Versioning, Price Fairness and Purchase Decision – An Empirical Investigation

Bastian Werner, Ines Brusch and Larissa Bürks-Arndt

Abstract Companies typically offer different variants of a product to address many heterogeneous consumer needs. This involves improving, reducing, correcting, or dismantling existing parts of a product, which is called versioning. This also serves to capture the different willingness to pay of consumers. According to rational choice theory, consumers weigh benefits relative to their costs in evaluating a product and generate the purchase decision. Consequently, the production method should be irrelevant. The empirical evidence of this study contradicts this thought. Based on Equity theory and Dual-Entitlement theory, a quantitative survey has been carried out. In this context, the four versioning methods were examined to determine whether they appear fair to consumers and how/if they influence their purchasing decisions. The results provide new insights for researchers from a theoretical and practical point of view, e.g., price fairness, and ethical convictions have significant effects on purchasing decisions. Finally, the paper gives some general implications and recommendations for future research.

Bastian Werner · Ines Brusch · Larissa Bürks-Arndt
Brandenburg University of Technology Cottbus, Postbox 101344, 03013 Cottbus, Germany
✉ bastian.werner@b-tu.de
✉ ines.brusch@b-tu.de
✉ buerklar@b-tu.de

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1 Introduction

In today's world, globalization, worldwide networking, and digitalization have made information more readily available than ever before, and communication and opinion-forming have become a global cross-border phenomenon. The Internet enables price comparisons in seconds, and through the increasing exchange of people in the virtual world (e.g., through social media) also production methods of companies can become more public compared to earlier times. Furthermore, companies today offer different versions of their products in order to satisfy the preferences of many different customers in saturated markets in order to cull their respective willingness to pay. When people receive prices and product information, they evaluate them automatically. The results can be positive, neutral, or negative. Emotions and fairness play a crucial role in the purchasing decision. This raises the question of whether knowledge of versioning methods influences the purchase intention. If so, to what extent? Do fairness and ethics play a role in the purchase decision of different versions?

Based on Equity theory (Adams, 1963; Nguyen et al., 2014) and Dual-Entitlement-Theory (Kahneman et al., 1986b; Chen et al., 2017), a quantitative survey of 211 subjects has been carried out. In this context, the four versioning methods improve, reduce, correct, and degrade are examined to determine whether they appear fair to consumers and how/if they influence their purchasing decisions. The tested products (tights, printers, and washing machines) have different life expectancies, degrees of involvement, and price ranges. A total of three product categories with three different quality levels each and four product versions each were tested. Then the perceived price fairness of products with different life expectancies and production processes, as well as their effects on the purchase decision, are analyzed. The empirical evaluation is carried out using various multivariate analysis methods (e.g., regression analysis and ANOVA). The empirical evidence of this study indicates that price fairness and ethical convictions have significant effects on purchasing decisions. The results provide new insights for researchers from a theoretical and practical point of view. The structure of the work is as follows: it begins with a discussion of the theoretical background. A consideration of the research methodology follows. The next section contains the empirical study with a presentation of results and inferences. Then a conclusion is drawn, and limitations are discussed. Finally, the paper introduces some general implications and recommendations for future research.

2 Theoretical Background

Homo Oeconomicus is the central illustration of classical economics. According to the model, it is a fictitious economic subject which possesses fixed preferences and always acts rationally, whereby the self-interest is maximized without the influence of emotions or other disturbing variables, and no errors in the information intake, information processing, and decision making can be noticed. For the modeling and mathematical formalization of economic theories, the assumption of a rational human being was indispensable (Kirchgässner, 2013).

Human reality, on the other hand, is different. Individuals have limited rationality. They make mistakes in information reception, information processing, and decision making. Due to limited abilities and limited time, they make use of heuristics. The application of these heuristics, according to an idea of behavioral economics, can lead to behaviors that deviate from economic rationality and partially lead to systematic errors. In the literature, this is referred to as behavioral anomalies or biases. However, given the limitations of the human mind, many of these heuristics are partially efficient. Furthermore, individuals have limited willpower and avoid unpleasant decisions. Even if they are aware of the consequences of their behavior, they decide differently in the short term. Ultimately, individuals have limited self-interest. They do not optimize exclusively egoistically their own utility, but worry about other humans, are careful about fairness, and ready for the punishment of unfair fellow men (Beck, 2014).

Prior research suggests that companies often offer different variants of the original product to fit as many heterogenous consumer needs and wants as possible to capture the differential willingness to pay of consumers. As a rule, companies profit from the fact that they offer several versions of a product. Also, companies can maintain or even increase their competitive advantage and strengthen their market dominance. Added to this are factors such as the increase in customer loyalty and the positive reputation of the company (Hui, 2004; Yang et al., 2017). For this, companies must adapt mass customization techniques (Felfernig et al., 2014). Consumers benefit from a more extensive choice of products, which means that even consumers with lower incomes can gain access to the products (Bhargava and Choudhary, 2008; De Sordi et al., 2016; Gershoff et al., 2012). A possibility, therefore, is to use versioning methods. Versioning is a series of actions that modify the product. These actions relate

to the content of the product, the technological and process platform as well as subsequences. This consists of four categories: improvement, correction, reduction, and degradation. The improvement category means that an element is added to the product, thus improving quality. An example of improvement is that a book is reprinted, and images in the reprint are colored rather than black and white. In the correction category, one element of the product is removed, and the quality increased. There are many examples of this in the gaming scene. Errors discovered in the beta version have been removed in the final version. The reduction category means that an element is removed from the product, and the quality decreases as a result. In the case of the book, chapters are deleted for the new edition, and the content shortened. This means that the book can be offered at a lower price, and a broader target group can be reached. The last category is the degradation category. Here an element is added to the product in order to lower the quality. For example, a complicated book is written in a simplified language in order to reach a broader target group (De Sordi et al., 2016). Xia et al. (2004) defined consumers perception of price fairness as

> *" a consumers assessment and associated emotions of whether the difference* (*or lack of difference*) *between a sellers price and the price of a comparative other party is reasonable, acceptable, or justifiable"* (Xia et al., 2004, p. 3).

That is, price fairness is the outcome of price evaluation based on comparing the price paid with the reference price (Chung and Petrick, 2015; De Sordi et al., 2016). Chung and Petrick (2015) also indicated that price fairness has two dimensions: cognitive price fairness (e.g., cognitive assessment of price and procedure of setting the price) and affective price fairness (e.g., emotions and feelings that are evoked by price).

According to Equity theory (Adams, 1963), customers compare in exchange situations their inputs to their outcomes. This is about justice during the exchange. Accordingly, prices are perceived as fair by consumers if they feel that the outcome is in fair proportion to the input they have provided themselves. This means that the service received is compared with the price paid (Huber et al., 2007; Fassnacht and Mahadevan, 2010; Nguyen et al., 2014). The more effort a customer undertakes during an exchange, the higher he expects his outcome to be (Oliver and Swan, 1989). The Equity theory assumes further that individuals tend to receive income (outcome) and expenses incurred (input) with the input-outcome ratio of other persons. Justice in the framework

of an exchange relationship exists if the relationship between input (e.g., costs, time, personal commitment) and output (e.g., services received and satisfaction) coincides between the exchange partners. Injustice (inequity) is perceived when the perceived input-outcome ratio is different from each other. Furthermore, the Equity theory assumes that individuals in an unjust exchange relationship aim to restore justice. This can be done, for example, by changing behavior (e.g., a change in purchasing behavior). An assessment of the fairness of a price increase (an increase of the own input) will, therefore, depend on the extent to which the customer feels that the changed input-outcome ratio is fair (Homburg and Koschate, 2005).

According to the Dual-Entitlement theory, the influence of costs and profits on the perceived price fairness is examined, and a reference value is used to assess the price fairness. Past prices, recommended retail prices, or current market prices of the product can serve as reference values. Because of the customer's willingness to pay depends on these reference prices, they are willing to purchase the product at that price. Since the fairness assessment by the customer is based on subjective perceptions, the reference value is formed based on different experiences. In the case of perceived price unfairness, customers are prepared to switch to a seller who offers them the desired or a comparable product at the desired reference price. Therefore, price changes of companies are related to price fairness perceptions of consumers, and these assessments depend on the motive of price change because of cost-justified price increase is considered fair. However, the profit-driven price increases (e.g., exploitation of market power) are considered unfair (Kahneman et al., 1986a,b). Customers are more likely to judge a price increase as fair if a firm faces rising costs or decreasing profit. It would not be acceptable if a company increased prices when its internal costs had not increased. On the other hand, increases in profits due to cost reductions at the same price are regarded as fair, although the company increases its profits as a result. In summary, according to the Dual-Entitlement theory, the buyer is entitled to a reference price and the seller to a reference profit (Chen et al., 2017). Charging higher prices in the face of higher costs may be socially accepted (Chen et al., 2017).

3 Research Methodology

A quantitative survey of 211 subjects was carried out. As a result of this four versioning methods have been tested to see if they appear fair to potential customers and have an impact on their purchase decisions. Three different product categories were investigated in the questionnaire. These were tights, printers, and washing machines. These were selected because each is assumed to have a different lifespan, degree of involvement, price range, and economic growth. The study presents product versions that are associated with an increase or decrease in quality. These versions often serve producers as a cost-effective way to expand their product range. In the survey it should be clarified whether these versions are perceived as fair by consumers and which implications they have for the purchase decision.

Concerning the three product categories, three basic products, each with different quality levels, were examined. A distinction was made between low, medium, and high quality. These were selected from real products with current market prices. The versioning methods mentioned were then created for each of these nine products. A total of 36 version products were tested besides the nine basic versions. There were 18 upgrades and 18 downgrades. In the easy version (reduction), the respective product was made worse by removing one element and offered 20 % cheaper than the basic product (e.g., for tights the spandex content was reduced by 4 %). With the light version (degradation), an element was added to worsen the respective basic product (e.g., the printing speed was lowered by two pages per minute by installing a program). Also, here, the price became 20 % cheaper. With the deluxe version (improvement) elements were added in each case around the product to improve (e.g., washing program choice added by installation). For each premium version (correction), one element was removed to improve the quality (e.g., print speed increased by two pages per minute by uninstalling the throttling program). For the latter two versions, the prices were increased by 20 % compared to the respective basic product. Easy and light versions are downgrades whereas deluxe, and premium versions are upgrades.

The survey started by describing the characteristics of the three basic products. Then the versioning variants were added. The subjects were asked to rate the individual products in terms of price fairness, quality expectations, durability, high production costs, a high number of production steps, and purchase intention.

The subjects were interviewed using five-point Likert scales, where the one stands for "does not apply at all" and the five for "applies completely", as this is advantageous for both the evaluation, and the respondents. The central element is the multi-level approach, with which opinions and attitudes are measured in a differentiated manner. To ensure that the questionnaire did not become too long, two instead of three product categories were surveyed per respondent, and consequently, there were three different questionnaire combinations. After each change to the product, the subjects were informed which product details had changed and how.

Building on the findings of Gershoff et al. (2012), and De Sordi et al. (2016), which have already provided empirical studies on the issue of versioning, based on the theoretical findings, and our considerations, seven research hypotheses were developed, which will be tested in the further course of this work.

It is undisputed that price plays a decisive role in purchasing behavior. We hold the opinion that people build a fairness judgment as soon as they are confronted with prices and product attributes. It is also conceivable that no adequate assessment is possible. Kamen and Toman (1970) show that a negative correlation between the level of a price and the perceived price fairness can be identified. Since we believe that the perceived price fairness is of particular importance for the purchase decision, we formulate Hypothesis 1:

- The perceived price fairness has a strong significant influence on the purchase decision.

We assume that when versions of the basic product are added, the fairness assessment of this basic product changes, since versions with different prices and product details are now available. According to the basic model of Homo Oeconomicus, there should be no changes, since the omniscient consumer already has all the information. Consequently, Hypothesis 2:

- Adding versioning variants changes the fairness assessment of the basic products.

Furthermore, we assume that the subjects who were initially confronted with the basic version of the products perceive worse alternatives (downgrade versions),

regardless of whether they were changed by an additional production step of the company or by omitting one, as unfair, and hardly ever buy. Consequently, Hypothesis 3 and 4 are:

- Downgrade versions are considered
  - › unfair and are
  - › hardly bought.

This again contradicts classical price theory. A conceivable explanation could be the Equity and Dual-Entitlement theory as well as the not always rational behavior of people.

Besides, we assume that for each of the three different quality levels of the three product categories, subjects regard the cheapest alternative as the fairest, and for this, the purchase intention is highest. This is due to the widespread tendency in western societies to save money and the sociodemographic characteristics (see Table 1 on page 10) of the subjects. Another conceivable explanation could be the Equity theory because the subjects perceive the price-performance ratio best with the cheapest alternative. Consequently, Hypotheses 5 and 6 are:

- The cheapest versions of the three basic products are
  - › considered to be the fairest in all three product categories, and
  - › the purchase intention is highest for these.

In the actual purchase decision, on the other hand, we assume that the central tendency, which has already been proven several times in economic research (e.g., Saal et al., 1980), is evident, and that the subjects decide in favor of the middle when confronted with three different quality levels per product category. Hypothesis 7, therefore, reads as follows:

- The subjects decide in favor of the middle product when confronted with three different quality levels in all three product categories.

A convenience sample was chosen for the survey. Since the study was conducted at a university, the sample consists mainly of young, well-educated people. The questionnaire was mainly spread via social media.

Since not only the intention to buy but also the perceived fairness and its context play a central role in this work, conjoint analysis was not carried out. Although it is a proven and frequently used tool for determining prices, it is rather unsuitable for the question of fairness assessments.

To answer the hypothesis, the next section deals with the data analysis carried out. For the empirical evaluation, mean values, standard deviations, and correlations were observed, and variance analysis and linear regression were used.

4 Data Analysis

First, data cleansing was carried out. All subjects who completed the questionnaire in less than five minutes were removed. Thus, there were only 184 participants instead of 212. Taken together, 118 women and 66 men completed the questionnaire. By considering the current occupational activity, it is conspicuous the two largest groups being students and apprentices with 59 and 54 subjects. The third-largest group was made up of employees with 38 subjects. The mean value of the age structure of the subjects is 36.66 years. The monthly net income is in the average in the range of 1501–2500 € (see Table 1 on page 10). All in all, the subjects in the questionnaire are younger, have lower-incomes, are more female, and are more likely to be in education than the average of the population. These results relate to each other and are justified by the university environment in which the survey took place.

To answer Hypothesis 1, multiple linear regressions were performed along all nine basic products to show which independent variables influence the dependent variable – purchase intention – to what extent. All independent variables included in the questionnaire – price fairness perception, high-quality expectation, long-life expectancy, high production costs, a high number of production steps – were included in the analysis. A total of twelve multiple linear regressions were performed, initially one for each basic product. The subjects were shown visualizations of the different product characteristics, including price, and then asked for their opinion using five-point Likert scales, where the one stands for “does not apply at all” and the five for “applies completely”. Three aggregated multiple linear regressions were then run on the three basic products tights, printers and washing machines. Also, the adjusted R^2 was always considered, since this represents a better measure of quality for a multiple regression model.

Table 1: Table of sociodemographic characteristics of the participants.

Participants (Total)	**Completed**		**Incomplete**	
212	184		28	
Sex	**Female**		**Male**	
	118		66	
Occupation	**Students**	**Apprentices**	**Employees**	**Other**
	59	54	38	33
Mean Age	36.66			
Net. Income	1501–2500 €			

The adjusted R^2 values vary from 0.237 to 0.376 for the nine models, each with a basic version, with an outlier upwards of 0.408 and downwards of 0.162 for the low quality and medium quality version of the printers. The models, therefore, explains these degrees of purchase intention. Conspicuous here is that the perceived price fairness is the only significant factor in all models that influences purchase intention. Four times the high number of production steps had a significant influence on the purchase decision and once each long-life expectancy, and high production costs. The aggregated multiple linear regressions along with the three product categories also show that the adjusted R^2 values 0.344 (tights), 0.346 (printers), and 0.406 (washing machines) according to Cohen (1988) have a moderate effect and only perceived price fairness has a significant influence on the purchase decision. For washing machines, a significant influence of the long-life expectancy on the purchase decision is also evident. The result is shown in Table 2.

It can be seen that the adjusted R^2 fluctuates in the range of 0.344–0.406, the predictor's price fairness, quality expectation, life expectancy, production costs, and the number of production steps explain 34.4 until 40.6 % of the purchase decision. The perceived price fairness is the only dependent variable that is significant for all three product categories. Consequently, Hypothesis 1 (the perceived price fairness has a strong significant influence on the purchase decision) is supported by the data.

Since the perceived price fairness has an enormous influence on the purchase decision, we considered in the following how the price fairness and the purchase decision change when presenting down- and upgrades of the initial product as well as further product versions.

Table 2: Aggregated multiple linear regression: dependent variable: Purchase intention basic products (Note: statistical significance at a level of *: $p < 0.05$, **: $p < 0.01$, ***: $p < 0.001$).

Predictors	**Std. Coef. Beta**		
	Tights	**Printers**	**Washing maschines**
(Constant)	***		
Price fairness	0.580***	0.582***	0.647***
High-quality expectation	−0.032	0.106	−0.009
Long-life expectancy	−0.015	−0.060	0.214*
High production costs	0.112	−0.092	−0.027
High number of production steps	−0.093	0.061	−0.070
adjusted R^2	0.344	0.346	0.406

That the addition of versioning variants has an impact on fairness perception is shown by the following procedure: The same question about the perceived price fairness of the basic products was asked for all three quality levels of tights once without other products and once with downgrade versions. Since the correlations are not 1.0 but 0.760 (presented with easy version low quality), 0.575 (presented with easy version medium quality), and 0.602 (presented with easy version high quality), it is shown that the added versions influence the assessment in this study. The differences between 1.0 and the correlations (0.760, 0.575, 0.602) are significant. Also, a strong correlation but not a perfect one is shown by the fairness assessment of the subjects regarding the medium quality printer when it was presented alone and when it was presented with an upgraded version (0.628). The same correlation effect can be seen in washing machines.

Furthermore, the performed ANOVA shows the same result. Based on the three product categories, the responses of the subjects were grouped with respect to the three different basic products. First, the basic products and their characteristics were described, the price was presented, and the perceived price fairness of the subjects was asked. Then additional product versions were presented, and the perceived price fairness of the basic product was asked again.

It is noticeable that the assessment of the subjects is changed by adding further versions, where all differences are significant at the 0.001 level. This can be seen in Table 3.

Table 3: Aggregated fairness perception of basic products mean values confronted with alternatives (Note: Likert 5 scale 1 = "does not apply at all" and 5 for "applies completely"; ANOVA / Welch statistical significance all at a level of $p < 0.001$; standard deviations in brackets).

Product	**Basic**	**Easy**	**Light**	**Deluxe**	**Premium**
Tights	3.21 (1.09)	3.28 (1.11)	3.25 (1.16)	3.17 (1.17)	3.16 (1.15)
Printers	3.25 (1.24)	3.13 (1.22)	3.08 (1.26)	3.04 (1.24)	3.02 (1.25)
Washing maschines	2.88 (1.29)	2.82 (1.34)	2.78 (1.33)	2.85 (1.29)	2.78 (1.28)

Consequently, Hypothesis 2 (adding versioning variants changes the fairness assessment) is supported by the data. Besides, an ANOVA was carried out, which shows the perceived price fairness of the subjects regarding the basic products as well as the four versions (two downgrades and upgrades each) aggregated along with the three different product categories. It is striking that in all three categories, the basic products show the highest price fairness. As shown in Table 4, the two downgrade versions easy and light each have the lowest fairness values. After considering the mean values, variance homogeneity tests were performed. Subsequently, Welch tests were carried out if heterogeneity was found, and ANOVA results were taken into account if the values were homogeneous. The significance values in the table can be explained by this. Bonferroni correction was chosen as a post-hoc test to identify which group mean values differ. It is interesting to note that only the compounds, according to Bonferroni correction, show significant group differences.

Table 4: Aggregated fairness perception of basic products and versioning alternatives mean values (Note: Likert 5 scale 1="does not apply at all" and 5 for "applies completely"; ANOVA/Welch statistical significance all at a level of $p < 0.001$; Bonferroni statistical significance at a level of $p < 0.05$).

Product	**Basic** (B)	**Easy** (E)	**Light** (L)	**Deluxe** (D)	**Premium** (P)	**Bonferroni significant**
Tights	3.21	2.94	2.95	3.04	3.19	B-E ; B-L ; E-P ; L-P ; D-P
Printers	3.25	2.89	2.75	3.02	3.02	B-E ; B-L
Washing maschines	2.88	2.63	2.43	2.85	2.84	B-L ; L-D, L-P

Consequently, Hypothesis 3 (downgrade versions are considered unfair) is supported by the data. Moreover, an ANOVA was carried out, which shows the purchase decision of the subjects with regard to the basic products and the four versions (two downgrades and upgrades each) aggregated along with the three different product categories. It is striking that the two upgrade versions along all three product groups have the highest purchase intention and the two downgrades the lowest. The basic products are, therefore, in the middle. In contrast to the price fairness assessment, it is not the basic products that show the best values, but the premium versions. This is shown in Table 5. The same tests as for Table 4 have been carried out and are reported in Table 5. It is interesting to see that, according to Bonferroni correction, fifty percent more of the connections show significant group differences in the purchase intention than in the fairness assessment. Nevertheless, not all possible connections show significant group differences.

Table 5: Aggregated purchase intention of basic products and versioning alternatives mean values (Note: Likert 5 scale 1="does not apply at all" and 5 for "applies completely"; ANOVA/Welch statistical significance all at a level of $p < 0.001$; Bonferroni statistical significance at a level of $p < 0.05$).

Product	**Basic** (B)	**Easy** (E)	**Light** (L)	**Deluxe** (D)	**Premium** (P)	**Bonferroni significant**
Tights	2.97	2.41	2.43	3.01	3.07	B-E ; B-L ; E-D ; E-P ; L-D ; L-P
Printers	2.72	2.47	2.37	2.73	2.77	B-L ; E-P ; L-D ; L-P
Washing maschines	2.45	2.22	2.13	2.53	2.54	B-L ; E-D ; E-P ; L-D ; L-P

Consequently, Hypothesis 4 (downgrade versions are hardly bought) is supported by the data. Since in reality, there are not always several different versions of a product and in order to facilitate management decisions, only the products of the three different quality levels (low, medium, high) of the three different product categories (tights, printers, washing machines) are considered below.

First of all, it is evident what perception of fairness the subjects had in relation to the products. The three basic products per product category were compared with the three different quality levels. It is striking here that the cheapest products were considered to be the fairest of all nine products. The medium quality products followed before the high quality products. The differences are significant. Variance homogeneity tests, Welch tests, and ANOVA were carried out. Bonferroni correction was chosen as a post-hoc test to identify which group mean values differ. It can be seen that for the printers, all quality combinations show significant group differences in the mean values. For the tights, low-quality and medium-quality, as well as low-quality and high-quality, show significant group differences of the mean values (vice versa). For washing machines, low-quality and high-quality, as well as medium-quality and high-quality, show significant group differences of the mean values (vice versa). Table 6 shows these findings and the respective standard deviations.

Table 6: Perceived fairness perception of nine basic products mean values (Note: Likert 5 scale 1="does not apply at all" and 5 for "applies completely"; ANOVA/Welch statistical significance all at a level of $p < 0.001$; in brackets standard deviations; Bonferroni statistical significance at a level of $p < 0.05$).

Product	**Tights**	**Printers**	**Washing maschines**
Low-quality (L)	3.54 (1.20)	4.02 (1.07)	3.61 (1.09)
Medium-quality (M)	3.15 (0.95)	3.25 (1.06)	3.33 (0.91)
High-quality (H)	2.92 (1.03)	2.48 (1.07)	1.69 (0.90)
Bonferroni significant	L-M and L-H	all	L-H and M-H

Consequently, Hypothesis 5 (the cheapest versions of the three basic products are considered to be the fairest in all three product categories) is supported by the data. Furthermore, it is relevant how the purchase intention of the subjects behaves in this setting. It is noticeable that, as expected, the purchase intention of tights and printers is highest for the low quality products, but the medium quality of washing machines is the highest; this is shown in Table 7. The standard deviations are also included in this table. The differences are significant.

Table 7: Purchase intention of nine basic products mean values (Note: Likert 5 scale 1="does not apply at all" and 5 for "applies completely"; ANOVA/Welch statistical significance all at a level of $p < 0.001$; in brackets standard deviations; Bonferroni statistical significance at a level of $p < 0.05$).

Product	**Tights**	**Printers**	**Washing maschines**
Low-quality	3.25 (1.38)	3.28 (1.37)	2.65 (1.40)
Medium-quality	3.02 (1.19)	2.88 (1.26)	3.24 (1.17)
High-quality	2.65 (1.24)	2.02 (1.21)	1.45 (0.87)
Bonferroni significant	L-H	all	all

Variance homogeneity tests, Welch tests, and ANOVA were carried out. Bonferroni correction was chosen as a post-hoc test to identify which group mean values differ. It can be seen that for the printers and washing machines, all quality combinations show significant group differences in the mean values. For the tights, only low-quality and high-quality, as well as vice versa, show significant group differences of the mean values. This result is interesting because it seems that the perceived differences in low- and medium-quality tights for the subjects

are not so strong that there is a significant group difference after Bonferroni correction.

Consequently, Hypothesis 6 (the cheapest versions of the three basic products have the highest purchase intention in all three product categories) can not be substantiated due to the washing machines and is, therefore, falsified.

Finally, the subjects were put into a purchase decision situation. The subjects were asked which quality class of the tights/printers/washing machines they would purchase and which product version they would choose. The choice was between low quality, medium quality, and high quality as well as basic product, downgrade versions (easy/light), and upgrade versions (deluxe/premium). Table 8 shows the purchase decision of the subjects.

Table 8: Selection decisions.

Purchase Decision	**Low Quality [%]**	**Medium Quality [%]**	**High Quality [%]**
Tights	29.8	46.8	23.4
Printers	40.2	47.5	12.3
Washing machines	14.8	74.6	10.7
Version chosen for	Basic	Downgrade	Upgrade
Tights	46.8	5.6	47.6
Printers	48.8	12.3	39.3
Washing machines	51.6	12.3	36.1

For the purchase decision, the central tendency – as demonstrated by empirical social research – is demonstrable. The average quality level visibly prevails for all three products. Subsequently, the low quality level is the second most popular choice for all three product lines. 76.6 to 89.3 % of all subjects opt for one of these two quality levels. It can also be seen that the higher the price and the longer the life of the product, the more subjects choose the medium quality level and thus fewer choose the high quality level. In particular, the high proportion of subjects who choose medium quality for washing machines is striking. Consequently, Hypothesis 7 (the subjects decide in favor of the middle product when confronted with three different quality levels in all three product categories) is supported by the data.

Regarding the versioning variant that the subject would choose, it is clear that, as the whole paper assumes, the downgrade versions are by far the worst rated. The percentages are relatively low. The basic versions cut off best. These are chosen by almost half of the subjects. The upgrade versions also have good selection values. It can also be seen that the higher the price and the longer the expected life of the product, the purchase decision develops in favor of the basic versions and to the disadvantage of the upgrade versions. These results are very interesting for the management and the product line decisions of companies to optimize corporate profits.

5 Conclusion

In summary, it can be said that the perceived price fairness has a decisive influence on purchase intention. In this paper, multiple linear regressions showed that the five factors price fairness, quality expectation, life expectancy, production costs, and the number of production steps explain between 23.7 and 40.6 % of the purchase intention of the products. The price fairness perception had the most substantial influence on the purchase intention, as it turned out. It can also be stated that, contrary to classical price theory, the addition of further product alternatives changes the perceived fairness assessment of the initial product. In this respect, the assessment of the price fairness of the initial product for tights has improved when downgraded versions are added, whereas otherwise, it can always be assumed that the perceived price fairness has deteriorated, although the data do not vary very widely.

In addition, a conducted ANOVA, which examined the perceived price fairness of the subjects regarding the basic products as well as the four versions aggregated along the three different product categories, showed that in all three categories the basic products show the highest price fairness and the downgrade versions the lowest. Here it can be seen that the downgrade versions are regarded as unfair. It seems that when people know the production methods of the companies, they also take them into account in their assessment of fairness and consider the lower-value product is created by reducing the higher-value version by its quality as not positive. In this case, the effort for the company to produce the lower-value version would be higher. The purchase intention should then be lower here. That is indeed the case. The purchase intention of the subjects in relation to the basic products and the four versions aggregated along the three different product

categories shows that the two upgrade versions along all three product categories have the highest purchase intention, and again the two downgrades the lowest. In contrast to the price fairness evaluation, it is not the basic products but the premium versions that show the best values. According to classical price theory, however, consumers should not be influenced by the production method and not by fairness and ethical considerations. These examples contradict the idea of Homo Oeconomicus and the classical price theory, as consumers should not complain and should instead consider the cheaper product with fewer product attributes as an alternative and purchase it, too.

When only the nine basic products corresponding to the three different quality levels are considered, it is striking that the cheapest products were considered to be the fairest of all nine products. The medium quality products followed before the high quality products. About the purchase intention, it is striking that of these nine products, the tights and printers behave the same as the price fairness assessment, namely, that the low-quality has the highest purchase intention, followed by medium-quality and finally high-quality. On the other hand, the medium-quality has the highest purchase intention for washing machines, followed by low-quality and high-quality. According to the research assumption and the previous findings, the first two results are not surprising, but expected. However, it is not trivial that the medium quality of washing machines has the highest purchase intention. This may be due to the central tendency of the subjects or/and because they acquire better quality in such a longer-acting decision. Maybe some subjects are thinking that a cheaper washing machine cannot function well or will not last long. Furthermore, the different degrees of involvement and the price could play a role. An expensive washing machine is moreover not bought as often as tights.

Finally, the subjects were put into a purchase decision situation. The subjects were asked which quality class of the tights/printers/washing machines they would really purchase and which product version they would choose. The choice was between low-quality, medium-quality, and high-quality as well as basic products, downgrade versions (easy/light), and upgrade versions (deluxe/premium). Interestingly, this situation showed a contradiction (for the tights and printers) to the previous result, as the subjects now preferred the medium quality products to the low quality products. We explain this by the special decision situation and the central tendency with three choices. It can also be seen that the higher the price and the longer the life of the product, the

more subjects choose the medium quality level and thus less choose the high quality level. In particular, the high proportion of subjects who choose medium quality for washing machines is striking.

Regarding the versioning variant that the subject would choose, it is crystal clear that, as the whole paper assumes, the downgrade versions are by far the worst rated. The percentages are really low. The basic versions are considered best. These are chosen by almost half of the subjects. The upgrade versions also have good selection values. It can also be seen that the higher the price and the longer the expected life of the product, the purchase decision develops in favor of the basic versions and to the disadvantage of the upgrade versions. Contrary to the theory of Homo Oeconomicus, the subjects do not behave rationally. It is not rational that so few subjects would purchase the downgrade versions. It is not rational that the production methods exert an influence. It is not rational to turn to the middle alternative when making decisions. Due to the constant comparisons of people, fairness perceptions and ethical reasons cannot be neglected in decision-making.

All in all, as has been shown here based on various studies on individual products as well as on an aggregated basis of three product categories, price fairness and ethical convictions have an enormous influence on the purchase decision, if the consumer knows the production process and the versions offered. These results are very interesting for management and the product line decisions of companies to optimize corporate profits. Decision-makers should know all this and consider it when making product line decisions to optimize the profits of the company.

6 Limitations and Further Research

This work is not free of limitations. On the one hand, there was a focus on three different industries, and four different versioning variants for each product were considered. Only the selected products were considered. This implies that the knowledge gained cannot be transferred to all other products of the market and other industries without restrictions. On the other hand, the subjects are not representative of the total population due to their sociodemographic characteristics. More women participated in the survey, their age was younger than the population average, and their income was lower than the population average. A disproportionately high number of subjects are also still in education.

These facts can be traced back to the university environment in which the survey was conducted. Furthermore, it is not possible to consider all factors that influence the perception of fairness and purchase intention, since these can be different for each person. Selected factors were examined here.

Future research should review the results and carry out further empirical studies. To consider a more extended period and more product lines are fruitful avenues for further research. Further questions could be what would happen to the sales, price fairness perceptions, and image of the company if only basic and upgrade versions or only one/several premium versions is/are offered? What would happen if the company, in turn, announced its production methods through public media? Would this have any influence, and which would it be?

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