	For Sleeping	9	
	When training/doing sports	10	
	For gardening/painting/other dirty household chores	11	
	None	13	
Q17	FOR EACH GARMENT IN Q10b/Q27b. ONLY ASK FOR ITEMS 1–5 Which of the following best describes what time of year you wear this item? [Single Answer]	Code	
	I wear it mostly in summer	1	
	I wear it mostly in winter	2	
	I wear it all year round	3	
	The item is not in active use	4	Q19
Q18	FOR EACH GARMENT IN Q10b/Q27b. DO NOT ASK IF CODE 4 AT Q17. ONLY ASK FOR ITEMS 1–5. How often do you typically wear this item PIPE IN RESPONSE FROM Q17 in Summer/in Winter/all year round? [Single Answer]	Code	
	Several times a week	1	
	Once a week	2	
	Once every 2 weeks	3	
	Once every 3–4 weeks	4	
	Once every 3 months	5	
	Once every 6 months	6	
	Less often than once every 6 months	7	
	Don't know	8	

Q19	FOR EACH GARMENT IN Q10b/Q27b. How many times have you worn this item? [Single Answer]	Code
	Never	1
	1–2 times	2
	3–4 times	3
	5–9 times	4
	10–19 times	5
	20–49 times	6
	50–99 times	7
	100–199 times	8
	More than 200 times	9
	Don't know	10
Q20	FOR EACH GARMENT IN Q10b/Q27b. ONLY ASK FOR ITEMS 1–5 How often do you expect to wear this item in the future? [Single Answer]	Code
	Several times a week	1
	Once a week	2
	Once every 2 weeks	3
	Once every 3–4 weeks	4
	Once every 3 months	5
	Once every 6 months	6
	Less often than once every 6 months	7
	Don't know	8
Q21	FOR EACH GARMENT IN Q10b/Q27b How many times do you expect to wear this item in the future? An approximate amount is OK. [Single Answer]	Code
	Never	1
	1–2 times	2
	3–4 times	3
	5–9 times	4
	10–19 times	5
	20–49 times	6
	50–99 times	7
	100–199 times	8
	More than 200 times	9
	Don't know	10
Q22	FOR EACH GARMENT IN Q10b/Q27b How often do you or someone else typically wash or dry clean this item? For seasonal items please report frequency of washing or dry cleaning item when in use. [Single Answer]	Code
	After every wear	1
	After every 2 wears	2

	After every 3 wears	3
	After every 4 wears	4
	After every 5 wears	5
	After every 6–10 wears	6
	After every 11–19 wears	7
	After every 20–29 wears	8
	After every 30 wears or less often	9
	Never	10
	Don't know	11
Q23	FOR EACH GARMENT IN Q10b/Q27b (Do not ask if CODE 10 or CODE 11 at Q22) Now regarding washing of this clothes item or accessory, do you . . . ? [Single Answer]	Code
	Hand wash it	1
	Wash it in the washing machine	2
	Send it for dry cleaning	3
	Sometimes hand wash and sometimes machine wash	4
	Sometimes hand wash and sometimes dry clean	5
	Sometimes machine wash and sometimes dry clean	6
	Don't know	7
Q24	FOR EACH GARMENT IN Q10b/Q27b. ONLY ASK FOR ITEMS 1–5 Which of the following would you expect to do in order to dispose of this clothes item or accessory when you no longer want it? [Single Answer]	Code
	Donate to charity or clothes recycling collection	1
	Donate/give to family/friends	2
	Put in the Rubbish Bin at home	3
	Recycle at home (e.g., use as cleaning cloth)	4
	Sell (e.g., garage sale, eBay)	5
	Other	6
	Don't know	7
Q25	FOR EACH GARMENT IN Q10b/Q27b. ONLY ASK FOR ITEMS 1–5 Here are some reasons people have said for disposing of garments. Which of the following do you think is likely to be the main reason you would dispose of this particular item? [Single Answer]	Code
	General wear and tear	1
	The style is not in fashion any more	2
	Doesn't fit me properly	3
	I don't like the colour or style any more	4
	Not enough space in my wardrobe for new items	5
	I don't need the garment any more	6
	Other	7
	Don't know	8

ATTITUDES—ASK ALL

Q44 ASK ALL. RANDOMISE ONE ANSWER PER ROW—LIMIT COLUMN 1 TO ONE ANSWER How important to you are each of the following aspects when you are buying Formal wear?					Code	Route
	Most important aspect	One of the key aspects	One I look for but not very important	Not at all important		
Designer brand	1	2	3	4		
Price	1	2	3	4		
Fabric quality	1	2	3	4		
Fibre content	1	2	3	4		
Country of manufacture	1	2	3	4		
Colour	1	2	3	4		
In fashion	1	2	3	4		
Design/Style	1	2	3	4		
Sustainable/environmentally friendly production	1	2	3	4		
Ethically produced	1	2	3	4		
Fit	1	2	3	4		

Q45 ASK ALL. RANDOMISE. ONE ANSWER PER ROW—LIMIT COLUMN 1 TO ONE ANSWER How important to you are each of the following aspects when you are buying Smart Casual wear?					Code	Route
	Most important aspect	One of the key aspects	One I look for but not very important	Not at all important		
Designer brand	1	2	3	4		
Price	1	2	3	4		
Fabric quality	1	2	3	4		
Fibre content	1	2	3	4		
Country of manufacture	1	2	3	4		
Colour	1	2	3	4		
In fashion	1	2	3	4		
Design/Style	1	2	3	4		
Sustainable/environmentally friendly production	1	2	3	4		
Ethically produced	1	2	3	4		
Fit	1	2	3	4		

Q46 Here is a list of statements people have made. Thinking about yourself, please select how much you agree or disagree with each statement.						Code
	Completely agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Completely disagree	
I change fashion with the season	1	2	3	4	5	

Q47 In the last 12 months approximately how many new items of clothing have you bought, including pairs of socks and underwear? [Single Answer]	Code
Less than 5	1
6–10	2
11–15	3
16–20	4
21–50	5
More than 50	7
Don't know	6

Q53 ASK ALL. RANDOMISE CODES 1–4. Here are some statements people have made about their skills in making/repairing/altering clothes. Which of the following best applies to you? [Multiple Answer]	Code
I can use a sewing machine	1
I can sew by hand	2
I can knit	3
I can crochet	4
None of these	5
Don't know	6

Q54 ASK ALL. RANDOMISE. Which of the following have you done in the last 12 months? [Multiple Answer] Probe: Please tick all that apply	Code
Sewn a button	1
Fixed an unravelled seam	2
Patched clothing	3
Darned clothing	4
Fixed a trouser length	5
Adjusted the size of an item of clothing	6
Changed a zipper	7
Made something new out of old clothing	8
Knitted or crocheted	9
Sewn new clothing	10
None of these	11
Don't know	12

ASK ALL. DEMOGRAPHICS SECTION

And finally, a few details about yourself to ensure that we are covering a cross section of the population.

Q72	What is your current marital status? [Single Answer]	Code	Route
	Single	1	
	Married/living with a partner	2	
	Divorced/Separated	3	
	Widowed	4	
	Prefer not to say	5	
Q73	How many people live in your household including yourself?		
Q76	What is your employment status? [Single Answer]	Code	Route
	Part time	1	
	Full time	2	
	Casual	3	
	Seeking work	4	
	Not seeking work	5	
	Home duties	6	
	Student	7	
	Retired	8	
	Prefer not to say	9	
Q77	Can you please indicate which of the following categories best describes your total/gross household income per year before tax? [SA] PROBE Please select all one. (Options given in local currencies)	Code	Route

Appendix B. Descriptive Statistics

Table A1. Answer distributions as percentage of each country per garment. Significance tested with Pearson chi-square and indicated for every variable. (N from 23498 to 53461. Weighted data).

		China	Germany	Japan	UK	USA	Total
Garment type $p < 0.001$	Pairs of socks, stockings	17.8%	18.6%	16.9%	20.8%	19.8%	18.8%
	Suits—Jacket + Trouser/Skirt	5.2%	2.6%	6.4%	2.8%	3.4%	4.2%
	Pants, trousers	12.2%	9.6%	10.8%	10.1%	11.2%	11.0%
	Skirts, dresses	10.7%	7.8%	9.9%	11.3%	8.4%	9.3%
	T-shirts, polo shirts, singlets, tanks	12.4%	20.0%	17.1%	17.4%	21.1%	18.2%
	Jumpers, pullovers, sweaters, cardigans	7.3%	13.0%	8.8%	11.6%	7.5%	8.7%
	Jackets, blazers	7.1%	8.4%	7.1%	5.4%	6.6%	6.9%
	Overcoats, coats, raincoats	8.6%	3.9%	6.1%	7.0%	6.7%	6.6%
	Thermal underwear	5.9%	2.6%	6.4%	3.0%	5.1%	5.0%
	Sports T-shirts, tops, singlets, tanks	8.4%	7.3%	5.8%	5.7%	6.8%	6.9%
	Scarfs, shawls, pashmina's, stoles	4.3%	6.1%	4.7%	4.9%	3.4%	4.3%

Table A1. *Cont.*

		China	Germany	Japan	UK	USA	Total
Main fibre category $p < 0.001$	Cotton and blends	59.8%	70.3%	51.3%	65.1%	74.1%	65.8%
	Wool and blends	22.1%	13.8%	22.0%	17.8%	12.6%	16.8%
	Synthetics	12.2%	12.7%	25.3%	14.2%	11.4%	14.5%
	Regenerated cellulose	5.9%	3.2%	1.4%	2.9%	1.9%	2.9%
When did you buy or acquire this clothes item? $p < 0.001$	In the last 6 months	32.5%	15.2%	16.7%	17.8%	20.2%	21.2%
	7–11 months ago	23.1%	12.0%	8.7%	12.4%	13.9%	14.4%
	1 year ago	20.3%	15.2%	15.3%	15.9%	13.6%	15.6%
	2 years ago	12.0%	15.1%	12.6%	15.8%	13.8%	13.5%
	3–4 years ago	6.7%	14.8%	13.7%	11.4%	12.4%	11.7%
	5–10 years ago	2.4%	9.5%	11.3%	6.4%	8.1%	7.6%
	11–15 years ago	0.5%	2.7%	3.2%	2.0%	2.7%	2.3%
	16–20 years ago	0.2%	1.3%	1.5%	0.9%	1.0%	0.9%
	21–25 years ago	0.0%	0.4%	0.6%	0.4%	0.3%	0.3%
	26–30 years ago	0.0%	0.2%	0.3%	0.3%	0.2%	0.2%
	More than 30 years ago	0.0%	0.2%	0.2%	0.3%	0.6%	0.3%
	Don't know/Cannot remember	2.2%	13.4%	16.0%	16.4%	13.2%	11.8%
Acquisition method $p < 0.001$	Bought new	80.9%	74.5%	79.3%	70.7%	67.5%	73.8%
	Bought second hand	0.7%	2.5%	3.1%	6.0%	8.1%	4.7%
	It was given to me as a present	11.1%	9.8%	8.3%	11.8%	9.5%	9.8%
	It was given to me as the other person no longer wanted it	3.0%	3.7%	2.7%	3.4%	6.1%	4.3%
	I made it myself	0.7%	1.5%	0.2%	0.5%	1.1%	0.9%
	Someone else made it for me	1.3%	1.5%	0.4%	0.6%	0.7%	0.9%
	Other	0.7%	0.5%	0.3%	0.4%	0.7%	0.6%
	Don't know	1.6%	6.0%	5.8%	6.6%	6.4%	5.1%
Garment price group $p < 0.001$	Cheap (<9.9 USD)	17.3%	18.5%	24.0%	24.4%	21.7%	20.8%
	Medium–low (10–39 USD)	34.5%	42.8%	31.7%	48.3%	43.9%	39.1%
	Medium–high (40–99 USD)	30.0%	24.7%	23.1%	17.5%	22.1%	24.5%
	Expensive (>100 USD)	18.3%	14.0%	21.2%	9.8%	12.2%	15.7%
Which of the following best describes what time of year you wear this item? $p < 0.001$	I wear it mostly in summer	31.4%	18.6%	19.1%	15.3%	18.4%	21.2%
	I wear it mostly in winter	38.0%	24.0%	34.0%	26.0%	24.0%	29.2%
	I wear it all year round	24.3%	50.2%	39.7%	50.9%	49.2%	42.1%
	The item is not in active use	6.2%	7.2%	7.2%	7.8%	8.4%	7.5%
How often do you typically wear this item? $p < 0.001$	Several times a week	32.7%	23.0%	22.9%	29.5%	22.2%	25.4%
	Once a week	32.7%	22.4%	24.7%	23.0%	23.8%	25.8%
	Once every 2 weeks	19.6%	19.1%	18.7%	16.4%	18.6%	18.8%
	Once every 3–4 weeks	10.6%	14.8%	13.0%	11.5%	15.5%	13.5%
	Once every 3 months	1.3%	6.8%	5.1%	5.5%	7.5%	5.4%
	Once every 6 months	0.3%	2.4%	2.2%	2.3%	3.2%	2.2%
	Less often than once every 6 months	0.3%	2.5%	3.7%	2.2%	3.1%	2.4%
	Don't know	2.3%	9.0%	9.7%	9.5%	6.1%	6.5%

Table A1. *Cont.*

		China	Germany	Japan	UK	USA	Total
How many times have you worn this item? $p < 0.001$	Never	2.0%	1.9%	3.3%	1.7%	2.2%	2.3%
	1–2 times	4.5%	5.1%	4.0%	6.5%	7.1%	5.7%
	3–4 times	11.8%	9.5%	7.1%	9.7%	9.4%	9.5%
	5–9 times	19.5%	12.5%	12.5%	12.0%	14.5%	14.7%
	10–19 times	26.4%	16.6%	18.8%	16.0%	18.9%	19.8%
	20–49 times	18.0%	16.9%	16.0%	14.6%	16.7%	16.7%
	50–99 times	7.9%	10.8%	8.7%	8.8%	7.5%	8.3%
	100–199 times	2.8%	4.8%	3.6%	3.6%	2.7%	3.2%
	More than 200 times	0.9%	3.2%	2.5%	5.8%	2.8%	2.7%
	Don't know	6.2%	18.6%	23.3%	21.2%	18.3%	17.1%
How often do you expect to wear this item in the future? $p < 0.001$	Several times a week	22.5%	17.4%	18.2%	22.6%	16.4%	18.7%
	Once a week	29.1%	16.3%	18.7%	17.5%	19.0%	20.8%
	Once every 2 weeks	20.7%	17.0%	15.5%	14.3%	15.6%	16.8%
	Once every 3–4 weeks	14.5%	15.7%	12.3%	12.3%	15.2%	14.3%
	Once every 3 months	2.6%	6.8%	4.4%	5.2%	7.6%	5.6%
	Once every 6 months	0.7%	2.6%	1.8%	2.7%	3.2%	2.3%
	Less often than once every 6 months	1.9%	2.7%	3.7%	3.5%	4.5%	3.5%
	Don't know	8.0%	21.5%	25.2%	22.0%	18.5%	18.0%
Number of wears before laundering $p < 0.001$	After every wear	37.6%	31.9%	50.0%	43.0%	47.9%	43.7%
	After every 2–3 wears	32.0%	36.3%	13.3%	28.4%	28.7%	27.6%
	After every 4–5 wears	19.8%	16.3%	14.3%	13.5%	13.3%	15.3%
	After every 6–10 wears	6.3%	6.3%	9.8%	7.0%	4.6%	6.3%
	After every 11–19 wears	2.2%	3.7%	3.7%	2.3%	2.1%	2.6%
	After every 20–29 wears	1.3%	2.1%	2.6%	1.8%	1.4%	1.7%
	After every 30 wears or less often	0.8%	3.4%	6.2%	4.0%	2.0%	2.8%
Occasion $p < 0.001$	Everyday and around the home	25.3%	44.5%	38.2%	36.2%	33.3%	34.0%
	Work occasion	32.5%	12.8%	19.2%	14.4%	18.6%	20.8%
	Formal social occasion	13.6%	12.0%	9.2%	14.1%	10.6%	11.5%
	Casual social occasion	13.5%	12.7%	19.1%	18.5%	18.9%	16.9%
	Sport/training occasion	7.0%	6.1%	5.3%	4.0%	3.1%	4.8%
	Religious occasion	0.3%	0.6%	0.7%	1.0%	2.1%	1.2%
	For Sleeping	1.0%	0.7%	0.9%	0.9%	1.6%	1.2%
	For gardening/painting/other dirty household chores	0.8%	1.0%	0.5%	0.8%	0.9%	0.8%
	The item is not in active use	3.5%	1.8%	1.2%	2.7%	2.7%	2.5%
	Other occasion/Don't know	2.5%	7.8%	5.9%	7.4%	8.2%	6.4%
Likely disposal reasons $p < 0.001$	Wear and tear	28.2%	45.9%	59.8%	48.2%	44.2%	44.0%
	Not in fashion any more	20.6%	9.5%	5.5%	9.2%	9.0%	11.1%
	Poor fit	11.5%	17.3%	6.7%	14.1%	15.6%	13.1%
	Dislike the colour or style	19.6%	10.1%	4.1%	6.4%	6.9%	9.6%
	Lack of space	6.0%	2.6%	2.4%	3.2%	5.2%	4.4%
	Don't need it any more	11.3%	5.0%	12.9%	7.6%	8.3%	9.4%
	Other/unknown	2.8%	9.5%	8.6%	11.3%	10.8%	8.5%

Table A1. *Cont.*

		China	Germany	Japan	UK	USA	Total
Disposal route $p < 0.001$	Put in the Rubbish Bin at home	26.1%	21.5%	55.9%	22.0%	17.2%	27.3%
	Donate to charity or clothes recycling collection	38.9%	42.1%	8.0%	44.2%	44.4%	36.1%
	Donate/give to family/friends	15.9%	9.6%	5.0%	10.7%	15.0%	12.3%
	Recycle at home (e.g., use as cleaning cloth)	11.5%	8.1%	6.9%	6.6%	7.5%	8.3%
	Sell (e.g., garage sale, eBay)	2.1%	6.8%	9.5%	2.5%	1.8%	4.0%
	Other/Don't know	5.5%	11.8%	14.6%	14.0%	14.2%	12.0%

Table A2. Answer distributions as percentage of each country per respondent. Significance tested with Pearson chi-square and indicated for every variable. (N = 1111. Weighted data).

		China	Germany	Japan	UK	USA	Total
Number of new clothing Purchases in last 12 months $p < 0.001$	Less than 5	5.7%	9.3%	16.7%	16.1%	14.5%	12.5%
	6–10	19.5%	23.5%	23.4%	22.5%	24.3%	22.9%
	11–15	23.8%	19.0%	21.9%	18.1%	17.8%	19.9%
	16–20	28.9%	18.5%	14.4%	13.6%	18.7%	19.7%
	21–50	17.7%	14.3%	13.5%	12.5%	16.5%	15.7%
	More than 50	2.5%	7.8%	4.3%	4.4%	4.9%	4.6%
	Don't know	1.8%	7.5%	5.9%	12.8%	3.3%	4.7%
Monthly spending in clothing by country trisects $p = 0.231$	Low	39.5%	36.0%	34.0%	29.6%	23.6%	30.6%
	Medium	36.0%	41.7%	36.6%	38.5%	41.5%	39.3%
	High	24.5%	22.3%	29.4%	31.8%	34.8%	30.1%
Wardrobe size group $p < 0.001$	Small wardrobe (Under 79)	48.1%	23.0%	28.8%	38.1%	31.6%	34.3%
	Average wardrobe (80–129)	37.3%	30.1%	30.4%	35.0%	35.8%	34.5%
	Large wardrobe (Over 130)	14.6%	46.9%	40.8%	26.8%	32.6%	31.2%
I change fashion with the season. $p < 0.001$	Completely disagree	0.9%	5.6%	5.3%	18.9%	9.9%	7.6%
	Somewhat disagree	6.2%	12.6%	5.5%	15.3%	15.0%	11.4%
	Neither agree nor disagree	23.9%	32.4%	15.5%	27.5%	23.7%	23.8%
	Somewhat agree	46.7%	33.6%	46.4%	26.5%	30.1%	36.3%
	Completely agree	22.3%	15.8%	27.3%	12.0%	21.2%	21.0%
Can use sewing machine $p < 0.001$	No	80.5%	70.7%	58.0%	82.3%	64.8%	69.3%
	Yes	19.5%	29.3%	42.0%	17.7%	35.2%	30.8%
Can sew by hand $p < 0.001$	No	65.1%	49.8%	44.5%	50.0%	45.4%	50.3%
	Yes	34.9%	50.2%	55.5%	50.0%	54.6%	49.7%
Has repaired or sewn clothing last 12 months $p < 0.001$	No	15.3%	27.1%	25.6%	36.6%	31.4%	27.0%
	Yes	84.7%	72.9%	74.4%	63.4%	68.6%	73.0%
Important decision factors when buying clothing: Designer brand $p < 0.001$	0 = Not at all important	8.6%	30.8%	20.6%	35.1%	28.7%	23.9%
	1	7.0%	10.4%	10.6%	10.3%	7.6%	8.5%
	2	32.3%	25.4%	22.4%	18.1%	24.9%	25.5%
	3	17.6%	18.2%	17.1%	13.7%	17.0%	17.0%
	4	31.5%	13.1%	28.1%	20.6%	17.8%	22.0%
	5	2.6%	2.1%	0.6%	1.3%	2.7%	2.1%
	6 = Most important aspect	0.5%		0.5%	0.9%	1.4%	0.9%

Table A2. *Cont.*

		China	Germany	Japan	UK	USA	Total
Important: Price $p < 0.001$	0 = Not at all important	2.5%	2.7%	0.4%	1.8%	0.9%	1.4%
	1	1.9%		1.4%	1.0%	2.5%	1.8%
	2	18.8%	11.8%	7.3%	5.2%	8.6%	10.6%
	3	19.8%	17.1%	5.3%	9.7%	12.7%	13.3%
	4	50.0%	38.0%	54.9%	48.6%	43.9%	46.7%
	5	3.7%	12.5%	10.1%	13.7%	9.3%	9.0%
	6 = Most important aspect	3.2%	17.8%	20.6%	19.9%	22.1%	17.2%
Important: Fabric quality $p < 0.001$	0 = Not at all important		1.4%	3.4%	4.1%	3.5%	2.5%
	1	0.2%	1.0%	1.7%	0.7%	1.9%	1.3%
	2	3.2%	10.0%	11.0%	9.0%	7.1%	7.4%
	3	4.5%	18.0%	14.3%	9.9%	19.3%	14.4%
	4	52.2%	55.0%	57.6%	62.8%	52.3%	54.4%
	5	23.8%	9.3%	7.6%	8.5%	12.4%	13.3%
	6 = Most important aspect	16.0%	5.3%	4.4%	5.0%	3.6%	6.6%
Important: Fibre content $p < 0.001$	0 = Not at all important	1.0%	8.6%	14.9%	10.7%	7.0%	7.5%
	1	1.6%	8.3%	7.3%	8.2%	5.1%	5.3%
	2	16.9%	30.0%	24.1%	24.0%	20.2%	21.6%
	3	20.3%	17.8%	16.2%	16.5%	24.4%	20.7%
	4	57.6%	34.3%	36.4%	38.8%	39.9%	42.3%
	5	1.6%	1.0%	0.4%	1.8%	1.6%	1.4%
	6 = Most important aspect	1.1%		0.6%		1.8%	1.1%
Important: Country of manufacture $p = 0.003$	0 = Not at all important	17.5%	15.1%	22.2%	32.7%	21.6%	21.1%
	1	11.2%	9.9%	9.1%	9.5%	8.4%	9.4%
	2	34.9%	37.2%	24.7%	27.0%	26.7%	29.4%
	3	15.4%	14.7%	14.9%	11.8%	19.6%	16.7%
	4	19.2%	19.1%	28.2%	18.8%	21.8%	21.7%
	5	1.9%	3.1%	0.5%		1.3%	1.4%
	6 = Most important aspect		0.9%	0.4%	0.2%	0.5%	0.4%
Important: Design/Style $p < 0.001$	0 = Not at all important		4.8%	1.6%	3.4%	4.1%	2.9%
	1	0.4%	3.1%	1.5%	1.9%	1.0%	1.3%
	2	6.6%	13.3%	1.9%	5.7%	7.4%	6.9%
	3	9.3%	23.4%	8.2%	13.4%	23.1%	16.9%
	4	57.8%	44.1%	42.3%	58.5%	54.5%	52.4%
	5	16.3%	8.8%	19.6%	12.0%	6.7%	11.5%
	6 = Most important aspect	9.6%	2.6%	24.8%	5.1%	3.1%	8.1%
Important: Sustainable/environmentally friendly production $p < 0.001$	0 = Not at all important	3.3%	9.9%	22.6%	17.2%	19.6%	15.3%
	1	2.5%	5.0%	8.1%	6.0%	5.7%	5.4%
	2	31.6%	31.9%	27.5%	27.5%	22.8%	26.9%
	3	15.5%	19.0%	12.8%	12.4%	20.6%	17.4%
	4	43.7%	29.7%	27.2%	33.6%	29.2%	32.4%
	5	2.9%	2.8%	0.5%	2.0%	1.5%	1.8%
	6 = Most important aspect	0.4%	1.8%	1.1%	1.3%	0.5%	0.8%

Table A2. *Cont.*

		China	Germany	Japan	UK	USA	Total
Important: Ethically produced $p < 0.001$	0 = Not at all important	4.4%	13.9%	17.7%	18.0%	25.6%	17.8%
	1	7.0%	6.7%	8.0%	5.5%	6.3%	6.7%
	2	31.4%	37.2%	26.7%	32.8%	26.9%	29.6%
	3	21.1%	16.7%	12.4%	16.0%	16.1%	16.6%
	4	33.8%	24.6%	33.3%	26.5%	22.2%	27.1%
	5	2.0%		1.3%	1.2%	0.9%	1.1%
	6 = Most important aspect	0.4%	0.9%	0.5%		2.1%	1.1%
Important: Fit $p < 0.001$	0 = Not at all important		1.5%	1.0%	1.1%	0.9%	0.8%
	1	0.3%	1.2%	0.5%	0.1%		0.3%
	2	4.0%	7.0%	2.8%	6.0%	4.5%	4.6%
	3	8.2%	9.8%	8.7%	5.6%	11.2%	9.5%
	4	44.5%	35.9%	61.2%	41.4%	43.1%	45.3%
	5	24.2%	21.1%	14.4%	17.3%	15.5%	18.0%
	6 = Most important aspect	18.8%	23.5%	11.4%	28.3%	24.8%	21.5%
Important: Colour $p = 0.015$	0 = Not at all important		1.9%	1.2%	3.1%	0.6%	0.9%
	1	0.4%	1.8%	1.3%	1.2%	1.7%	1.3%
	2	8.6%	11.4%	5.1%	11.2%	12.0%	10.0%
	3	17.7%	17.2%	10.7%	11.7%	17.2%	15.8%
	4	71.4%	61.2%	75.1%	68.4%	65.4%	68.0%
	5	1.1%	3.5%	4.3%	3.8%	1.9%	2.5%
	6 = Most important aspect	0.8%	3.0%	2.3%	0.5%	1.3%	1.5%
Important: In fashion $p < 0.001$	0 = Not at all important	1.4%	7.5%	22.2%	16.3%	12.7%	11.6%
	1	4.0%	6.6%	8.0%	12.2%	9.0%	7.8%
	2	13.1%	20.0%	24.9%	17.5%	21.5%	19.8%
	3	21.9%	19.0%	13.8%	13.2%	22.4%	19.7%
	4	56.1%	44.4%	29.2%	36.2%	30.0%	37.6%
	5	3.2%	2.6%	1.9%	3.4%	2.6%	2.7%
	6 = Most important aspect	0.3%			1.1%	1.7%	0.9%

References

1. Quantis. *Measuring Fashion. Environmental Impact of the Global Apparel and Footwear Industries Study*; Quantis: Lausanne, Switzerland, 2018.
2. Lehmann, M.; Arici, G.; Boger, S.; Martinez-Pardo, C.; Krueger, F.; Schneider, M.; Carrière-Pradal, B.; Schou, D. *Pulse of the Fashion Industry-2019 Update*; Global Fashion Agenda: Copenhagen, Denmark; Boston, MA, USA; San Francisco, CA, USA, 2019.
3. Niinimäki, K.; Peters, G.; Dahlbo, H.; Perry, P.; Rissanen, T.; Gwilt, A. The environmental price of fast fashion. *Nat. Rev. Earth Environ.* **2020**, *1*, 189–200. [CrossRef]
4. Laitala, K.; Klepp, I.G.; Henry, B. Does Use Matter? Comparison of Environmental Impacts of Clothing Based on Fiber Type. *Sustainability* **2018**, *10*, 2524. [CrossRef]
5. Strand, J. *Environmental Impact of the Swedish Textile Consumption-a General LCA Study*; Swedish University of Agricultural Sciences: Uppsala, Sweden, 2015.
6. Allwood, J.M.; Laursen, S.E.; Malvido de Rodríquez, C.; Bocken, N.M.P. *Well dressed? The Present and Future Sustainability of Clothing and Textiles in the United Kingdom*; University of Cambridge, Institute for Manufacturing: Cambridge, UK, 2006.

7. Wiedemann, S.G.; Biggs, L.; Nebel, B.; Bauch, K.; Laitala, K.; Klepp, I.G.; Swan, P.G.; Watson, K. Environmental impacts associated with the production, use, and end-of-life of a woollen garment. *Int. J. Life Cycle Assess.* **2020**, *25*, 1486–1499. [CrossRef]
8. European Parliament and the Council. Directive 2008/98/EC on Waste and Repealing Certain Directives. Available online: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0098 (accessed on 1 August 2020).
9. Watson, K.J.; Wiedemann, S.G. Review of Methodological Choices in LCA-Based Textile and Apparel Rating Tools: Key Issues and Recommendations Relating to Assessment of Fabrics Made From Natural Fibre Types. *Sustainability* **2019**, *11*, 3846. [CrossRef]
10. Klepp, I.G.; Laitala, K.; Wiedemann, S. Clothing lifetimes: What should be measured and how. *Sustainability* **2020**, *12*, 6219. [CrossRef]
11. The Nielsen Company. *Global Wardrobe Audit-All Countries*; Prepared for Australian Wool Innovation by The Nielsen Company: Sydney, Australia, 2012.
12. Klepp, I.G.; Laitala, K. *Klesforbruk i Norge*; SIFO: Oslo, Norway, 2016; p. 120.
13. Langley, E.; Durkacz, S.; Tanase, S. *Clothing Longevity and Measuring Active Use*; Wrap: Banbury, UK, 2013.
14. Cooper, T.; Claxton, S.; Hill, H.; Holbrook, K.; Hughes, M.; Knox, A.; Oxborrow, L. *Clothing Longevity Protocol*; Project Code: REC100-008; Nottingham Trent University Banbury: Banbury, UK, 2014; p. 11.
15. Uitdenbogerd, D.E. Energy and Households-The Acceptance of Energy Reduction Options in Relation to the Performance and Organisation of Household Activities. Ph.D. Thesis, Wageningen University, Wageningen, The Netherlands, 16 May 2007.
16. Gwozdz, W.; Steensen Nielsen, K.; Müller, T. An Environmental Perspective on Clothing Consumption: Consumer Segments and Their Behavioral Patterns. *Sustainability* **2017**, *9*, 762. [CrossRef]
17. Aalto, K. *Kuluttajien Halukkuus ja Toimintatavat Tekstiilien Kierrätyksessä*; Kuluttajatutkimuskeskus: Helsinki, Finland, 2014; p. 46.
18. Laitala, K. Clothing Consumption—An Interdisciplinary Approach to Design for Environmental Improvement. Ph.D. Thesis, Norwegian University of Science and Technology, Trondheim, Norway, 12 September 2014.
19. Uitdenbogerd, D.E.; Brouwer, N.M.; Groot-Marcus, J.P. *Domestic Energy Saving Potentials for Food and Textiles: An Empirical Study*; Wageningen Agricultural University, Household and Consumer Studies: Wageningen, The Netherlands, 1998.
20. Laitala, K.; Klepp, I.G.; Henry, B. Use phase of wool apparel: A literature review for improving LCA. In Proceedings of the Product Lifetimes and The Environment-PLATE 2017, Delft, The Netherlands, 9 November 2017; pp. 202–207.
21. Degenstein, L.M.; McQueen, R.H.; McNeill, L.S.; Hamlin, R.P.; Wakes, S.J.; Dunn, L.A. Impact of physical condition on disposal and end-of-life extension of clothing. *Int. J. Consum. Stud.* **2020**, 11. [CrossRef]
22. McNeill, L.S.; Hamlin, R.P.; McQueen, R.; Degenstein, L.; Wakes, S.; Garrett, T.C.; Dunn, L. Waste not want not: Behavioural intentions toward garment life extension practices, the role of damage, brand and cost on textile disposal. *J. Clean. Prod.* **2020**, *260*, 121026. [CrossRef]
23. Laitala, K.; Boks, C. Sustainable clothing design: Use matters. *J. Des. Res.* **2012**, *10*, 121–139. [CrossRef]
24. Collett, M.; Cluver, B.; Chen, H.-L. Consumer Perceptions the Limited Lifespan of Fast Fashion Apparel. *Res. J. Text. Appar.* **2013**, *17*, 61–68. [CrossRef]
25. Ungerth, L.; Carlsson, A. *Vad Händer Sen Med Våra kläder? Enkätundersökning*; Konsumentföreningen: Stockholm, Sweden, 2011.
26. Klepp, I.G. *Hvorfor Går Klær ut av Bruk? Avhending Sett i Forhold til Kvinners klesvaner [Why are Clothes No Longer Used? Clothes Disposal in Relationship to Women's Clothing Habits]*; SIFO: Oslo, Norway, 2001.
27. Appadurai, A. *The Social Life of Things: Commodities in Cultural Perspective*; Cambridge University Press: Cambridge, UK, 1988.
28. Haugen, B.S.H. The Concept of National Dress in the Nordic Countries. In *Berg Encyclopedia of World Dress and Fashion*; Eicher, J.B., Skov, L., Eds.; Berg: Oxford, UK, 2010; Volume 8.
29. Klepp, I.G.; Storm-Mathisen, A. Reading fashion as age: Teenage girls and grown womens Accounts of Clothing as Body and Social Status. *Fash. Theory: J. DressBody Cult.* **2005**, *9*, 323–342. [CrossRef]
30. Kidwell, C.B.; Steele, V. *Men and Women: Dressing the Part*; Smithsonian Insititution Press: Washington, DC, USA, 1989.

31. Cooper, T.; Hill, H.; Kininmonth, J.; Townsend, K.; Hughes, M.; Shorrocks, J.; Knox, A.; Fisher, T.; Saicheua, V. *Design for Longevity-Guidance on Increasing the Active Life of Clothing*; Wrap: Banbury, UK, 2013.
32. Glitsch, V.S. Fit Step in Ready-to-Wear Clothing. TOWARDS a Reduction of Garment Disposal in View of Sustainability. Ph.D. Thesis, University of South-Eastern Norway, Rauland, Norway, 2020.
33. Bjerck, M. *Apparel at Work: Work Uniforms and Women in Male-Dominated Manual Occupations*; Copenhagen Business School: Copenhagen, Denmark, 2017.
34. Craik, J. *Uniforms Exposed. From Conformity to Transgression*; Berg: Oxford, UK, 2005.
35. Liu, S.; Feng, J.; Song, Z.; Zhang, T.; Lu, H.; Xu, C.; Yan, S. Hi, magic closet, tell me what to wear! In Proceedings of the 20th ACM International Conference on Multimedia, Nara, Japan, 29 October 2012; pp. 619–628.
36. Yu, L.-F.; Yeung, S.K.; Terzopoulos, D.; Chan, T.F. DressUp!: Outfit synthesis through automatic optimization. *ACM Trans. Graph.* **2012**, *31*, 134. [CrossRef]
37. Neto, A.; Ferreira, J. From Wearing off to Wearing on: The Meanders of Wearer–Clothing Relationships. *Sustainability* **2020**, *12*, 7264. [CrossRef]
38. Herweyers, L.; Catarci Carteny, C.; Scheelen, L.; Watts, R.; Du Bois, E. Consumers' Perceptions and Attitudes toward Products Preventing Microfiber Pollution in Aquatic Environments as a Result of the Domestic Washing of Synthetic Clothes. *Sustainability* **2020**, *12*, 2244. [CrossRef]
39. Laitala, K.; Boks, C.; Klepp, I.G. Potential for environmental improvements in laundering. *Int. J. Consum. Stud.* **2011**, *35*, 254–264. [CrossRef]
40. Laitala, K.; Klepp, I.G.; Henry, B. *Use Phase of Apparel: A Literature Review for Life Cycle Assessment with Focus on Wool*; SIFO: Oslo, Norway, 2017; p. 162.
41. Kramer, A.A.; Zimmerman, J.E. Assessing the calibration of mortality benchmarks in critical care: The Hosmer-Lemeshow test revisited. *Crit. Care Med.* **2007**, *35*, 2052–2056. [CrossRef]
42. Paul, P.; Pennell, M.L.; Lemeshow, S. Standardizing the power of the Hosmer–Lemeshow goodness of fit test in large data sets. *Stat. Med.* **2013**, *32*, 67–80. [CrossRef]
43. Liang, J.; Xu, Y. Second-hand clothing consumption: A generational cohort analysis of the Chinese market. *Int. J. Consum. Stud.* **2018**, *42*, 120–130. [CrossRef]
44. Ertz, M.; Leblanc-Proulx, S.; Sarigöllü, E.; Morin, V. Made to break? A taxonomy of business models on product lifetime extension. *J. Clean. Prod.* **2019**, *234*, 867–880. [CrossRef]
45. Laitala, K.; Klepp, I.G.; Hauge, B. Materialised Ideals: Sizes and Beauty. *Cult. Unbound J. Curr. Cult. Res.* **2011**, *3*, 19–41. [CrossRef]
46. Laitala, K.; Klepp, I.G.; Kettlewell, R.; Wiedemann, S. Laundry care regimes: Do the practices of keeping clothes clean have different environmental impacts based on the fibre content? *Sustainability* **2020**, *12*, 7537. [CrossRef]