A Work Project, presented as part of the requirements for the Award of a Master's degree in Management and International Management from the Nova School of Business and Economics.

Assessing fans' requirements and consumer behaviour towards sustainability in sports merchandising

Nick Julius Eysel - The drivers of sustainability and label attributes

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January-2024

Abstract

This master's thesis addresses the topic of sustainability in football merchandising and the growing need for innovative and sustainable strategies. The conducted survey shows that emotional connection to a club has a strong effect on purchase intention, while sustainability attitude has a significant influence on willingness to pay. Low CO2 emissions and sustainability of materials and packaging are the most important sustainability criteria to fans, while transparency proves to be relevant as an attribute of label. This study contributes to a better understanding of merchandise consumer behaviour in the context of sustainability labels and offers practical implications for football clubs.

Key terms: Sport Management, Sustainability, Merchandise, Football, Intention to Purchase, Willingness to Pay, Sustainability Labels.

We would like to thank our supervisor at Nova SBE, Pedro Brinca, and the managing partners of Bayer 04 Leverkusen, Frank Hüttemann and Michael Krause, for their invaluable support and commitment to this study and their fundamental trust in this new partnership. We sincerely hope that with this first collaboration we have laid the foundations for a successful and long-lasting partnership between these two great institutions.

This work used infrastructure and resources funded by Fundação para a Ciência e a Tecnologia (UID/ECO/00124/2013, UID/ECO/00124/2019 and Social Sciences DataLab, Project 22209), POR Lisboa (LISBOA-01-0145-FEDER-007722 and Social Sciences DataLab, Project 22209) and POR Norte (Social Sciences DataLab, Project 22209).

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FCA	-	1. FC Augsburg
HDH	-	1. FC Heidenheim
KOE	-	1. FC Köln
M05	-	1. FC Mainz 05
FCU	-	1. FC Union Berlin
B04	-	Bayer 04 Leverkusen
FCB	-	FC Bayern Munich
BVB	-	Borussia Dortmund
BMG	-	Borussia Mönchengladbach
DFL	-	Deutsche Fußball Liga
BSC	-	Hertha BSC Berlin
RBL	-	RB Leipzig
SCF	-	SC Freiburg
SGE	-	Sportgemeinschaft Eintracht Frankfurt
D98	-	SV Darmstadt 98
TSG	-	TSG 1899 Hoffenheim
VfB	-	VfB Stuttgart
BOC	-	VfL Bochum
WOB		VfL Wolfsburg
SVW	-	SV Werder Bremen
ITP	-	*Intention to purchase*
IL	-	*Internal Legitimacy*
SA	-	*Sustainability Attitude*
WTP	-	*Willingness to pay*
SCR	-	*Sustainability criteria rating*
PLR	-	*Perceived label relevance*

1. Introduction

Football is one of the most popular sports in the world. Throughout centuries, it has provided immense joy and motivation for people around the world. For many it is not only a source of entertainment, but it can also lead to inspiration and change the life of each individual follower. Sports clubs are in the spotlight of society and therefore have a responsibility to the population. Nonetheless, the large fanbase is not only influenced by football, but in turn also affects the clubs themselves and shapes the world of football to a certain extent too. Therefore, with the growing interest of fans in the environment and sustainability, it is no surprise that many clubs start to engage in more sustainable practices.

In today's modern environment, the beloved sport can assist in protecting the planet by acting as a carrier for encouraging sustainable practices and spreading knowledge about environmental topics. Football has a unique role to play in helping create a more environmentally responsible world. Due to external pressures by governments and society and the rising awareness among fans, football clubs make increasing efforts to implement more sustainable measures, e.g., in merchandising. This research explores the interest of fans in sustainable merchandise as well as their purchasing behaviour. This includes the expectations of consumers regarding certifications and seals for fan articles, as well as the monetary implementation from the perspective of the German football club Bayer 04 Leverkusen (B04). B04 is one of the most successful clubs in the German Bundesliga today and active in international competitions. To meet the growing demand for more sustainability, the club is currently endeavouring to increase sustainability in its merchandising and is therefore planning to introduce its own sustainability label. Hence, this study examines this topic on the basis of fans' requirements. As the majority of the data was collected among football clubs of the First German Bundesliga, the data and insights gained relate to the First Bundesliga for the most part.

2. Situation Analysis

2.1 Football Merchandise Market

2.1.1 Bundesliga

The Bundesliga is the highest German league in football. It is divided into the First and Second Bundesliga, with 18 teams participating in each (transfermarkt.de 2023). Founded over 50 years ago, in 1963, the German Bundesliga is the youngest of the European “big five” leagues, also including the English Premier League, Spanish La Liga, Italien Serie A and French Ligue 1. The German football management system is highly regarded for its emphasis on developing young players and effectively managing club finances and sponsor relations. A primary aspect of this system is the German Football League Association (Deutsche Fußball Liga; DFL), which manages the Bundesliga and distributes its revenue fairly among the 36 clubs. Bundesliga clubs, in comparison to the other major leagues in Europe, more strongly prioritize the satisfaction and affordability of their fan base, with an average attendance of over 40,000 fans per game. This is largely due to their approach of limiting season tickets and offering affordable ticket prices, ensuring that all fans have the opportunity to attend matches (Palchykau and Matvienka 2014). Unlike other major European leagues, the gap between the highest and lowest earning club does not exceed €130 million. Ultimately, financial resources are the key to sporting success, and merchandise plays a significant role in this.

Bain & Company summarizes the most important value levers for sporting success under the foundation of customer value management, sponsoring, stadium & ticketing and merchandising. On top of these, brand positioning and fan mobilization are important factors. The interplay of these components generates the necessary resources to finance sporting success. The more effectively a club uses these components to manage its business, the more likely it is to achieve sporting success in the medium to long term. The study also underlines

the importance of recognizing new trends at an early stage, as the market is still far from reaching its potential (Sinn, et al. 2022).

All current First Bundesliga clubs account for a total accumulated revenue of €3.459 billion in the last financial year (balance sheet date varies from 30.06.22 and 31.12.22). However, only eight out of 18 clubs have a positive after-tax result. Among other things, this is due to the high personnel costs of €1.817 billion across the league, these include player salary. At last, all clubs in the Bundesliga reported total equity of €1.63 billion and total assets of €3.625 billion in fiscal year 2022 (DFL 2023a).

Total merchandising sales in the Bundesliga amounted to €174 million last season. Figure 1 illustrates the development of merchandise sales over the last nine seasons, showing that they have not increased over the last decade. On the contrary, sales reached a low point in the season 2021/22 (Zeppenfeld 2023a).

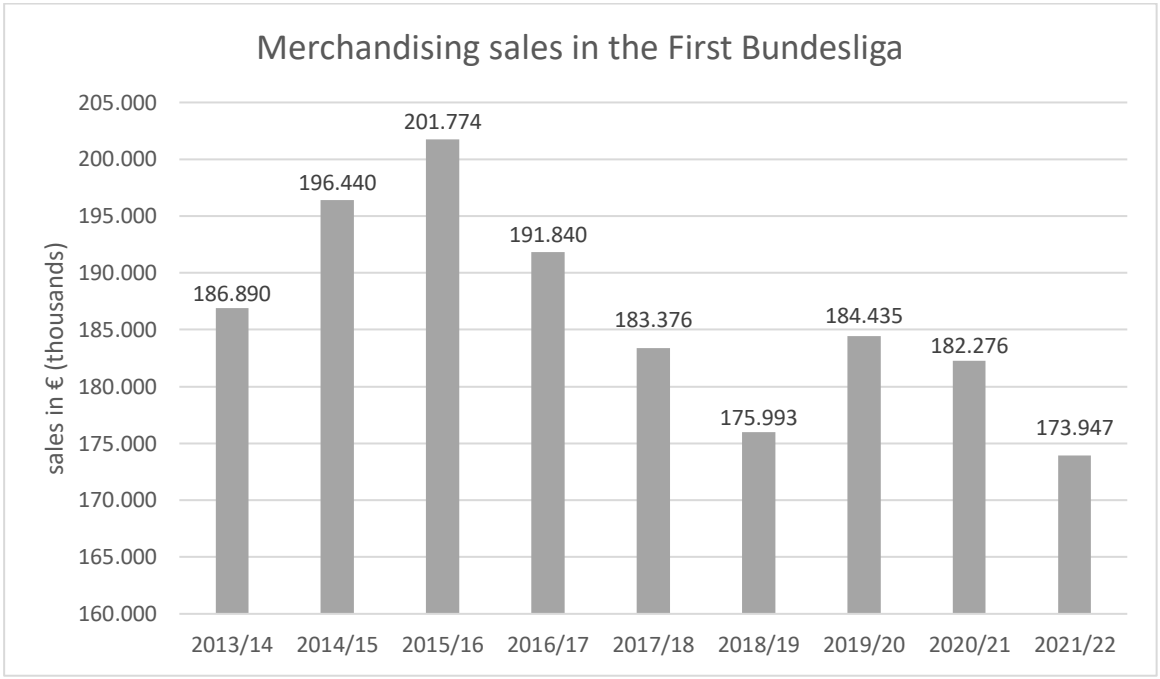

Figure 1: Merchandising sales in the First Bundesliga. Own illustration (Zeppenfeld 2023a)

According to the DFL, merchandise accounted for 4.82% of the companies' total revenue this year. This puts merchandising in fourth place among the strongest revenue drivers, behind media exploitation (38.25%), advertising (25.75%) and transfer revenue (12.73%) (DFL 2023b).

In recent years, Bundesliga clubs have recorded a decline in merchandising sales and show lower sales growth compared to other top European leagues. The reasons for this are market saturation on the one hand and on the other hand, the fact that the two biggest clubs, FC Bayern Munich (FCB) and Borussia Dortmund (BVB), are no longer as successful internationally, when considering an international uptrend after they faced each other in the Champions League Final in 2013. In addition, the needs of consumers were not sufficiently taken into account and there was a lack of innovative ideas, such as digital fan merchandise. The Bundesliga is at a disadvantage compared to other leagues internationally, as too little consideration is given to fast-moving consumers who expect changing product ranges. This is confirmed by Joachim Hilke, Managing Director of Fanatics, an American fan merchandise manufacturer that is responsible for Germany, Austria and Switzerland. The expert blames the decline on the marketing strategies of German clubs. Clubs abroad are more open to the further development of their merchandising products, which is also reflected in declining sales in Germany. One example of the positive success of sales figures is the sharp rise in merchandising sales at Juventus Turin following the signing of Cristiano Ronaldo. This also illustrates the connection between merchandising sales figures and sporting decisions (Ashelm 2019).

To increase merchandising sales again in the future, Bundesliga clubs should focus on new markets and target groups and introduce new innovative types of fan merchandise. Even though, club jerseys are currently the biggest revenue driver in merchandising, the Bundesliga has seen the lowest increase in jersey sales compared to other top leagues. In addition, jersey prices have

risen by 23% in the last ten years, leading to an average price of a First Bundesliga jersey of €81.90, most expensive jersey from FCB (Adidas), Sportgemeinschaft Eintracht Frankfurt (SGE), RB Leipzig (RBL) and Hertha BSC (BSC) (Nike) for €89.95, cheapest jersey from SC Paderborn (Saller) for €69.95, in season 2019/20 (Ashelm 2019).

At last, on the one hand, the general decline in consumption due to the COVID-19 pandemic and the current high inflation demonstrate the current missing demand by fans. On the other hand, they also put the decline in sales figures into perspective compared to other consumer goods (Ha, Kose and Ohnsorge 2021). Overall, it is important that Bundesliga clubs focus more on customer wishes and trends in the future to increase merchandising sales again.

2.1.2 Bayer 04 Leverkusen

Bayer AG, founded over 150 years ago, is a life-science company with core competences in the fields of medicine and agribusiness (Bayer 04 Leverkusen Fußball GmbH 2023a). Bayer AG is the sole shareholder of the football club, which is due to an exemption from the 50+1 rule. This set of rules of the DFL usually implies that a capital company must be majority owned by the parent club to obtain a license to participate in the Bundesliga, which means that the parent club must hold at least 50% of the voting rights plus at least one additional voting right in the meeting of shareholders of the capital company (DFL 2023c). The exemption was only possible because Bayer 04 Leverkusen Fußball GmbH was founded on April 1, 1999, and until then had received insignificant funding from Bayer AG. The club was first founded on July 1, 1904, under a different name (Bayer 04 Leverkusen Fußball GmbH 2023b).

Professional football in Germany reaches a lot of people and enjoys great popularity. A survey of the population in Germany in 2022 showed that about 5% of the respondents in Germany are fans of the B04 club. In addition, the club currently has around 30,000 members and thus ranks twelfth among the clubs with the largest number of members (Zeppenfeld 2023b). Most

recently, B04 recorded equity of €200.5 million and total assets of €375 million. The club generated sales of €273.6 million in fiscal year 2022. After deducting personnel costs of €142.3 million, and descriptions, expenses and taxes of €138.8 million, it generated a loss of €-7.347 million (DFL 2023a). However, the parent company Bayer AG ensures that the equity level stays constant at round about €200 million via a profit transfer agreement with the club at the end of each fiscal year (Zeppenfeld 2023c). The main sources of income are, on the one hand, about €79 million in broadcasting sales. On the other hand, the club earns about €8 million per year by the current jersey sponsor Barmenia in addition to many other sponsors (Zeppenfeld 2023d).

Merchandising is also a significant source of revenue that can finance sporting success, as previously categorised by Sinn et al. (Sinn, et al. 2022)(2022). It is difficult to quantify the market for B04, as specific sales figures are not publicly available. In addition, no precise sales figures were granted by B04 for this study. Based on the published data provided, merchandising sales can be estimated at approximately €13 million (4.82% of €273.6 million). This figure is derived from the total revenue of 2022 and the DFL's published percentage figure for the share of merchandising in the total revenue of First Bundesliga clubs (DFL 2023b).

Bain & Company provides one of the few well-founded key figures on merchandise for B04. The company’s study examined the merchandising sales per fan of all Bundesliga clubs. According to the study, B04 came third on this list with €10.59 in sales per fan (Sinn, et al. 2022). This leads to the assumption that B04's merchandising revenue exceeds the estimated €13 million. Consequently, there are two approaches to further expand the market for B04. Firstly, new fans who buy merchandise can be attracted, and secondly, existing fans can be encouraged to buy more products.

2.2 Sustainability in Sports Merchandise

2.2.1 Sustainability in Football

Sustainability is one of the most pressing challenges in maintaining the prevailing living conditions globally, but it also presents an opportunity for companies to take the lead and gain new or retain current customers in the long run. This is particularly true for the sports industry, including football associations, leagues and teams, many of which have already introduced regulations and guidelines for their daily work. In the report "The Red Way" by English football club Liverpool FC, it is emphasized that merchandising plays a crucial role in the journey towards sustainability. As stated in the report, merchandising accounts for over 70% of Co2 emissions, which have only increased during the corona season (Liverpool FC 2021).

The world of sport and the natural environment are inextricably linked; the latter is essential for humans to survive as well as enjoy playing and watching sport. Still, our practices and patterns of consumption have caused significant damage to the relationship between these two entities. Climate change is at the forefront of public discourse, creating the realization that our behaviour needs to adjust to help preserve the planet. However, implementing changes can be a difficult process, with it being hard for us to comprehend the effects of our day-to-day decisions (McCullough and Kellison 2018).

The growing awareness of environmental responsibility has spurred major football clubs in Europe to take action in minimising their environmental impact while also enhancing their social responsibility. To this end, several collaborative efforts with environmental organisations, sustainability projects, and introduction of eco-friendly regulations have been initiated (Liverpool FC 2021; UNFCCC 2020). Additionally, FIFA has devoted considerable attention to the notion of sustainability, devising a range of programs and initiatives intended to encourage sustainability in football (FIFA 2023).

2.2.2 Bundesliga

As previously described, the Bundesliga is extraordinarily focused on its fans compared to other leagues. Accordingly, as fans (especially Gen Z) increasingly demand more sustainable practices, a positive trend is also developing in terms of sustainability (UNiDAYS 2022). Yet, this also derives from external pressures on football clubs by society, governments, or leagues. At the same time, this is an indicator for increased demand by society for sustainable merchandise. The DFL followed up on this by incorporating sustainability guidelines into its licensing regulations in May 2022. This includes measures to support clubs in implementing and networking in the area of sustainability, such as guidelines and templates for standardized analyses that support the implementation of specific criteria (DFL 2022).

In April 2022, the German Federal Ministry for Economic Cooperation and Development (BMZ) and Brands Fashion launched the "From Field Work to Fan Shop" initiative. The aim is to promote the sustainable cultivation of cotton and support producers in the western Indian region of Gujarat. Nine clubs of the First and Second Bundesliga (1. FC Union Berlin (FCU), Arminia Bielefeld, SGE, Hamburger SV, SV Werder Bremen (SVW), VfB Stuttgart (VfB), VfL Wolfsburg (WOB), BVB and FC St. Pauli have already joined the initiative (INA 2022). In addition, 450 small farmers will be supported in switching to organic farming and 1,000 children and young people from the region will be encouraged through sporting activities. Showcasing the increased relevance of such topics among the associations, a delegation visited the cotton fields in January 2023 and took part in a sports and youth festival to learn more about the initiative. The first fan merchandise made from organically grown cotton from the region was initially planned to be available in fan stores in summer 2023 under the collection name “cotton-in-conversion” (Sport for Development 2023). It remains to be seen when the first products can be realised.

2.2.3 Bayer 04 Leverkusen

B04 is aware of the enormous social significance of football and the responsibility it brings to professional clubs. They themselves want to contribute to positive changes regionally and globally in times of sustainability transformation. Driven by the social influence of football, the aim is to be an attractive employer in terms of social commitment and to use innovation to make new economic challenges more sustainable.

The club defines its goals in three areas: Environment, Society and Club Governance. Within these areas, B04 is already very active, particularly at the social and community level, leaving space for more environmental engagement. They add value to society through numerous projects and initiatives. To name a few examples: On the "Bayer 04 Hilft-Tag" (Bayer 04 helps day) the club joins forces together with coaches and players as well as the city of Leverkusen to enhance a public institution in the city in many ways. This action was initiated in 2015 and has been held annually since then. Furthermore, since 2010, mentally impaired young people have been given the opportunity to pursue their favourite hobby, football, at what are now more than 20 locations throughout Germany. They are accompanied by a team of coaches from the club and the program is specially adapted to young people. In addition to these valuable initiatives and many fundraising activities, the club offers many other opportunities for children, young people, and even older or sick fans at levels of education, closeness to the team and community events.

For several years, the club has been optimizing the resources needed to become more energy efficient and sustainable. Over the last 6 years, the relative reduction in total energy consumption has been in excess of 30%. Facilities are constantly being optimized to operate in a more resource efficient manner. These include water, electricity, gas, and district heating. In addition, the association reinforces the topics of mobility, nutrition, waste, and the CO2 footprint. The latter is one of the most current targets for more sustainable action. The club

website explicitly mentions the pursuit of goals in the areas of fan mobility, catering and merchandising (Bayer 04 Leverkusen Fußball GmbH 2023c).

Accordingly, the current status of the merchandising department is difficult to assess by the public. There already have been some measures in the past, e.g. changing the annual jersey release to two years, which however have been abolished again due to leaking profitability. This example illustrates the conflict between sustainable measures and achieving economic goals. Nevertheless, the latter activities and the association with external consultants show the willpower to make fan merchandise more sustainable.

For 2022, B04 reported to the DFL on sustainability measures in merchandising products. According to the report, items with an environmental label account for 26.1% of total merchandising sales, while items with a fair production label have a share of 20.2%. In terms of production, 13.8% of merchandising items are manufactured in Europe (EU and Schengen area). This year, the outfitter was changed from Jako to Castore at the start of the 2022/23 season. The sustainability measures have tended to take a step backwards with the change of supplier, which resulted from discussions with B04. The club would therefore like to make items produced in-house more sustainable and is working on an eco-label that meets the wishes and requirements of the fans, which shapes the scope of this collaborative study (Bayer 04 Leverkusen Fußball GmbH 2023d).

For the current year (1.1.2023 - 05.12.2023), there are no published figures for sustainability in the merchandising area, but the share of sales accounted for by Castore items compared to items produced in-house can be put at 85.88%. In addition, jerseys continue to make up the largest share of the textile range at 67.42% (Bayer 04 Leverkusen Fußball GmbH 2023d). The high proportion of jerseys may be due to the current sporting success, as Bayer 04 Leverkusen is currently leading the First Bundesliga table (first half of the 2023 season), but just 14.12% of

current sales are made up of items produced in-house that are eligible for a self-developed eco-label. Direct changes seem to be difficult to implement due to contract barriers. The current outfitter Castore has a contract with the club until 30th June, 2027 (Bayer 04 Leverkusen Fußball GmbH 2022). Subsequently, changes are most likely latest to be created with a new contract. Therefore, potentials for fan articles of own production are sought first. These are to be implemented in the near future. The research is designed to help B04 identify opportunities and prioritise changes that can be implemented internally, without the need for external decision-makers, and therefore focuses on products directly sourced by the club. The aim is to win new fans through a sustainable approach and to continue to inspire existing fans with B04 merchandise.

2.3 Relevance of Sustainability

Numerous influences, such as environmental, economic, governmental, and corporate, serve as drivers to motivate the transition towards sustainability. This shift requires a comprehensive and well-considered approach to ensure that the long-term benefits of sustainability are realised.

The current state of global climate affairs has encouraged an increase in corporate sustainability initiatives. Consumers' demands for greater environmental protection has urged companies to reduce their carbon footprint and comply with emission standards. A governmental intervention involves the adoption of regulations designed to save the environment and promote social accountability. Furthermore, sustainability initiatives may ultimately provide a commercial benefit by allowing organizations to stay competitive and capitalize upon cost savings in the long term. Therefore, by keeping up with emerging trends and adapting their methods to become more ecologically efficient, organizations are positioned to obtain long-term economic benefits. However, to obtain this advantage, a long and strict compliance with the restructuring process is required (Wijethilake and Upadhaya 2020).

To remain competitive and meet environmental sustainability objectives, businesses must prioritize the reduction of their carbon emissions and energy consumption. This includes investing in renewable energy sources, applying energy efficient technologies, and promoting a circular economy to reduce potential waste. Additionally, organizations should strive to ensure their supply chains are sustainable and prioritize utilizing sustainable production processes and sourcing materials and products from environmentally minded sources. Lastly, the engagement of stakeholders in the dialogue and decision-making processes related to sustainability initiatives can effectively help to meet their expectations and requirements. It is crucial to hold conversations with stakeholders at every step of the process to guarantee that sustainability objectives adequately reflect the needs of all involved parties (Yadav, et al. 2018).

By pursuing sustainability goals, organizations may gain numerous advantages. Consumers are increasingly becoming aware of the social and environmental implications in their consumer behaviour. Especially, as the purchasing power of Gen-Z, who are highly interested in sustainability, increases as time goes on (UNiDAYS 2022). Companies that promote sustainability have the potential to grow trust and loyalty amongst their customers. Additionally, this may also lead to a more favourable image, as customers are significantly motivated to associate with companies that are actively investing in sustainability, which most likely positively influences the sales and customer satisfaction (Niţă and Ştefea 2014).

Insight into the business operations of a company can demonstrably change the perception and individual assessment of the company. If the perception is positive, this can also have a positive impact on consumer behaviour. It can also be applied to aspects of sustainability. Businesses that are transparent and actively engaged in mitigating their environmental footprint are likely to gain the approval and endorsement of their customers (Buell, Shwetha and Yanchong 2019).

However, the switch to a more sustainable production of merchandise also brings several challenges. On the one hand, materials that are often used due to their low prices need to be replaced by more environmentally friendly alternatives, which can be associated with higher costs. On the other hand, improving working conditions and implementing new supply chains also requires investment in the form of training, acquiring new machines, adapt processes and introducing standards and control mechanisms. However, these initial investment costs can be amortized in the long term through various efficiency measures. By avoiding waste, reducing delivery routes or schedules, and cooperating with local trading partners, a return on investment can be achieved. In addition, a more efficient and transparent supply chain can minimize risks such as supply disruptions or loss of reputation, which can further increase customer satisfaction and retain customers in the long term (Nayak, et al. 2019).

Overall, switching to a more sustainable production of merchandise is therefore not only necessary from an ecological perspective, but also offers economic benefits for the company. It contributes to a long-term stable and sustainable business strategy that meets both the needs of consumers and the requirements of responsible corporate governance. It is therefore important that companies are aware of the implied costs and make the necessary investments to pursue a holistic and long-term approach to sustainable merchandise production (Nayak, et al. 2019).

Many of these sustainability trends are included by companies in sustainability labels for product identification. The company is free to decide whether to be certified by an organization and apply this label, or to design its own label that is tailored to customer requirements. B04 is currently planning the latter, indicating a need for research on customer requirements in the context of a club-internal sustainability label. In the following the fundamentals of an eco-label are explained in more detail.

2.4 Sustainability Labels

As global sustainability is becoming increasingly important in the sports merchandise industry, sustainability labels have become more and more relevant. Sustainability labels indicate how eco-friendly a product is produced and how it impacts the environment (UBQ 2021). Yet, the question is not only how to ensure that your merchandise products are sustainably produced but also how to communicate this to the fans.

One possible method is to communicate it with banners through the online and offline fan shops. The VfB, for example, practices this method (appendix 1). A green banner with the word "sustainability" is displayed in the left corner of the club for the promotion of sustainable produce products, while also mentioning it in the product description (VfB Stuttgart 2023).

Several other Bundesliga clubs display eco-labels next to their products in their online stores as well. In the textile industry, there are currently 104 different textile labels. Three of the most used labels in the sport industry are Bluesign, OEKO-TEX, and GOTS (fairlyfab 2021). Table 1 shows an overview of exemplary labels and their attribute and merchandise partners.

Eco Label	**Attributes**	**Merchandise**
Bluesign	Social responsibility, CO2/ water emission, chemicals, resource efficiency, supply chain,	Puma, Adidas, Nike
OEKO-TEX	Prohibited substances, chemicals, labour conditions	Puma, Hummel, JAKO
GOTS	Organic fibres, Social Standards (working conditions), Environmental (chemicals, water waste, colouring)	-
Grüner Knopf	Environmental (chemicals, water waste, colouring, CO2,), Social Standards (working conditions, discrimination, minimal wage)	-
IVN Best	Chemicals, organic fibres, Social Standards (working conditions), colouring	-

Table 1: Overview Eco-Labels. Own creation

The IVN Best label is the most stringent label currently available on the market by regulating not only the production process, but also the raw materials that are permitted to be used.

In accordance with the Global Organic Textile Standard (GOTS), at least 70 percent of the fabric must be made from natural fibres of controlled organic origin. Next to meeting the social standards of the International Labour Organization (ILO), the entire textile value chain is regulated from the point of cultivation to the point of sale as part of GOTS (Greenpeace 2018).

Bluesign is used by the majority of companies in the sport industry, including Nike and Adidas. Among the partner companies are not only retailers and sports companies, but also suppliers. The labels' objective is to eliminate all harmful substances from the manufacturing and supply chain and make the products 100% sustainable by controlling the input factors (Bluesigntechnologies, Bluesign Home 2023). As a prerequisite for receiving the Bluesign label, the company must meet certain requirements (Bluesign criteria), namely: Chemical Consumption, Carbon Emission, Water Consumption, Energy Consumption, Worker Health & Safety.

The OEKO-TEX label was created by several independent textile and leather testing institutes in Europe and Japan. As a result of their collaboration, several test methods have been developed for the evaluation of sustainable products and the determination of limits for several values, such as harmful substances. There are currently seven different OEKO-TEX labels available on the market. For example, the OEKO-TEX® STANDARD 100 and OEKO-TEX® LEATHER STANDARD labels guarantee that products are free from harmful substances. The OEKO-TEX® ORGANIC COTTON labelled products have been tested from the time of cultivation to the time of manufacture for the presence of genetically modified organisms, pesticides, and harmful substances (OEKO-TEX Service GmbH 2023).

Having a "Grüner Knopf" label indicates that a company fulfils its corporate responsibility via a sustainable supply chain. Furthermore, sustainability must extend not only to the supply chain, but also to the products themselves. There are several characteristics of sustainably produced products, including the following: Pesticides and hazardous chemicals are prohibited, hourly limits and fixed employment contracts are in place, anti-discrimination and anti-harassment policies are in place, and occupational safety requirements are in place. This label is an official seal of the German Association for International Cooperation (GIZ) (GIZ 2023). Several Bundesliga Clubs use these eco-labels to proof the sustainability of their products as seen in table 2.

Eco-Label	**Football club**
GOTS	SVW, D98, FCU, VfB, BOC, TSG, M05, KOE, SGE, WOB
Grüner Knopf	D98, FCU, KOE, SCF, SGE, WOB
Fairtrade	FCU, M05, SGE,
OEKO-TEX	KOE, SGE, WOB
Peta	BOC, SGE,
Others:	SGE, D98, TSG,
No labels	FCB, BVB, BMG, RBL, B04, FCA, HDH

Table 2: Bundesliga clubs and their used textile eco label. Own creation

The club TSG 1899 Hoffenheim (TSG) uses a small sustainability label next to their products in their online store to indicate they are "GOTS" (Global Organic Textile Standard) certified (TSG 1899 Hoffenheim Fußball-Spielbetriebs 2023). Among the labels displayed at SGE are the “Grüner Knopf,” the “Cradle to Cradle”, the “GOTS”, and the “Fairtrade” labels. The club has furthermore created a landing page that describes what the club is doing for sustainability and what its sustainability goals are for the next few years (Eintracht Frankfurt Fußball 2023).

Some rankings mention WOB as a pioneer and the greenest club in the Bundesliga (Leagues 2022). As one of the first football clubs to create its own sustainable label, the club is a pioneer in this area. WOB describes its label "Grüne Fährte" as follows: "Grüne Fährte stands for the

trail we want to leave behind as WOB, with the aim of gradually reducing our ecological footprint, starting with the use of sustainable materials, through compliance with ecological and social standards, to resource-saving packaging." (VfL Wolfsburg-Fußball, Nachhaltige Siegel im Wölfeshop 2023).

Furthermore, the 1. FC Köln (KOE) has developed its sustainability label "der Grüne Hennes", which is named after its mascot. In creating the label, four sustainability goals from the UN were considered (United Nations 2023): Goal 1: No poverty, Goal 3: Promoting health and well-being for people of all ages, Goal 4: Quality education, Goal 13: Climate action. Aside from this, the German football club has a partnership with other already existing textile labels, like the "GOTS" or the "Grüner Knopf" (1. FC Köln 2023).

There is, however, little information available about the underlying purpose of the certificate. To make an informed purchase decision, fans often need to dig deep to find all the information they need. There are several football clubs, such as WOB, SGE, and KOE, that have their own sustainability label. Throughout the fan shops and on their websites, they inform their fans about the labels and how they promote sustainability. Other clubs, such as Borussia Monchengladbach, lack information regarding sustainability and the merchandise they sell. Furthermore, interestingly there are mostly sustainable merchandise products like fan t-shirts or hoodies but little sustainable jerseys.

3. Literature Analysis

3.1 Sustainability Labels

The purpose of sustainability labels is to inform consumers about the sustainability of the supply chain and the product as already mentioned in Chapter 2.3. Labels have specified criteria that must be met by a minimum value and therefore ensure that the labelled products satisfy those criteria. Typically, sustainability labels emphasize characteristics such as those associated with responsible sourcing of raw materials, carbon footprints, composability, recyclability, etc. (UBQ™ 2021). The use of these labels is voluntary and is not regulated by the government. By using such labels, companies can raise awareness about their sustainability measures and differentiate themselves from their competitors (fairlyfab 2021). Labelling is a means to encourage consumers to purchase products that meet high social and environmental standards – "green products" (Morris, Koep and Damert 2021). Hence, through the provision of information about the sustainability of the production process, companies hope to, for example, increase demand for their products.

There are three key problems in the production process of textiles: "Human ecology, production ecology and waste disposal". Ecological problems are associated with the production process (dyeing, printing, and washing), societal problems are related to the countries in which production is conducted, and waste disposal refers to the frequency of change in the industry – "fast fashion industry" (Koszewska 2011).

Labels can be classified into ecological, social and sustainability labels. It is the ISO-Norm 14024 that governs the labels to determine which labels may refer to themselves as eco-friendly, socially responsible, etc. (fairlyfab 2021). There are three types of ISO Eco-labelling (Type 1, 2 and 3) and three additional types of eco labels. The first type of labelling is industry labelling, which is specific to a particular industry. Secondly, there is corporate labelling, which is used

by organizations that manufacture or sell goods. Furthermore, packaging labelling informs the customer about the product's packaging (Koszewska 2011). However, eco-labels can be differentiated in a variety of ways. There is also the possibility of making a distinction between first party and third party labels. Generally, a first party label indicates the environmental impact of a product without having been verified by an independent source. The purpose of this is to demonstrate the environment friendliness of the products or production methods of a company, its overall environmental friendliness, or its sustainable philosophy and values to the customer. Considering that the labelling is an individual initiative by the company, the focus is usually on the positive aspects of the product or behaviour from the company in terms of sustainability. To enhance the credibility of the label, companies may align it with industry standards or appropriate business and social behaviour. There are also occasions when companies provide their customers with negative information on their production process / products with their labels, often if the information becomes public anyway. In contrast, third-party labelling refers to a label that makes claims about the environmental impact of a product on behalf of a third party. The decision on this claim is based on certain standards and criteria. It is possible for the label to be voluntary or mandatory (Jones and Lansdell 2001). As mentioned in Chapter 2.3, there are currently 104 eco-labels available in the textile industry (Ecolabel 2023). Each of these numerous eco-labels has its own set of requirements, although they can change over time, which in total can be confusing or overwhelming for consumers. Therefore, it is essential to communicate effectively for customers to understand what the label represents and what sustainable requirements are met (Greenpeace 2018). According to several studies, problems like unreliable and untrustworthy eco-labelling are often caused by poor eco-labelling design, a lack of clarity, and insufficient formation (Raziuddin Taufique, et al. 2019).

An organization can benefit from labelling its products if there is a competitive business advantage over other companies. An effective label can enhance the reputation of a company

or its brand as well as increase the number of sales and customers' willingness to pay (*WTP*) (Morris, Koep and Damert 2021). To ensure the success of these labels, it is essential to conduct auditing. In addition to being an important step for the credibility of the label, ensuring that the audit is accurate and not biased is very difficult. However, transparency and the transfer of information are some of the most important aspects of business today (Koszewska 2011). A consumer may also conclude that a missing label indicates that the aspect may not be applicable to the product, due to the large number of claims and labels available on the market. As an example, a missing organic claim on food products indicates that the food is not organic.

How much impact a label has on the purchase decision of a customer is different for each customer and depends furthermore on three important things: the size, format, and placement of the label; and the information provided by other sources like a webpage etc. (Jones and Lansdell 2001). There are several challenges associated with labelling. To obtain the label, the entire value chain must meet the requirements and strictly adhere to the sustainable production methods. Changing from a conventional approach to a sustainable one requires that all parts of the value chain align and shift their perspectives (Morris, Koep and Damert 2021). In addition, third-party labels are often expensive, resulting in an increase in the price of the product most of the time. It is possible that the price difference between a labelled product and a non-labelled product is too large for the customer to use the given information to make an informed purchase (Jones and Lansdell 2001).

Nevertheless, it is also important that the customer recognizes the good quality and the sustainable production methods that have been used (Morris, Koep and Damert 2021). To develop a label on its own, it is essential to put the customer's informational benefit as well as transparency throughout the entire value chain first. When assessing eco-labelling, companies should consider several aspects including consumer knowledge, consumer awareness and

involvement, credibility of environmental quality, consumer trust, design and visibility of the label, persuasiveness, information clarity, and private benefits. Consumer knowledge refers to the consumer's familiarity with various eco-labels, considering terms and labelling schemes. These familiarities are essential to forming subjective knowledge and therefore what is believed to be known by the customer. Meanwhile, consumer awareness and involvement refer to the extent to which the customer is aware of the eco-label and the extent to which the customer is involved in gathering information about the label. A greater level of involvement is accompanied by a greater level of awareness and a higher likelihood to buy eco-labelled products (Raziuddin Taufique, et al. 2019). Consumers' trust in the credibility of a labels environmental quality depends on the believability of the intention of the company as well as the communication of the information. Environmental labelling information must relate to the product's environmental characteristics and must indicate the product's environmental superiority over non-eco-labelled products. Customers are greatly influenced by the design and visibility of the label. Environmental images are important for triggering emotional associations, such as a label depicting a pine tree making the customer feel that the product is environmentally friendly. Eco-label information is one of the most important components of the eco-label and must be persuasive. In this regard, it is crucial to ensure that the claims and label information are clear. As an example, the label should explain what the term "made from recycled material" means, potentially resulting in indicating the shares of old and new plastic within a product. As a future goal, it should also be possible to define these terms similarly for the consumer (Raziuddin Taufique, et al. 2019).

As a final point, consumers must always find a benefit in purchasing products with a sustainable label. This can be applied to several reasons, such as increasing their wellbeing or gaining recognition from others. In the presence of such a personal additional benefit, a higher *WTP* may result (Raziuddin Taufique, et al. 2019).

3.2 Intention to purchase

As already described, an increasing number of consumers are concerned about their consumption and its impact on the environment. As a result, they are seeking more information on products and their production processes and have higher *Intentions to purchase* (*ITP*) eco-friendly or green products (Vazifehdousta, et al. 2013). The selection and purchase of products (or services) that minimize negative environmental impacts over their life cycle is referred to as "green purchasing" and is adding price and performance criteria when making purchasing decisions with the goal of reducing environmental impacts (Vazifehdousta, et al. 2013).

According to the theory of reasoned action (TRA), behavioural intention is shaped by two factors: the attitude towards performing the behaviour and the subjective norm (Lee, et al. 2010), i.e., the perception of social pressure to adopt a specific behaviour. Attitudes are a set of beliefs about a specific object or action, which can be translated into the intention to perform the action. Intention, in turn, is the determination to act in a certain way (Ramayah, Lee and Osman 2010). Attitudes impact the intentions held and the more favourable the attitude, the bigger the intention to perform the behaviour will be. Moreover, as attitudes are predictors of purchase intentions, they eventually influence purchase behaviour. In general, empirical studies have shown a significant positive relationship between environmental intention and environmental behaviour (Chan 2001; Vazifehdousta, et al. 2013). Consequently, the greater the positive attitudes, the more likely the purchase intention and thus the more likely the consumer is to buy environmentally friendly products instead of conventional products.

Regarding football fans, other important factors need to be considered. The consumer behaviour of sport fans is highly emotionally driven and can be influenced by various motives, which reflects why people seek sport consumption experiences and engage with their favourite team or club. These motives include the desire to connect and maintain relationships with others

through sport, to recognise excellence in sport, the desire to feel pride and belonging, and the longing for a break from the daily routine through enjoyable sporting activities (Funk, Beaton and Alexandris 2012). The main motives driving the purchase of team-licensed merchandise include loyalty and identification with the team, celebration of team success, and belonging to a community of other team supporters (Apostolopoulou, et al. 2013; Kwon and Kwak 2014). Depending on their personal history, fans associate symbolic meanings to their team's merchandise, which emphasize aspects such as fan identity, team support, social connection, personal values and self-expression. Wearing team apparel is considered to be a public demonstration of loyalty and love for the team and allows fans to identify themselves as supporters (Apostolopoulou, et al. 2013). The higher the levels of loyalty and team identification among the fans, the more likely they are to buy and regularly wear team-licensed merchandise because team identification provides emotional rewards, such as pride and excitement. Furthermore, team identification has a direct positive effect on the perceived quality and value of the licensed product, especially for hedonistic products like jerseys, shirts or scarfs, and can influence the *ITP*. Also, team performance can mitigate the influence of team identification on product evaluation. When a team is successful, fans place more value on team-licensed merchandise, while value may decrease when the team is not performing well (Kwon and Kwak 2014).

But how do sustainability measures influence the purchasing behaviour of fans and what motivates them to buy sustainable products? Walker and Kent (2009) state that CSR activities can improve brand image, enhance corporate reputation, increase sales, and strengthen customer loyalty (Walker and Kent 2009). Specifically in the sports industry, CSR can create 'secondary value' for organisations by creating an emotional connection with consumers. CSR activities can influence buying behaviour and be a significant predictor of word of mouth. Fans with high identification tend more to buy team-related products, attend games, and speak

favourably about the club they support. If they feel that their club also has a good reputation through CSR activities, these behaviours are reinforced. Also, Blumrodt, Bryson and Flanagan (2012) found that CSR engagement positively influences customer-based brand equity for football clubs (Blumrodt, Bryson and Flanagan 2012). The study indicates that CSR activities enhance customers' perceptions of the brand, leading to increased brand loyalty and positive word-of-mouth. Furthermore, it highlights the importance of communicating CSR initiatives to customers. Football clubs that communicate their mission, business objectives and CSR commitment on their website are more likely to improve their brand image and customer-related brand equity, which in turn influences customer purchase intentions. Moreover, it helps addressing consumers' concerns about greenwashing, which has negative impact on attitudes towards sustainable products and purchase intentions. Consumers' scepticism about the credibility of sustainability claims made by companies may discourage their *ITP*. Therefore, companies need to increase transparency and provide reliable information about their sustainable practices to reduce consumer doubts and increase the intention to buy sustainable products (Rausch and Kopplin 2021; Sharma, Aswal and Paul 2023).

3.3 Willingness to pay

The continuous growth of demand for more sustainable products is opposed by different potential barriers on the supply side, such as uncertain price premiums or longer lead times. Therefore, strategies are needed to help football clubs cope with risks, solve strategic challenges, and capture price premiums. For this purpose, it is essential to collect valid information on purchasing behaviour, or more precisely on the *Willingness to pay* (*WTP*), to assess the feasibility of more sustainability and its financial consequences. In theory, *WTP* is a basic economic concept defined as the amount a person is willing to sacrifice in exchange for a particular good or service (Hanemann 1991). However, measuring *WTP* is challenging for many reasons, such as the complexity of human preferences, information constraints,

behavioural biases, or potential strategic behaviour in surveys. These challenges require sophisticated survey methods, statistical procedures, and experimental designs to improve the accuracy and reliability of *WTP* measurements. Despite ongoing efforts, *WTP* measurement is a multi-faceted task due to the complexity of human decision making and judgement.

Consumer characteristics such as environmental concern and eco-literacy play an important role in customers' *WTP* for environmentally friendly products. Environmental concern refers to a consumer's general attitude towards protecting the environment and has been shown to be a powerful predictor of environmentally friendly intention and behaviour, including the purchase of environmentally friendly products. Eco-literacy, or environmental competence, on the other hand, refers to the extent to which consumers understand environmental issues and environmentally friendly products. These consumer characteristics are important predictors of different cognitive and behavioural responses to green products. Consumers with a higher level of environmental awareness and knowledge are more likely to adopt environmentally friendly behaviour and are more willing to pay a premium for green products (Schmuck, Matthes and Naderer 2018; Diekmann and Preisendörfer 2003).

Furthermore, research has shown that consumer participation influences consumers' *WTP* as well (Wei, Ang and Jancenelle 2018; Franke, Schreier and Kaiser 2010). Consumer participation refers to the extent to which consumers are involved in the design, production and delivery of goods and services by contributing effort, knowledge, information, and other resources (Dong and Sivakumar 2017). When consumers are given the opportunity to participate in the production and delivery process, it can enhance their perceived consumer effectiveness and increase their *WTP* for green products (Wei, Ang and Jancenelle 2018). In this context, fan engagement plays a crucial role too. Fan engagement is a specific form of customer engagement in the sport context and refers to strategies and activities that sport

organizations use to connect with their fans on a deeper level (Biscaia, Johan Cruyff Institute 2021). Thereby, they are fostering a sense of belonging, loyalty, and emotional attachment. This is especially important for football clubs as they heavily depend on the involvement of their fans, economically and emotionally, as fan engagement encompasses various transactional and non-transactional interactions and experiences that go beyond the actual sporting events. Especially through the increasing usage of social media, fan engagement has extremely grown in importance. It increases brand loyalty, fosters revenue generation and marketing opportunities, and enhances the emotional connection of the fans and thus the fan experience (Yoshida, et al. 2014; Biscaia, Johan Cruyff Institute 2021). With regards to merchandising this could be translated into an increased *ITP* and higher *WTP*.

In a study that analysed Slovenian consumers and their purchasing habits in relation to eco-labels, only 13% stated that they pay attention to the environmental impact of production when buying clothing. Interestingly, only 29% were not willing to pay more for eco-labelled products than for non-labelled alternatives. Of those who were willing to pay more, the majority (47%) were happy with a premium of up to 10%, while 19% were open to a premium of 10-20%. Health considerations emerged as the main motive for a higher *WTP* (43%), followed by environmental concerns (38%) and perceived better product attributes (19%). Another study revealed different results regarding the willingness to pay a premium for clothing with a certified eco-label: Only 45% had a clear motive for such a willingness, 36% expressed reluctance and 19% remained neutral. Remarkably, this study also found a higher *WTP* among female participants (Rutten 2022).

Another study conducted by Ha-Brookshire and Norum (2011) explored the elements that influence consumers' *WTP* for sustainable cotton apparel and found that more than half of the respondents were willing to pay more for such shirts (Ha-Brookshire and Norum 2011). The

survey was conducted by telephone among 500 nationally representative respondents. On average, consumers said they would be willing to pay $5.54 more for shirts made from sustainable cotton. Several factors influencing consumers' *WTP* extra for socially responsible cotton clothing were identified, including attitude towards the environment, age, gender and product evaluation criteria such as brand name, washing requirements, colour and fit. In particular, a strong attitude towards environmental protection and socially responsible consumption was correlated with a greater likelihood of paying a premium for these apparel alternatives. In addition, the study identified age and gender as significant demographic factors influencing consumers' *WTP* a premium for organic clothing. For instance, younger participants as well as female respondents had a higher *WTP* for the sustainable cotton shirts.

Concludingly, consumers *ITP* and *WTP* regarding sustainable products are influenced by various factors. The most important ones are their attitude towards sustainability or sustainable products, demographics like age and gender, a company's CSR activities or communication measurements and the usage of sustainability labels. Particularly for football fans, their emotional connection with their favourite club has a strong impact on *ITP* and *WTP* for merchandise in general. Also, fan participation and fan engagement can positively influence fans' *ITP* and *WTP*. However, for the specific context of this research study the literature is lacking in sufficient information and shows great research gaps. There were no particular studies found on the purchasing behaviour of football fans regarding sustainable merchandise or the consumer behaviour for sustainable sports merchandise in general. Also, the influence of sustainability labels in this specific context has not been measured yet.

4. Theoretical framework and hypothesis formulation

A pairing of Likert scale constructs and a combination of a conjoint and Gabor-Granger analysis is used as the theoretical foundation for determining the relevant analysis criteria. The dependent target variables in this research framework are the two constructs *ITP* and *WTP*. In this thesis, *ITP* is defined as the tendency of fans to buy a certain fan article, neglecting the area of sustainability at first. Meanwhile, the construct *WTP* connects to this by examining the extent to which fans are willing to spend more money on a product with such a sustainability label than on an ordinary merchandise item without it. By using these two target variables, precise conclusions can be drawn at the end of the research about the extent to which sustainability labels influence the consumer behaviour of fans and what this influence depends on.

As a first independent variable, participants' emotional connection to their respective favourite club is explored to evaluate fan identity, as previous research indicates that team identification serves as a precursor to decisions related to sport consumption (Bodet and Bernache-Assollant 2011). Therefore, fan identity is a crucial dimension to be measured in the evaluation of fan consumer behaviour. This study focuses on the internal dimension of fan identity by incorporating how the participants view themselves as dedicated supporters of the club. For this purpose, the construct of *Internal Legitimacy (IL)* is utilized, which has already been developed and applied by Biscaia et al. to conceptualise and measure fan identity (Biscaia, Hedlund, et al. 2018).

Fans often show the importance of a sports club to them by wearing the team’s merchandise to express their support and show affiliation (Apostolopoulou, et al. 2013; Fetchko, Roy and Clow 2018). Therefore, this study infers the following hypotheses regarding the two consumer behaviour dimensions *ITP* and *WTP*:

H1: *IL* has a significant positive effect on (a) *ITP* and (b) *WTP*.

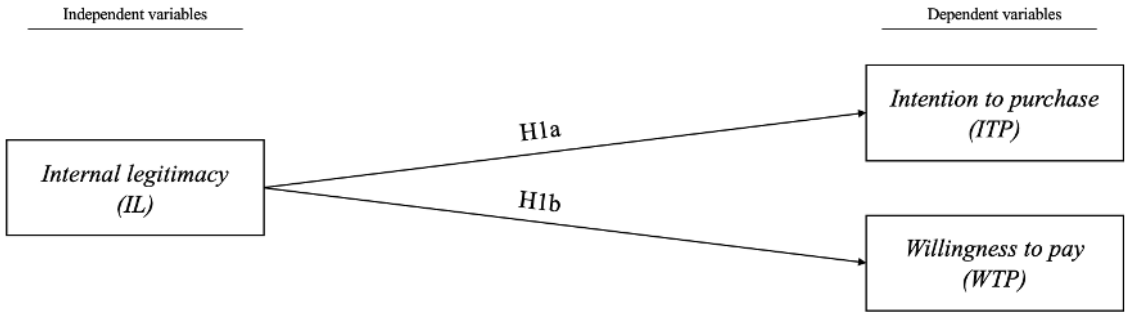

Figure 2: IL has a significant positive effect on (a) ITP and (b) WTP. Own illustration

Furthermore, previous research has shown that pro-environmental attitude towards sustainable clothing, even in the presence of an intention-behaviour gap, is significantly influencing the purchase intention (Chaturvedi, Kulshreshtha and Tripathi 2020; Rausch and Kopplin 2021; Chi, et al. 2014). Meanwhile, other studies suggest that sustainably conscious individuals with eco-friendly consumption patterns have a higher *WTP* for sustainable fashion products than consumers with lower awareness of sustainability (Rausch and Kopplin 2021). Based on these theoretical implications, the following hypotheses regarding the relationship between *SA* and *ITP* and *WTP* respectively are concluded:

H2: *SA* has a significant positive effect on (a) *ITP* and (b) *WTP*.

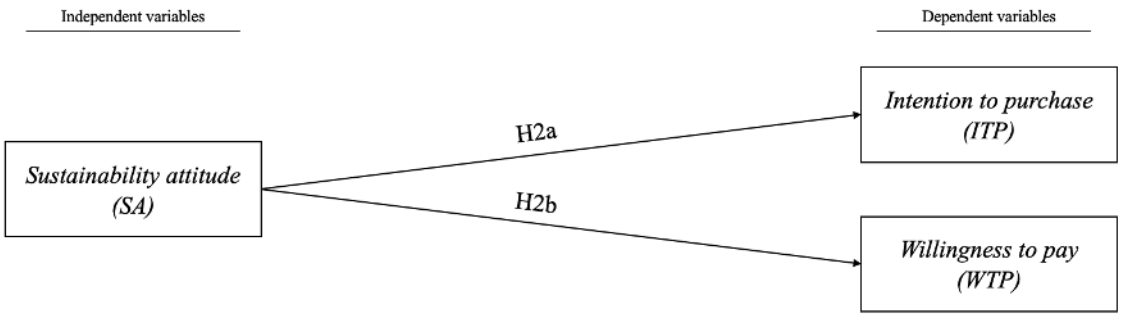

Figure 3: SA has a significant positive effect on (a) ITP and (b) WTP. Own illustration

Additionally, individuals' awareness and concerns about the environment have a proven influence on their requirements for and general acceptance of sustainability labels (Testa, et al. 2015). At the same time, a sustainability label also functions as an information carrier for consumers, which is why such labels become increasingly relevant in purchasing decisions the better a consumer is informed about environmental issues (D'Souza, Taghian and Lamb 2006). Therefore, two additional dependent variables are created, *Sustainability criteria rating (SCR)* and *Perceived labelling relevance (PLR)*, which analyse the requirements and importance of certain attributes of sustainability certificates as well as measure the perceived relevance of such seals, and derive the following hypotheses:

H3: *SA* has a significant positive effect on (a) *SCR* and (b) *PLR*.

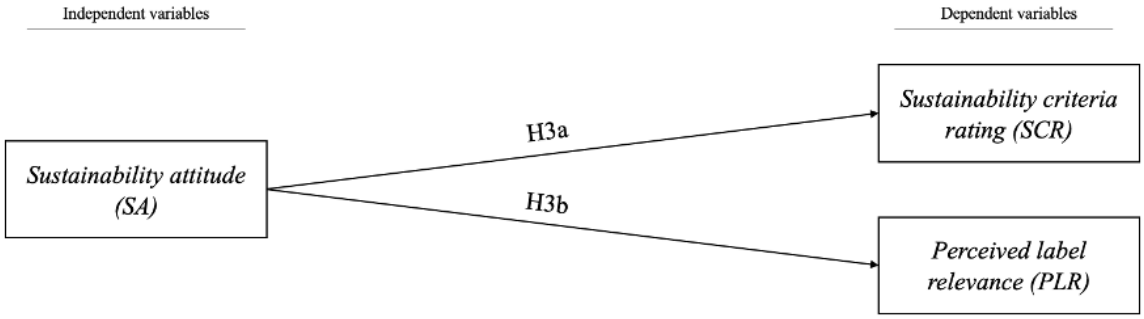

Figure 4: SA has a significant positive effect on (a) SCR and (b) PLR. Own illustration

Furthermore, to provide additional valuable insights into drivers of positive consumer behaviour change, the relationship between the individual *SCR* and the corresponding *ITP* and *WTP* is explored. This enables a more in-depth understanding of which attributes of sustainability labels have a particularly positive influence on the *ITP* and *WTP*:

H4: *SCR* has a significant positive effect on (a) *ITP* and (b) *WTP*.

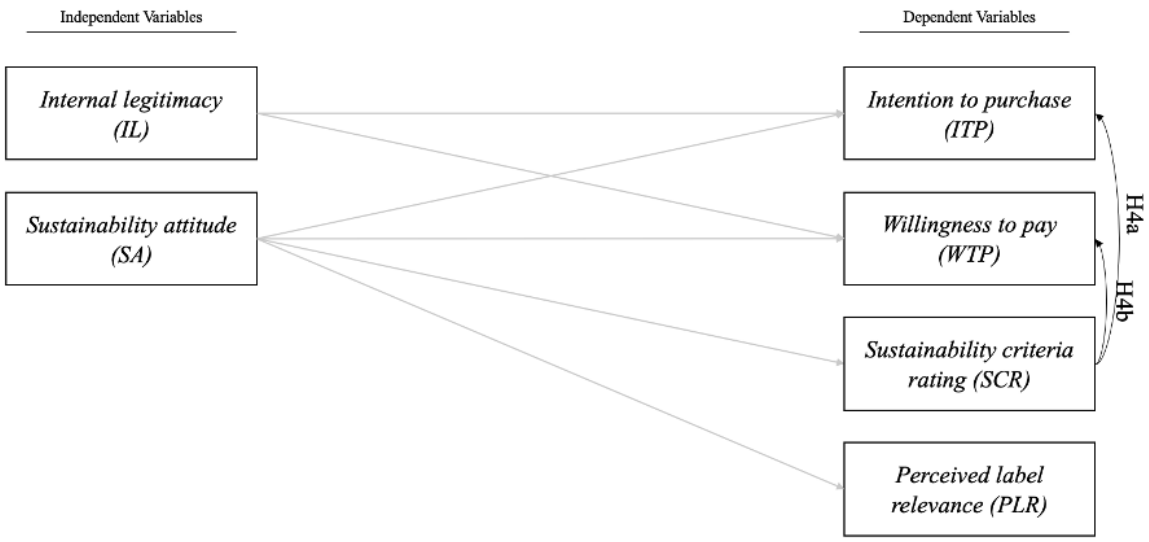

Figure 5: SCR has a significant positive effect on (a) ITP and (b) WTP. Own illustration

Finally, to provide further insights into the antecedents of consumer behaviour, demographic factors are examined for their potentially moderating relationships to the respective individual variables. This, in combination with the hypotheses defined above, leads to the following overall research model:

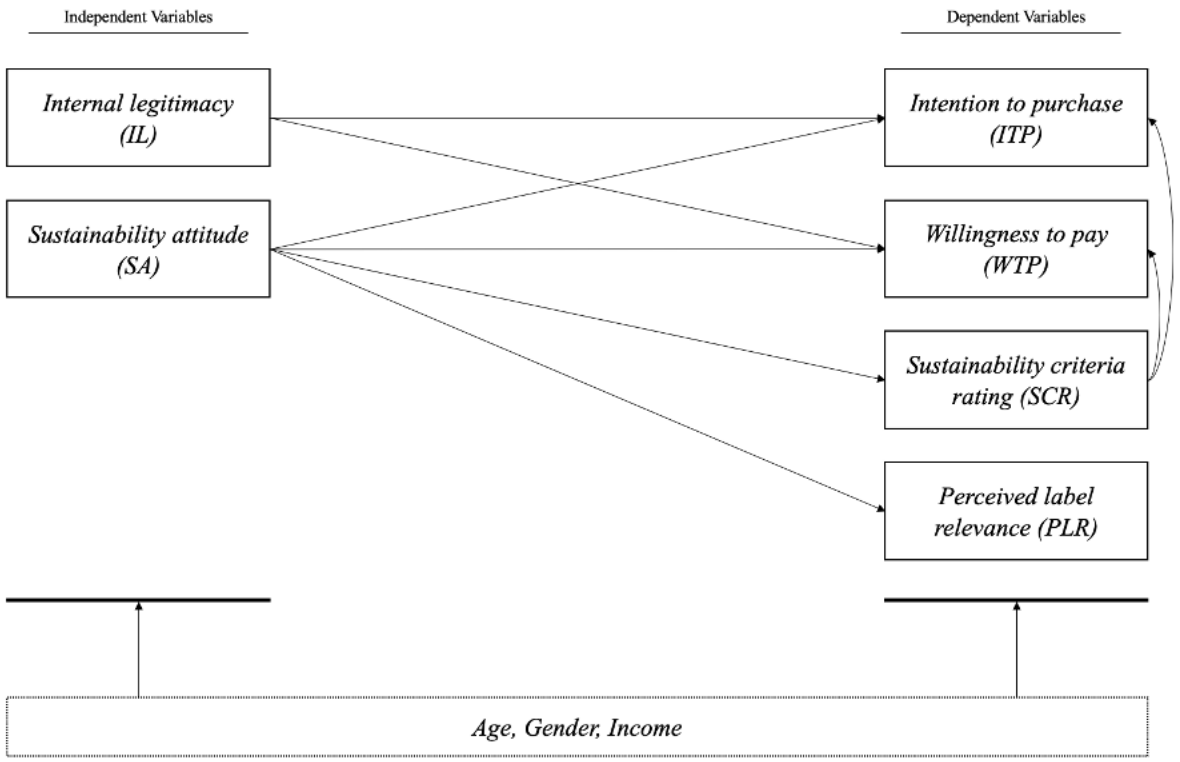

Figure 6: Overall research model. Own illustration

5. Methodology

5.1 Research Design

To test the hypotheses and relationships of this thesis, a quantitative approach is applied. This is based on an empirical survey conducted from October to November 2023, which focuses on the areas of emotional connection to the club, relevance of sustainability in fan merchandise, perception of and demands on sustainability seals, as well as resulting changes in consumer behaviour. For the former, the concept of *IL* by Biscaia et al. and corresponding questions are used to measure emotional fan identity (Biscaia, Hedlund, et al. 2018). Relevance of and attitudes towards sustainability in fan merchandise is measured via interrogating preferences in personal consumption, basic acceptance of additional costs for sustainable products as well as perceptions on football clubs' responsibilities and sufficiency of current actions in the context of sustainability. Regarding sustainability label perceptions, the participants are asked to rank or evaluate different aspects of such certificates in terms of importance and trustworthiness. Finally, the changes in consumer behaviour due to such sustainability labels are explored using a mixed approach of conjoint analysis and the Gabor-Granger method.

To enable a cross-club analysis, the survey was not limited to B04 fans but was expanded to include all 18 clubs in the First Bundesliga in the 2023/24 season. Consequently, at the beginning of the survey, club identification was queried so that the participant could then be asked personalised questions and shown visuals depending on their favourite club. Clubs that exceed the participant threshold of 30 are further analysed individually as consequently normal distribution of the results can be assumed (Scharnbacher and Holland 2013). To be able to determine the distinct preferences of the actual end buyers of football fan merchandise, it was necessary to specifically survey actual football fans. While non-football fans (or fans of clubs not included in the survey) could also participate in the survey to create a control group, the

clear focus on actual fans of football clubs is essential for the detailed evaluation of the research question in the context of football merchandising. These communicate extensively in official and unofficial fan groups on social media, so that the dissemination of the survey was largely implemented on these forums. This is in line with the targeted benefits of online survey research in social media, which include increased reach through enhanced networking and participation effects as well as reduced use of resources such as financial resources or time required for the survey (Kayam and Hirsch 2012; Oeldorf-Hirsch and Sundar 2015).

In addition, the survey was sent to all registered fans of the club via the newsletter and social media channels of our partner club B04 to reach a significant number of participants especially in this focus group. The survey was made available in German and English, but only placed and distributed in German networks of the fan groups on the social platforms.

A total of 1342 clicks on the link to the online survey have been generated, whereas 1042 of these clicks (78%) referred to the general survey including all First Bundesliga clubs, leaving 295 clicks (22%) coming from B04's own channels. Of these 1342 clicks, 636 entries successfully completed the survey. Overall, there is a larger proportion of male participants (492 men [77.4%]; 139 women [21.9%]; 3 diverse [0.5%]), while the average age of the entire sample is 33.6 years. The grouped age structure of the sample is shown in figure 7.

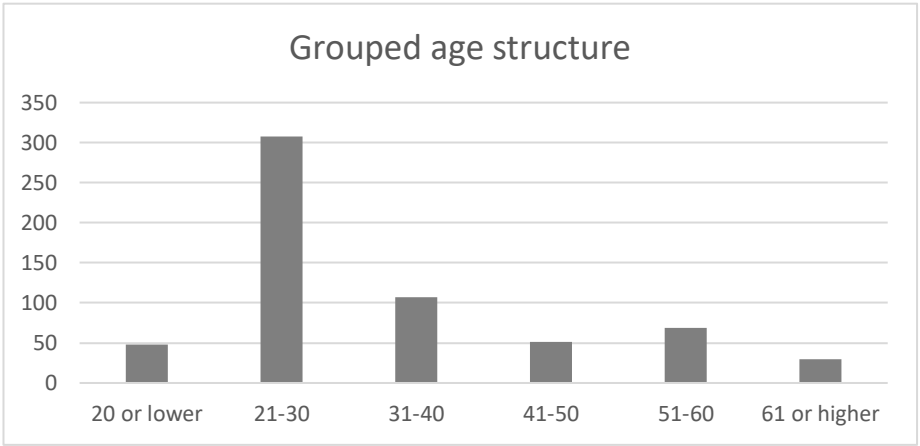

Figure 7: Grouped age structure. Own illustration. Adapted from survey data

B04 represents the club that most participants identify as a fan of (24.2%), followed by FCB (9.7%) and BVB and SGE (9.1% respectively). In total, nine clubs reached the threshold of 30 participants, so that statistical normal distribution can be assumed for their results (Scharnbacher and Holland 2013). 57 participants (9.0%) stated that they were a fan of a club not covered in this study, whereas 18 respondents (2.8%) are not a football fan at all. The full distribution of club identification is illustrated in figure 8.

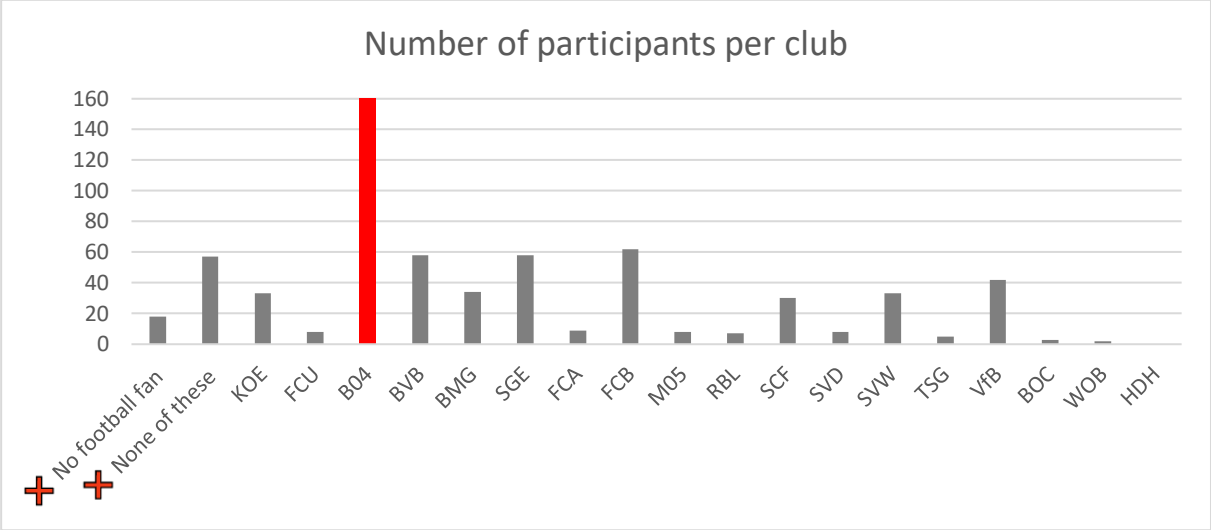

Figure 8: Number of participants per club. Own illustration. Adapted from survey data

The empirical approach and analysis of the model includes Spearman's correlation (r_s) and ordinal regression analysis (regression parameter = b). The statistical application SPSS was used to apply these statistical methods.

5.2 Methodical approach

The structure and content of the survey is based on relevant, context-specific literature. Apart from the quantitative questions and rankings, the scale constructs are defined by seven-point Likert scales. The anchors of the Likert scales are always either "Disagree at all" (empirical value: one) and "Totally agree" (empirical value: seven) as well as once "Not important at all" (empirical value: one) and "Very important" (empirical value: seven). Based on this approach,

these items are considered ordinally and hence, an ordinal regression will be applied for statistical analyses.

After an introductory survey on the participants' club identification on the basis of 20 options (current eighteen First Bundesliga clubs plus the two special cases of non-football fans and club not listed), the two antecedent constructs are investigated. *IL* and its survey items are all based on the study by Biscaia et al. (2018) and are accordingly explored using a seven-point Likert scale, while *SA* was constructed and intensively tested by us.

The construct *SCR* requires a variation of more complex questions to enable a comparative assessment of the individual dimensions and characteristics of sustainability labels. Consequently, eight attributes of fan articles are evaluated regarding their relevance for the sustainability of the product on a scale of zero to ten with ten showcasing the highest relevance, before subsequently the importance of sustainability seals for the individual consumption of fan articles is asked using a seven-point Likert scale. Finally, eight different attributes of sustainability labels need to be ranked based on their relevance to the trustworthiness of a label (most relevant to most irrelevant), enabling a deeper analysis on which of these attributes are valued comparably more important than the others.

After assessing *ITP* via the Gabor Granger-related query on the general intention to buy a presented fan t-shirt, the participant is confronted with a comparison of the item with and without the sustainability label at the same price. In this setting, the assumption holds that the sustainability seal verifies all of the participant's requirements for a sustainable fan article. The participant must finally decide on one of the two options presented visually. The images of the products differed only in the addition of the sustainability seal (appendix 2). As long as the decision is made in favour of the article with the sustainability label, a further comparison of the two articles is shown afterwards, whereby the price of the sustainable article increases by

€2 at each step while the price of the ordinary article remains constant. This procedure starts at the price point of €19.99 and goes on until a comparison of €27.99 for the sustainable product versus the common article still being at €19.99. Consequently, the maximum potential number of purchase decisions is five, which would occur if the participant always chose the sustainable option. By using such a mixed method of conjoint and Gabor Granger method, an assessment of an approximate *WTP* for a fan article with sustainability label in comparison to an ordinary product as well as an analysis of this in relation to antecedent variables can be conducted. The full questionnaire can be examined in appendix 2.

For the elements of the constructs to be considered representative, both the reliability and validity of the survey and the constructs created must be evaluated. All constructs were tested for reliability and validity prior to the survey using a test sample and in the final results. Since all values for Cronbach's alpha are above 0.7, all constructs achieve sufficient internal reliability (Cronbach 1951). This is further confirmed by the composite reliability values calculated via Confirmatory Factor Analysis, which both exceed the threshold of 0.6 for *IL* and *SA*, showcasing strong internal consistency within the constructs (Shrestha 2021). In addition, the average extracted variance of the constructs exceeds the threshold value of 0.5 respectively so that the convergence validity of the constructs can be assumed. Furthermore, the square root of the average extracted variance of each construct is greater than any of their correlations with each other. Consequently, the Fornell-Larcker criterion is fulfilled and sufficient discriminant validity of the constructs of this model can be assumed (Fornell and Larcker 1981).

Construct	**Cronbach's Alpha**	**Composite reliability**	**Average Variance Extracted**
IL	0.900	0.930067	0.769039
SA	0.869	0.911058	0.720154

Table 3: Statistical reliability and validity values. Own creation

6. Findings

6.1 Influence of *SA* on (a) SCR and (b) *PLR*

Next to analysing the Spearman correlations, an ordinal regression was carried out to analyse the relationship between *SA* and the *SCR* as well as the perceived relevance of sustainability certifications in football merchandising. Due to the consideration of eight different attributes, these connections are only examined in the entire sample and in the sample of B04 fans. The correlation and ordinal regression results of the two samples are listed in tables 11 to 12.

In the total sample, all Spearman correlations between the variable *SA* and the eight *SCR* are significant at a 0.001 significance level and strongly positive (see table 11). Therefore, H3a cannot be rejected, indicating that the construct *SA* significantly and positively influences the relevance evaluation of sustainability criteria regarding the sustainability of products. This is additionally supported by the findings of the ordinal regression, which significantly claims increased Odds ratios for higher attribute ratings in the case of a unit increase in *SA* for each of the examined attributes, with multipliers reaching from 1.332 to 2.300 (see table 12).

However, it is further important to take a closer look at the general sample data, especially the rating means, to be able to identify those attributes that are perceived as the most important sustainability drivers of products. In this context, all sample means are significant at a 0.01 significance level in both the total and the B04 sample and can therefore be considered representative as a population mean (see table 12). In both samples, *fair working conditions* achieve the highest relevance score for sustainable products, although this attribute is not directly linked to environmental factors. *Sustainable packaging* also achieved second place in terms of relevance in both samples, while clearly setting itself apart from the related attribute of *sustainable materials* in the B04 sample (sixth highest relevance). In the entire sample, though, *sustainable materials* follow *sustainable packaging* on the relevance ranking for

sustainable products. *Low air pollution (CO2 emissions)* and *sustainable supply chain* each make up the next relevant attributes in both samples respectively (third and fourth / fourth and fifth). While *environmentally friendly additives during production* represent the fifth most relevant factor for B04 fans, it is the second-least important attribute within the total sample. *Low water and energy consumption during production*, however, seems to be comparably irrelevant with the seventh and sixth relevance position respectively. Lastly, both samples agree on *local production* being the least important factor for sustainable products, although it only closely undercuts *environmentally friendly additives* in the total sample. On average, you can identify higher ratings among the B04 fans compared to the entire sample, as it shows higher values for each ranking position. In addition, the second-least important attribute for B04 fans (*Low water & energy consumption during production*) still achieves higher relevance scores than the fifth most relevant factor among the entire sample (*sustainable supply chain*), which indicates that B04 fans generally consider these attributes to be more important for products to be sustainable.

A comparison of these mean findings with the Spearman correlations reveals some interesting deviations. On the one hand, the attribute with the highest average rating in both samples, *fair working conditions*, shows only the lowest or second lowest correlation with the *SA* variable. This indicates that, although the population claims this attribute to be the most relevant factor for a product to be sustainable, it seems to be "just" an ethical baseline that fans expect to be implemented, without any connection to environmental issues. On the other hand, *sustainable materials* rank highest among the correlations and regression factors in both samples, even being the only one with a correlation above 0.5 respectively, while it is only perceived the sixth most relevant sustainability driver within the B04 sample. Similarly, but this time reversed, the high rankings of the *sustainable packaging* (second highest relevance) are not reflected in the ranking of the correlation values (fifth highest relevance). Consequently, despite statistical

significance, it can be stated that although *SA* has a positive influence on the general level of relevance assessment, this cannot be transformed one-to-one into the final assessment order.

However, the order of the correlation and regression factors is the same, so that a distinction must be made in the perceived relevance of sustainability factors depending on the personal attitude towards sustainability, which in turn can be very valuable when targeting highly sustainable conscious consumers. According to the ordinal regression analysis and in support of the correlations, an increase in *SA* by one unit leads to at least twice as high a probability of rating *sustainable materials* (Odds ratio: 2.300 [overall] / 2.385 [B04]), *low CO2 emissions* (2.220 / 2.264) and a *sustainable supply chain* (2.135 / 2.076) as very relevant for the sustainability of products. These attributes can therefore be considered as crucial requirements, when addressing fans with high environmental concerns. Within the entire sample, this probability is similar for the attribute of *low water and energy consumption* (2.092), although it carries the third-lowest mean relevance score, indicating that this sustainability driver is perceived especially important among highly environmentally conscious fans and less among less conscious groups. Among B04 fans, this attribute ranks at the same position within the attributes' regression order, yet it shows comparably lower odds than in the entire sample (1.839). A similar case can be made for *sustainable packaging*, which shows higher Odds ratios among the full population (1.907) compared to the B04 sample (1.655). In this case however, the attribute scores high on average (second highest relevance mean in both samples) but shows comparably lower Odds ratios in dependence of *SA* (fifth rank in both samples). This leads to the conclusion that *sustainable packaging* is considered an appropriate measure to increase sustainability among less sustainability-conscious consumers, while more conscious groups view this attribute as less efficient in the context of sustainable products. Finally, all samples as well as the data (relevance ratings, correlations, regression factors) agree on *local production*

being the least important necessity for the sustainability of products, indicating that consumers have a general acceptance for producing abroad as long as other sustainability criteria are met.

Meanwhile, *PLR* in general show highly significant parameters as well. Since the variable even positively exceeds all correlations and Odds ratios of the eight sustainability attributes in the total sample at a significance level of 0.001, H3b cannot be rejected either, concluding that *SA* has a significant positive influence on the perceived relevance of certification for sustainable products. With a Spearman correlation factor of r_s=0.552, the importance of sustainability certification for football clubs is strongly corresponding to the individual's attitude towards sustainability. As mentioned above, this correlation factor exceeds all correlations of the individual sustainability criteria to *SA* in the total sample, while coming close to the second-highest correlation in the B04 sample. This is an indication that the effects of extended attitudes towards sustainability are stronger on general perceptions on sustainability matters, such as the perceived importance of contextual certificates, than on specific attributes. The parameters of the ordinal regression confirm this connection as a unit increase in *SA* expands the chances of increased perceived importance of sustainability certificate in sports merchandise by a multiplication factor of 2.533 (entire sample) or 2.332 (B04 sample) respectively, both ranking first or close to first place in the regression lists. This is a valuable insight when it comes to potential certification target groups and on whose requirements the certificate should be based.

Sustainable attribute	Relation	Spearman correlation	Regression parameter	Odds ratio
Sustainable materials	*SA – SCR1*	0.520*** (1)	0.833*** (1)	2.300
Fair working conditions	*SA – SCR2*	0.369*** (7)	0.546*** (7)	1.726
Low CO2 emissions	*SA – SCR3*	0.492*** (2)	0.797*** (2)	2.220
Sustainable supply chain	*SA – SCR4*	0.492*** (2)	0.758*** (3)	2.135
Local production	*SA – SCR5*	0.222*** (8)	0.287*** (8)	1.332
Low water & energy consumption in production	*SA – SCR6*	0.474*** (4)	0.738*** (4)	2.092
Sustainable packaging	*SA – SCR7*	0.429*** (5)	0.645*** (5)	1.907
Environmentally friendly additives	*SA – SCR8*	0.394*** (6)	0.564*** (6)	1.758
Perceived relevance of sustainable certification	*SA - PLR*	0.552***	0.929***	2.533

Table 4: H3 - Total sample - Correlation and regression parameters. Adapted from SPSS Data
****Correlation is significant at the 0.001 level (2-tailed).*

Sustainable attribute	Relation	Spearman correlation	Regression parameter	Odds ratio
Sustainable materials	*SA – SCR1*	0.539*** (1)	0.869*** (1)	2.385
Fair working conditions	*SA – SCR2*	0.269*** (8)	0.339** (7)	1.404
Low CO2 emissions	*SA – SCR3*	0.495*** (2)	0.817*** (2)	2.264
Sustainable supply chain	*SA – SCR4*	0.461*** (3)	0.731*** (3)	2.076
Local production	*SA – SCR5*	0.290*** (7)	0.311** (8)	1.365
Low water & energy consumption in production	*SA – SCR6*	0.415*** (4)	0.609*** (4)	1.839
Sustainable packaging	*SA – SCR7*	0.357*** (5)	0.504*** (5)	1.655
Environmentally friendly additives	*SA – SCR8*	0.355*** (6)	0.467*** (6)	1.595
Perceived relevance of sustainable certification	*SA - PLR*	0.474***	0.847***	2.332

Table 5: H3 - Bayer 04 Leverkusen sample - Correlation and regression parameters. Adapted from SPSS Data
***Correlation is significant at the 0.01 level (2-tailed).*
****Correlation is significant at the 0.001 level (2-tailed).*

Sustainable attribute	Total Sample Mean	B04 Mean
Sustainable materials	7.12** (3)	6.83** (6)
Fair working conditions	8.57** (1)	8.70** (1)
Low pollution (CO2 emissions)	7.05** (4)	7.39** (3)
Sustainable supply chain	6.79** (5)	7.12** (4)
Local production	6.62** (8)	6.62** (8)
Low water & energy consumption in production	6.66** (6)	6.81** (7)
Sustainable packaging	7.37** (2)	7.42** (2)
Environmentally friendly additives	6.63** (7)	6.94** (5)

Table 6: H3 – Means of SCR. Own Table. Adapted from SPSS Data
***Sample mean is significant at the 0.01 level (2-tailed).*

6.2 Relevance of label attributes

Apart from examining the drivers behind and effects of such sustainability certificates on consumer behaviour, this study aims to provide B04 with additional insights into potential general measures that fans expect to be incorporated in the seal. Therefore, taking a closer look on the ranking results of the proposed label attributes can be very valuable for creating a trustworthy seal for customers. Again, as this study compares eight different label attributes, this analysis focuses on the entire sample results and the findings within in the B04 sample only. The final attribute means were entirely significant at a 0.01 level for both samples and can therefore be interpreted as representative population means. Both samples, the total and B04 one, show only very small differences in average scores, giving no room for interpretation of differences to other fan groups. The results of the ranking means are illustrated in table 15.

When analysing the findings of the survey on the scale of one being the most relevant ranking position and eight the least relevant, no clear pattern among the different label attributes in question can be identified. *Transparency*, in both samples, scores the most relevant ranking position with 2.74 and 2.88 on average, indicating that high levels of transparency along the

internal processes is highly valued by customers. Following this, ranks two to five are densely clustered, again in both samples, with only small differences in average scores. However, the two groups of four attributes are marked by the same factors, namely *Strict requirements for certification*, *clear communication of measures*, *frequent auditing of measures*, and *trustworthy partnerships with other organizations*. Consequently, fans in general don't have clear priorities among these attributes and value them accordingly even. *Communication of long-term goals* and *education of customers* make up a second, smaller cluster, which scores sixth and seventh on relevance. Finally, fans tend to agree on the *popularity of the seal (organization)* to be by far least relevant, indicating that they don't need popular organizations to certify products, but prefer actual measures that enhance trustworthiness.

Certificate attribute	**Total Sample Mean**	**B04 Mean**
Transparency	2.74** (1)	2.88** (1)
Strict requirements for certification	4.29** (2)	4.12** (3)
Popularity of seal (organization)	6.08** (8)	6.21** (8)
Clear communication of measures	4.29** (2)	4.43** (5)
Frequent auditing of measures	4.33** (4)	4.25** (4)
Trustworthy partnerships with other organisations	4.33** (4)	4.05** (2)
Communication of long-term goals	4.97** (6)	4.99** (6)
Education of consumers	4.97** (6)	5.06** (7)

Table 7: Ranking means of label attributes. Adapted from SPSS Data
***Sample mean is significant at the 0.01 level (2-tailed).*

7. Discussion

7.1 Influence of *SA* on (a) *SCR* and (b) *PLR*

Analysing the general relevance means of the individual sustainability criteria, you can identify a certain pattern among B04 fans that only deviates in some cases from the entire sample. The ethical control factor *fair working conditions* scores by far the highest in both samples, making it the most relevant factor of sustainability. However, as the next highest attribute (*sustainable packaging*) is way below the mean of *fair working conditions*, the social factor can be viewed as a certain binary, ethical baseline (given or not given) that is required to prevail in any situation, whereas ecological attributes are more outcome-focused and aim to achieve certain targets on a given scale (e.g. 30% CO2 emission reduction). This would explain the positive deviation in the relevance mean compared to the ecological attributes and indicates that including such ethical foundations in the certificate can be important, even if they are not directly linked to ecological sustainability. Following *sustainable packaging* as second most relevant attribute for sustainability, the total sample ranks *sustainable materials, low CO2 emissions,* and *sustainable supply chain* on third to fifth place, indicating that for them, sustainability is linked to CO2 emissions and the major emission drivers in production. B04 fans agree on *low CO2 emissions* (third) and *sustainable supply chain* (fourth) but show significantly lower relevance scores for *sustainable materials* (sixth). The results thus provide the club with clear guidance for the inclusion of measures to reduce the product's CO2 emissions, especially in packaging and the supply chain, while the club's fans have lower requirements for sustainable core materials in merchandising products, giving the club more flexibility in this regard. Finally, according to the findings, the least relevant drivers of sustainability in merchandise products are, in descending order, *environmentally friendly additives*, *low water and energy consumption,* and *local production*. However, as all three

attributes scored way over the base value of five, the club can consider including these areas in the certificate in case it wants to set a league-wide benchmark, needs to compensate a higher-ranked but not applicable attribute, or just decides on high internal claims towards sustainability. In this regard, it is important to note that the B04 sample, compared to the entire sample, scored higher on each relevance mean ranking position as well as on each sustainable attribute except for sustainable materials compared. This suggests that B04 fans generally view the proposed attributes to be more important in making merchandising products sustainable than the average Bundesliga fan. Following this insight, the club should really consider including as many attributes as possible, as its fan base seems to be quite discerning, or sees a high relevance in the areas measured.

Based on the findings, an increased attitude towards sustainability results in significantly higher valuations of sustainability criteria, while also significantly expanding the perceived importance of sustainability labels in sports merchandising. Hence, the more sustainably conscious a fan is, the higher the perceived relevance of such certificates and the various sustainability criteria of merchandise will be. Therefore, offering a sustainable merchandise line including certified sustainability measures can enhance the relationship of the club towards fans with high attitudes towards sustainability, which also, as mentioned above, transforms into higher *WTP* for these products. This results in certain implications for the club. On the one hand, when considering launching such product line or certificate, these findings strongly suggest targeting fans with high scores in *SA,* as the perceived individual relevance can be a strong driver in club loyalty and consumer behaviour. On the other hand, this same increased perceived relevance most likely results in higher standard requirements regarding the measures needed to qualify for the certificate.

However, having identified fans with an attitude towards sustainability as the target group of such certificates, it is additionally crucial for the club to investigate the impact of sustainability awareness on the individual attribute rankings, since it can help to fulfil the requirements of the certificate's target group. As summarized above, a stronger attitude towards sustainability among B04 fans drives primarily the evaluation of *sustainable materials, low CO2 emissions,* a *sustainable supply chain*, *low water and energy consumption*, as well as *sustainable packaging*. On the contrary, relevance scores in *environmentally friendly additives*, *local production*, and *fair working conditions* seem to be less dependent on sustainable consciousness. The same pattern is also confirmed by the entire sample, giving the club strong validation and confidence in this attribute ranking as it generally reflects the average relevance ranking and emphasizes action to reduce CO2 emissions. However, the correlation and regression analysis clearly recommend that the sustainability of the core materials of the products should not be neglected, although it ranks only sixth in the relevance means, as this is the most relevant factor for sustainable products for sustainably conscious consumers. These fans rate the importance of the seals the highest and generate an increased *WTP* as a result, which in turn puts leverage on including sustainable materials in the certificate’s measures.

Placing these findings in the context of our label situation analysis, both, the Bluesign and Grüner Knopf labels, contain similar attributes and therefore present suitable templates (see table 1). Both consider CO2 emissions, water waste, additive chemicals, the supply chain and social factors such as fair working conditions, among other things. Yet, Bluesign is mainly used by external jersey and merchandise suppliers such as Nike, Adidas, or Puma, while Grüner Knopf is used by the clubs themselves (see table 2). Both therefore offer good guidance on possible processes and measures behind the individual attributes, but when considering the concrete implementation of one of these certificates as a club, the Grüner Knopf seems to be more suitable.

7.2 Relevance of label attributes

The findings do not provide clear label attributes guidance except for heavily focusing on *transparency* while neglecting the *popularity of external certificates / organizations*. Hence, when implementing a sustainability certificate, an organization should invest a lot into fostering and creating transparency along the processes and measures, whereas fans do not expect popular external partner organizations or labels. Apart from that, fans seem to have no clear preference in terms of *strict requirements for certification*, *clear communication of measures, frequent auditing of measures,* and *trustworthy partnerships with other organizations*, and value each of them on average below but close to the base score of 4.5. This leaves room for interpretation concerning how much the club wants to elaborate on these individual factors. However, they should be prioritized before the *communication of long-term goals* and *consumer education*.

Strict certification requirements and *frequent audits* help to achieve credibility and trustworthiness, as the products must fulfil various strict criteria and are frequently checked in this respect. Furthermore, *clear communication of measures* promotes the most important factor, namely *transparency*, and should therefore be given strong consideration, as the confidence consumers have in a label's credibility relies on both the sincerity of the company's intentions and the effectiveness and clarity of information communication (Raziuddin Taufique, et al. 2019). However, while *trusted partnerships with other organizations* can also enhance credibility, this effect requires alignment with the mission and culture, suggesting that this should be considered more in an advisory capacity if such a fit cannot be achieved. Furthermore, *the communication of long-term goals* for better dialogue and accountability as well as the *education programs for consumers* are available as optional enhancements to the certificate.

8. Recommendations

8.1 Sustainability criteria and their influences

8.1.1 Drivers of sustainability and their labelling implications

Based on our findings and the examined labels in the situation analysis, a new sustainability certificate should definitely include ethical baselines such as *fair working conditions*, prohibition of discrimination, or appropriate wages. The club needs to ensure that this ethical aspect is strongly embedded in the certificate, even if it's not directly linked to ecological sustainability. This can be achieved, for example, via a strict supplier code of conduct, which outlines the ethical standards for the suppliers, or frequent supplier auditing and monitoring to ensure compliance with the established ethical standards. Further supplier engagement on a partnership rather than transactional basis additionally fosters the implementation of ethical baselines, which are a crucial baseline for fans' acceptance of the label.

Upon that, the main focus should lie on setting strict and efficient obligations on the *supply chain*, *production processes*, and *product packaging*, especially in terms of *CO2 emissions*. The organization needs to set up holistic data collection systems to gather information on the occurring emissions in their own as well their suppliers' value chain. Following this, the club can identify and needs to prioritize efficient emission reduction measures and communicate the following effects externally. While *sustainable materials* ranked lower in relevance, the study still strongly recommends including them in these actions as the correlation analysis indicates that sustainably conscious fans value the sustainability of core materials highly. Switching to more sustainable materials in the product component mix for existing and newly developed products is therefore a good initiative to meet the increasing sustainability requirements. In this context, the "From Field Work to Fan Shop" initiative, which was already mentioned in the status quo analysis, represents a functional example, as nine other clubs in the First and Second

Bundesliga have already joined it to promote the sustainable cultivation of cotton and support producers in the western Indian region of Gujara.

Even though attributes like *environmentally friendly additives*, *low water and energy consumption*, and *local production* ranked lower in relevance, they still scored above the base value. Yet, *local production* is a challenging requirement for internationally active clubs with no meaningful control over, for example, the production of their jersey supplier. Hence, this study suggests considering including the first two in the certificate for benchmarking purposes or to meet high internal sustainability claims. Supporting baseline demands of customers with more detailed or complex actions like these is a great driver of credibility and trustworthiness. First, however, the club needs to set up a solid data collection system on which it can base its measures and following claims, as otherwise such communication could result in counteractive effects on the certificate's trustworthiness.

In terms of target customers, our study shows significant evidence for higher relevance scores for certification among more sustainable conscious fans. We therefore come to the conclusion that fans with a high attitude towards sustainability should be addressed as a target group, since they perceive such sustainability seals as more relevant and rate the measures implemented more highly than normal fans. By leveraging the certificate and its credibility for sustainability engagement, you can enhance their club loyalty and utilize the increased *WTP* based on their comparably higher perceived relevance. In practice, B04 should analyse for example clicks and visit durations on the label's online landing page or purchase histories of fans to collect valuable contact data about this target group.

Furthermore, the club-owned labels of competitors like KOE or WOB are solid benchmark labels that already have experienced successful implementations and therefore can provide guidance for further steps. Given its alignment with the identified priorities, similarity of

attributes and usage of other Bundesliga clubs, Grüner Knopf seems to be another good benchmark and orientation for open questions as well. Therefore, if B04 should forfeit the decision of its own seal, this study would recommend using the Grüner Knopf certificate instead. In addition, Bluesign is a solid second guidance option, yet keep in mind that its mainly connected with external supplier brands like Puma, Nike, and Adidas.

8.2 Label attributes

The findings provide one clear recommendation in terms of the certificate's attributes, namely *transparency*. The high relevance value placed on *transparency* indicates its importance to consumers. Therefore, the organisation needs to ensure that the criteria of the certificate and the processes behind it are communicated and made available to fans in a transparent and holistic manner. For example, detailed annual sustainability reports should be published as part of the seal, which outline the club's initiatives, goals, and achievements in the sustainability areas. These reports could cover various aspects such as environmental impact, supply chain practices, and social responsibility efforts. In this context, WOB and their annual sustainability reports are good benchmarks. For such reports, too, detailed data is required so that the statements in the report are based on quantitative evidence. In addition, this sustainability-related information should be periodically updated and made easily accessible to fans through the club's website or fan shop, merchandise packaging, as well as social media channels. By providing links or QR codes directing fans to detailed landing pages concerning the sustainability label or reports, *transparency* is further fostered while increasing trustworthiness. This can even be enhanced by establishing open communication channels in which fans can ask questions, provide feedback, and engage with the club regarding sustainability practices. Hence, the *clear communication of measures*, even if it is considered less important, is a decisive factor for *transparency* and should therefore be emphasised by the club.

Opposing to the high relevance of *transparency*, the study suggests neglecting the *popularity* factor when it comes to external partner organizations or labels. Hence, when considering forfeiting the decision of a club-internal label or collaborating with contextual organizations, focus on criteria and mission fit instead of *popularity of the (certifying) organization*. This goes hand in hand with the higher ranking for *trustworthy partnerships with other organisations*, which underlines alignment with the mission and requirements of sustainability labels.

The equally valued criteria of *strict requirements for certification* and *frequent auditing of measures* are good drivers for the credibility of the seal and enable the certifying organisation to place greater emphasis on the actual impact of the measures implemented. Connecting this to the recommendations concerning the label criteria, the *strict requirements for certification* could result in including *environmentally friendly additives* or *low water and energy consumption* if the club aims for high label standards. In addition, *frequent auditing of measures* is comparably easy to implement via external auditors, and is therefore a logical addition to the label, since they enable controlling the compliance of suppliers and certify the implemented measures and communicated numbers.

Finally, *communicating long-term goals* and *educating consumers* play valuable roles in a club's potential overall sustainability strategy, as they provide credibility through liability and show that the club takes its responsibilities seriously. Furthermore, *educating consumers* in the context of sustainability will increase their *SA*, which in turn has proven positive effects on their *WTP* and *PLR*. In addition, when introducing an annual sustainability report as part of the label, the club must set long-term targets to enable progress and performance to be tracked.

9. Theoretical Contribution

The exploration of consumer behaviour within the contexts of merchandise and sustainability, specifically in the realm of football clubs, stands as a crucial area of study blending two domains: the psychology of emotional connection to a club and the accelerating trend of sustainable consumption. This study aims to shed light on the diverse effects between identification with the club as well as attitudes towards sustainability and consumer behaviour in specific relation to sustainability labels. In close cooperation with the partnering Bundesliga club B04, not only a status quo analysis in the Bundesliga environment but also an in-depth quantitative analysis of fan perspectives and consumer behaviour were conducted. The results provide the club with an extensive data foundation and practical recommendations for the further development of the planned sustainability label in the merchandise sector, for example, to what extent fans are prepared to bear the higher costs of sustainability by paying a higher price. Furthermore, this is one of the first studies to place the interplay between the three areas of fan identification in football, sustainability, and product labels in the business context of consumer behaviour. Beyond that, the results reveal insights into the perceptions of individual criteria and attributes of such sustainability labels by fans, so that this study presents a holistic analysis of sustainability labels in the context of football club identification as well as personal sustainability attitudes and purchasing behaviour among fans.

10. Limitations

Apart from the interesting results, this study also faced several challenges and included certain limitations that impacted the generalizability and robustness of the findings.

First, the study refers solely to self-produced textiles, which excludes the significantly larger proportion of sales made by the outfitter Castore and is primarily due to contractual barriers. In addition, fans' perceptions tend to depend on the weekly team performance, which is why future studies should incorporate longitudinal research. Furthermore, most VfB participants are ultra fans, which fundamentally have a high emotional connection. Additionally, the study's exclusive focus on the German Bundesliga restricts its external validity, limiting the generalization of findings to football fans inside Germany.

The study uncovered a discrepancy between stated values and actual purchasing behaviour by fans, linking to previous findings regarding discrepancies in anonymous surveys between stated intentions towards sustainable products and the actual behaviour in reality. Furthermore, the reliance on online surveys introduces potential biases related to the clarity of questions and the visual presentation of products. Moreover, the limitation of product visibility to small generic photos and the varying mobile displays may compromise the accuracy of participant responses.

In addition, there are correlations between some demographic factors that make it difficult to examine individual variables. In this survey, for example, this includes a moderate to high correlation between *age*, *income*, and *level of education*. The investigation of the relationship between *income* and *WTP* was further limited as the highest possible response was limited to the open category "Over €65,000", which also showed the largest differences. Further investigation could allow more categories for top earners to be specified, or an accurate input option (potential data privacy issues).

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Appendices

Appendix 1: Fanshop VfB example for Label certification (VfB Stuttgart 2023)

Appendix 2: Online Survey Questionnaire

- **Q1 Intro text: No respondent input Introduction to the survey**

  (Required)

  Welcome to this study regarding sustainability in football.

  This study is being conducted in collaboration with **NOVA School** of Business and Economics as part of a **master's thesis**. The aim of the study is to promote **sustainable products** and related **certifications** in professional football and better adapt them to the needs of you fans.

  The survey is divided into **4 sections** and requires less than **10 minutes** of your time. Of course, your information will remain **anonymous** and cannot be traced. Please **do not use** your browser's **back button** at any time during the survey, as your previous responses will be lost.

  To show our appreciation for your efforts and time, we would like to **raffle** a current **jersey of your favorite club** among all participants. Simply enter your email address at the end of the survey to be entered into the prize draw.

  We appreciate your participation. Thank you very much!

- **Q2 Multiple choice Which football club in the First Bundesliga are you a fan of?**

  (One response required; One response allowed; Fix order of options; Place options in 3 columns)

Which football club in the First Bundesliga are you a fan of?

- FC Bayern München
- Borussia Dortmund
- RB Leipzig
- 1. FC Union Berlin
- SC Freiburg
- Bayer 04 Leverkusen
- Eintracht Frankfurt
- VfL Wolfsburg
- FSV Mainz 05
- Borussia Mönchengladbach
- 1. FC Köln
- TSG 1899 Hoffenheim
- SV Werder Bremen
- VfL Bochum
- FC Augsburg
- VfB Stuttgart
- 1. FC Heidenheim
- SV Darmstadt 98
- ❌ None of these clubs
- ❌ I'm not a football fan

- **Q3 Simple block External legitimacy**

Show this question only if the following conditions are met:

If all of these conditions are met:
Answer to question "Q2 Which football club in the First Bundesliga are you fan of?" is not equal to "Option 20"

- **Q4 Intro text: No respondent input Introduction Emotional Connection**

  (Required)

Section 1/4: Emotional connection to the club

The following part deals with your emotional connection to the club as a fan. Please read the statements carefully and then rate whether you agree with them.

- **Q5 Randomisation block Randomisation block**

  (Randomise order of questions)

- **Q6 Likert scale _ Fan loyalty**

  (Required)

  I consider myself a real fan of my club.

  Labelled from Disagree at all (1) *to* Totally agree (7)

- **Q7 Likert scale _ Loss of fan status**
  (Required)

  I would consider it a loss if I could no longer be a fan of my club.

  Labelled from Disagree at all (1) *to* Totally agree (7)

- **Q8 Likert scale _ Importance of being a fan of my team**
  (Required)

  Being a fan of my club is very important to me.

  Labelled from Disagree at all (1) *to* Totally agree (7)

- **Q9 Likert scale _ Fan identification**
  (Required)

  I want others to know that I'm a fan of my club.

  Labelled from Disagree at all (1) *to* Totally agree (7)

  - **Q10 Simple block Sustainability**

- **Q11 Intro text: No respondent input Introduction Sustainability & Football**
  (Required)

Section 2/4: Sustainability & Football

The following part deals with the topic of sustainability and its role in football. Please read the statements carefully and then rate whether you agree with them.

- **Q12 Randomisation block Randomisation block**
  (Randomise order of questions)

- **Q13 Likert scale _ Sustainability is important to me when buying products**
  (Required)

  Sustainability is important to me when buying fan articles.

  Labelled from Disagree at all (1) *to* Totally agree (7)

- **Q14 Likert scale _ Preference for sustainable fan merchandise**
  (Required)

I prefer sustainable fan articles over ordinary fan articles.

Labelled from Disagree at all (1) *to* Totally agree (7)

- **Q15 Likert scale _ Sustainable fan merchandise preference**
  (Required)

  I accept additional costs for sustainable fan articles compared to normal fan articles.

  Labelled from Disagree at all (1) *to* Totally agree (7)

- **Q16 Likert scale _ Responsibility for sustainability**
  (Required)

  A football club has a responsibility to act sustainably.

  Labelled from Disagree at all (1) *to* Totally agree (7)

- **Q17 Likert scale _ Sustainability commitment**
  (Required)

  My favorite club is committed enough to sustainability.

  Labelled from Disagree at all (1) *to* Totally agree (7)

  - **Q18 Simple block Label**

- **Q19 Intro text: No respondent input Introduction Label**
  (Required)

Section 3/4: Sustainable fan articles and sustainability seals

The following part deals with your requirements for sustainable fan articles and the role of sustainability seals. Please answer the questions in detail and answer them honestly and truthfully.

- **Q20 Multiple choice _ Frequency of purchasing fan merchandise**
  (One response required; One response allowed; Fix order of options; Place options in 3 columns)

  At what frequency do you buy fan articles from your club (e.g. jerseys, scarves, etc.)?

  - Every 1-3 months
  - Every six months
  - Yearly
  - Every 2 years

- Less common
- Never

- **Q21 Slider _ Sustainability attributes for fan merchandise**

  (Required; Accept values from 0 to 10; Values must be multiples of 1)

Please rate the following attributes of fan articles in terms of their relevance for the sustainability of the fan article (0 = Absolutely irrelevant | 10 = Absolutely relevant). To do this, use either the movable sliders or the numeric input fields on the right-hand side.

Sum total labelled as Total

- Sustainable materials (bamboo fibers, recycled PET bottles, etc.)
- Fair working conditions (compliance with labor and human rights)
- Low air pollution (CO2 emissions)
- Sustainable supply chain
- Local production
- Low water & energy consumption in production
- Sustainable packaging (recyclable raw materials)
- Environmentally friendly additives (oil, bleach, etc.)

- **Q22 Likert scale _ Importance of sustainability certification for football club fan merchandise**

  (Required)

  How important do you think sustainability seals are for certifying sustainable fan merchandise from football clubs?

  Labelled from Not important at all (1) *to* Very important (7)

- **Q23 Ranking _ Sustainability seal attributes ranking**

  (Required)

Please rate the following attributes of sustainability labels according to their relevance for a trustworthy certificate of sustainability. To do this, move the individual attributes up or down so that the most important attribute is at the top and the least important is at the bottom.

- transparency
- Strict requirements for obtaining a seal
- Popularity of the seal or certifying organization
- Clear communication of measures
- Regular auditing/review of measures
- Credible partnerships / cooperation with other organizations
- Communication of long-term goals
- Information / education for consumers

- **Q24 Simple block Conjoint / GG Bayer 04 Leverkusen**

Show this question only if the following conditions are met:

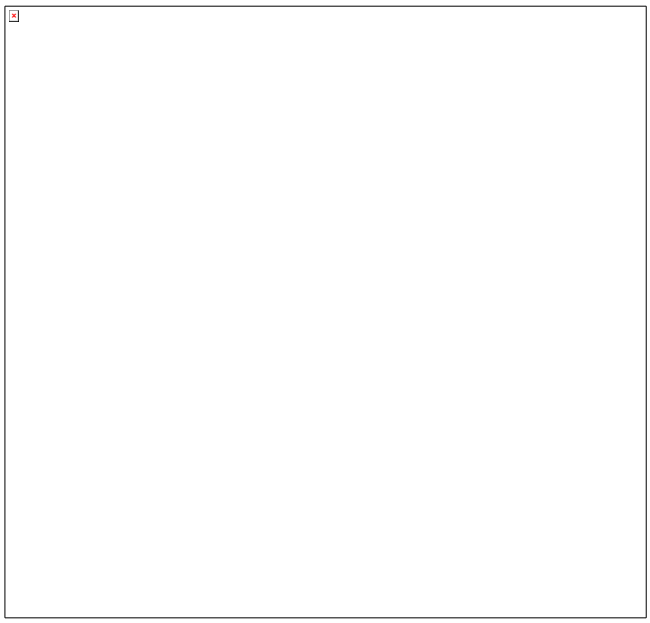
If all of these conditions are met:
Answer to question "Q2 Which football club in the First Bundesliga are you fan of?" " is equal to "Option 6" *Example B04 Track*

- **Q25 Intro text: No respondent input Introduction Conjoint**

  (Required)

Section 4/4: Purchase decision

For the following questions, please assume that this sustainability seal is trustworthy and verifies all of your requirements for sustainable fan merchandise.



- **Q26 Simple block Conjoint: Bayer 04 Leverkusen**

Show this question only if the following conditions are met:

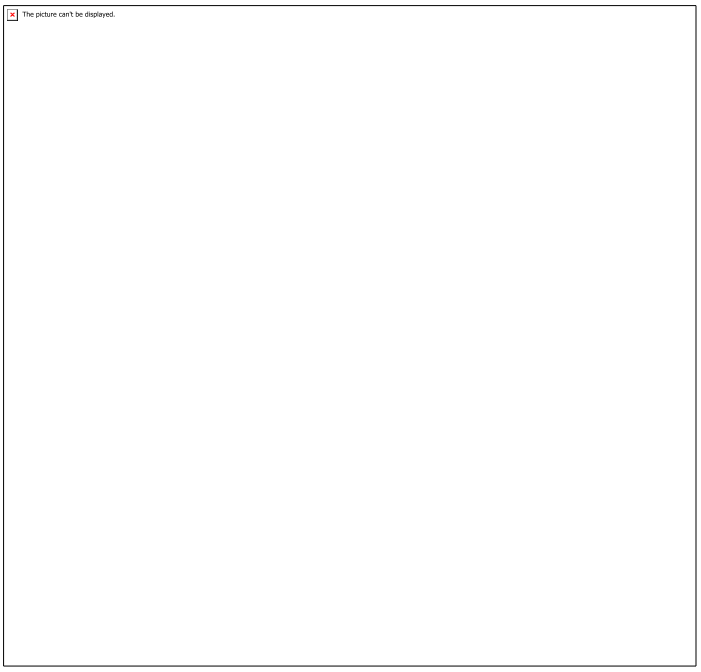
If all of these conditions are met:
Answer to question "Q2 Which football club in the First Bundesliga are you fan of?" is equal to "Option 6" *Example B04 Track*

- **Q27 Likert scale Query purchase intention**

  (Required)

How likely do you think it is that you will buy yourself a fan shirt from your favorite club at a price of **19.99€** at any time in the future?

To illustrate, here is an example photo of a simple fan shirt:



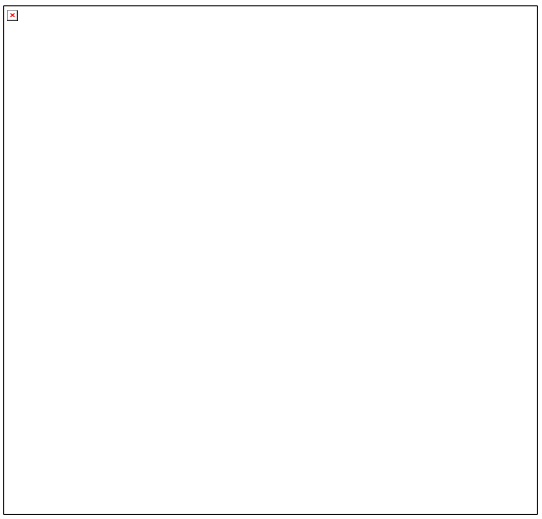
Labelled from Very unlikely (1) *to* Very likely (7)

- **Q28 Multiple choice _ Sustainable fan T-shirt choice**

  (One response required; One response allowed; Fix order of options; Place options in 2 columns)

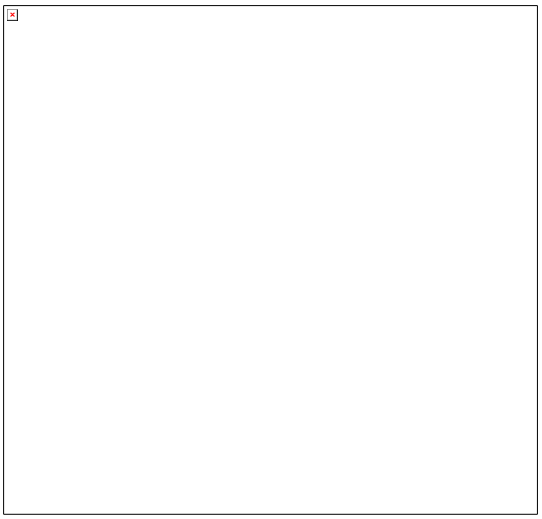
  Assuming that the Fan T-shirt with sustainability label meets all your sustainability requirements, which option would you choose when buying a Fan T-shirt? Please click on the option you would choose.

  - Fan T-shirt without sustainability seal



19.90€

- Fan T-shirt with sustainability seal



19.90€

Show this question only if the following conditions are met:

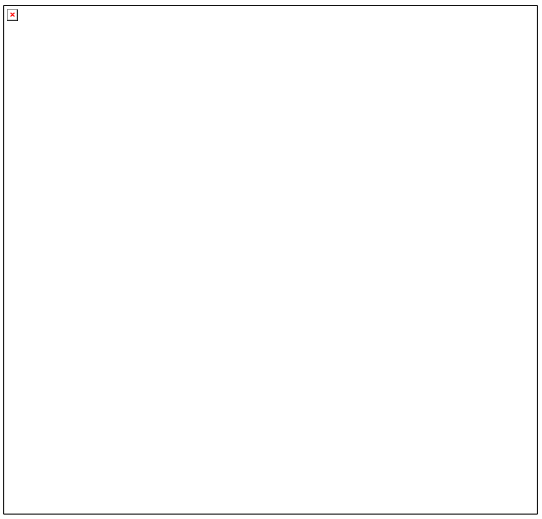
If any of these conditions are met:
Answer to question "Q27 Query purchase intention " is equal to "4"
Answer to question "Q27 Query purchase intention " is equal to "5"
Answer to question "Q27 Query purchase intention " is equal to "6"
Answer to question "Q27 Query purchase intention " is equal to "7"

- **Q29 Multiple choice _ Sustainable fan T-shirt choice**

  (One response required; One response allowed; Fix order of options; Place options in 2 columns)

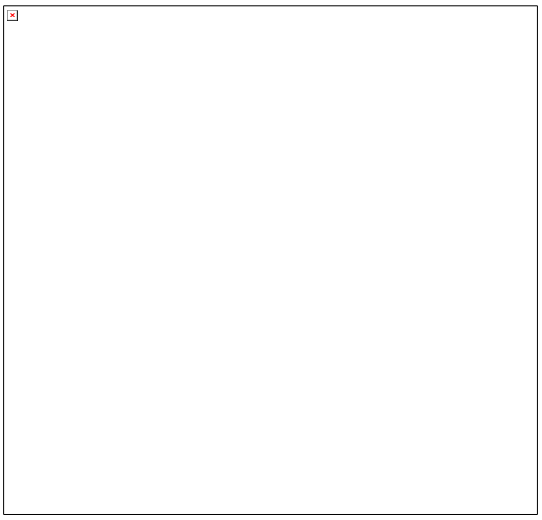
  Assuming that the Fan T-shirt with sustainability label meets all your sustainability requirements, which option would you choose when buying a Fan T-shirt? Please click on the option you would choose.

  - Fan T-shirt without sustainability seal



19.90€

- Fan T-shirt with sustainability seal



21,90€

Show this question only if the following conditions are met:

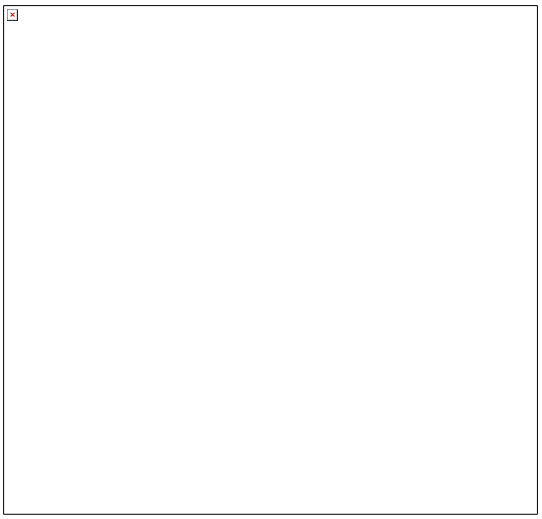
If all of these conditions are met:
Answer to question "Q28 _ Sustainable fan T-shirt choice" is equal to "Option 2"

- **Q30 Multiple choice _ Sustainable fan T-shirt choice**

  (One response required; One response allowed; Fix order of options; Place options in 2 columns)

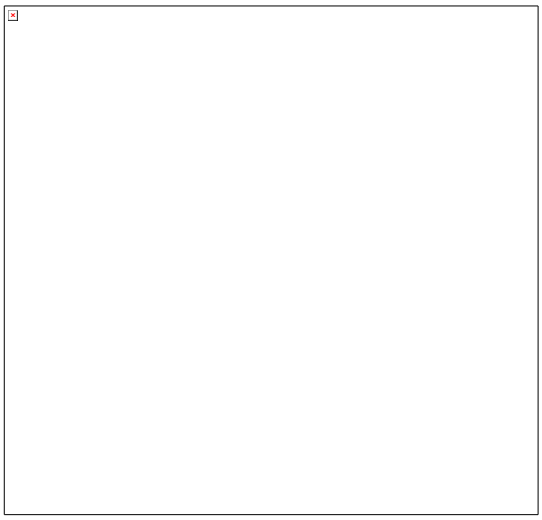
  Assuming that the Fan T-shirt with sustainability label meets all your sustainability requirements, which option would you choose when buying a Fan T-shirt? Please click on the option you would choose.

- Fan T-shirt without sustainability seal



19.90€

- Fan T-shirt with sustainability seal



23.90€

Show this question only if the following conditions are met:

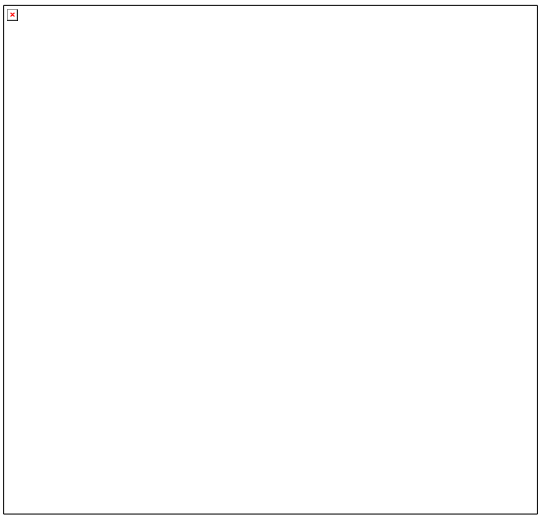
If all of these conditions are met:
Answer to question "Q29 _ Sustainable fan T-shirt choice" is equal to "Option 2"

- **Q31 Multiple choice _ Sustainable fan T-shirt choice**

  (One response required; One response allowed; Fix order of options; Place options in 2 columns)

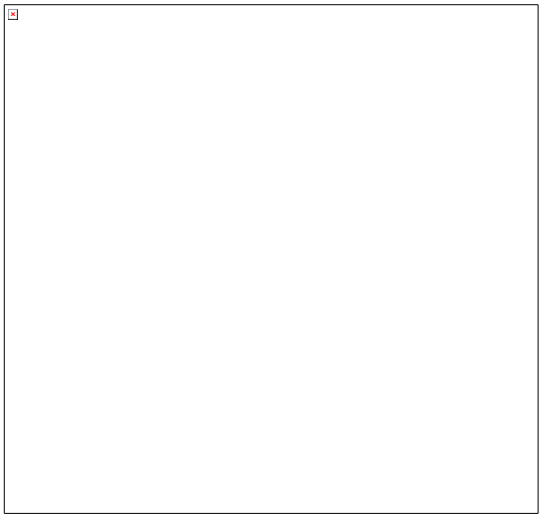
Assuming that the Fan T-shirt with sustainability label meets all your sustainability requirements, which option would you choose when buying a Fan T-shirt? Please click on the option you would choose.

- Fan T-shirt without sustainability seal



19.90€

- Fan T-shirt with sustainability seal



25.90€

Show this question only if the following conditions are met:

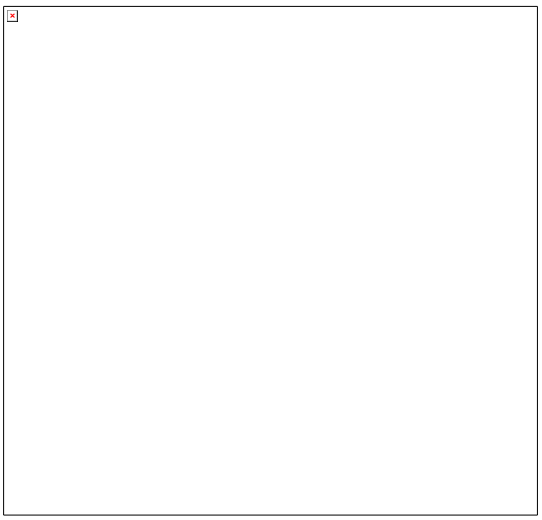
If all of these conditions are met:
Answer to question "Q30 _ Sustainable fan T-shirt choice" is equal to "Option 2"

- **Q32 Multiple choice _ Sustainable fan T-shirt choice**

(One response required; One response allowed; Fix order of options; Place options in 2 columns)

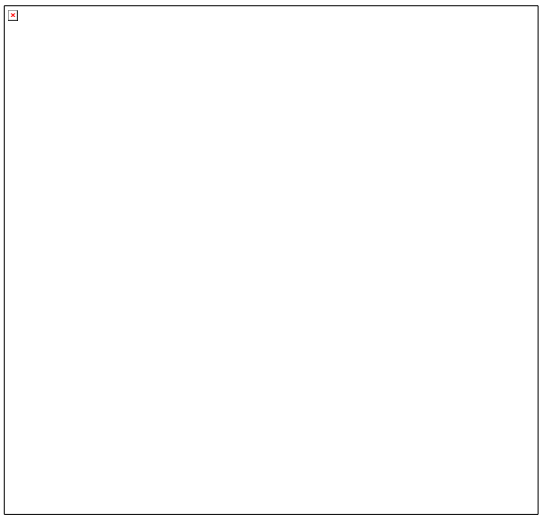
Assuming that the Fan T-shirt with sustainability label meets all your sustainability requirements, which option would you choose when buying a Fan T-shirt? Please click on the option you would choose.

- Fan T-shirt without sustainability seal



19.90€

- Fan T-shirt with sustainability seal



27.90€

Show this question only if the following conditions are met:

If all of these conditions are met:
Answer to question "Q31 _ Sustainable fan T-shirt choice" is equal to "Option 2"

- **Q154 Simple block Conjoint: Keiner dieser Vereine**

Show this question only if the following conditions are met:

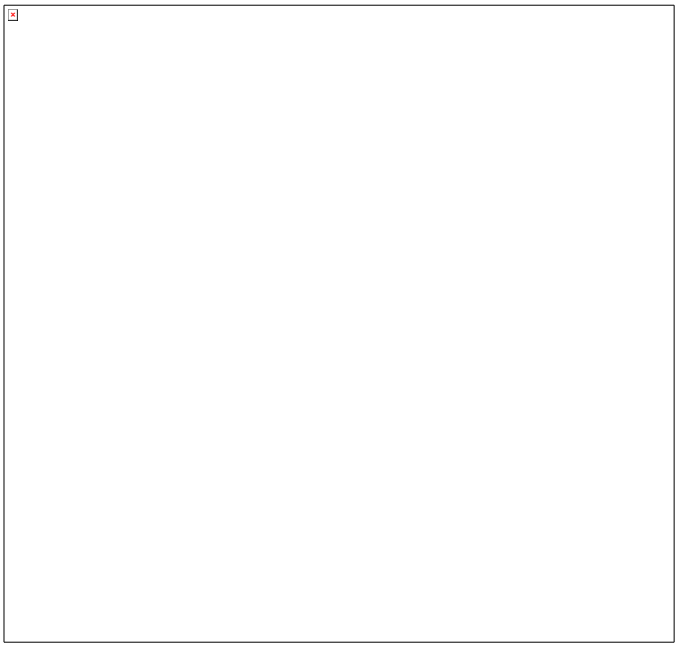
If all of these conditions are met:
Answer to question "Q2 Which football club in the First Bundesliga are you fan of?" is equal to "Option 19" *Example None of these clubs track*

- **Q155 Likert scale Abfrage Kaufintention**

  (Required)

  How likely do you think it is that you will buy yourself a fan shirt from your favorite club at a price of **19.99€** at any time in the future?

  To illustrate, here is an example photo of a simple fan shirt:

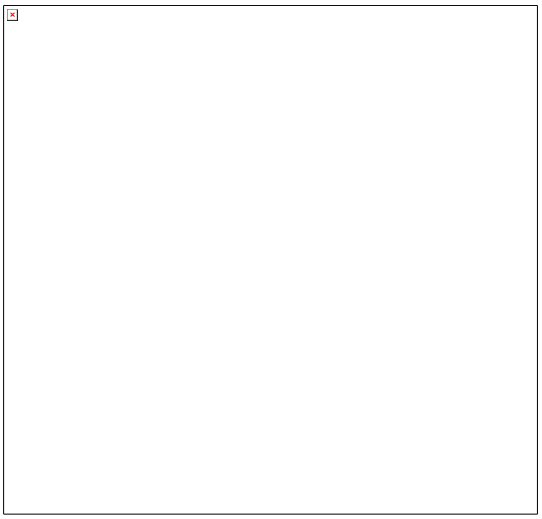
  Labelled from Very unlikely (1) *to* Very likely (7)

- **Q156 Multiple choice _ Sustainable fan T-shirt choice**

  (One response required; One response allowed; Fix order of options; Place options in 2 columns)

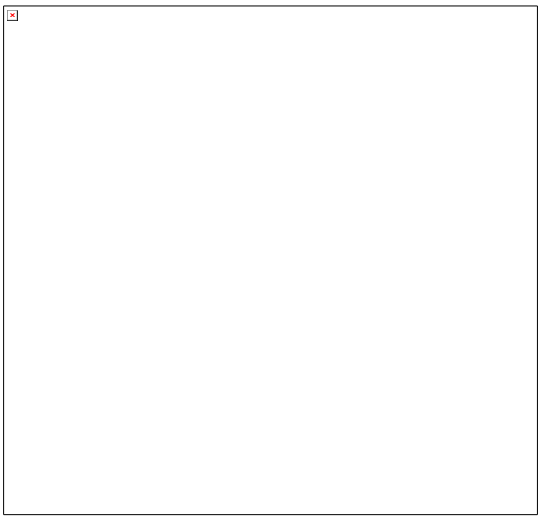
  Assuming that the Fan T-shirt with sustainability label meets all your sustainability requirements, which option would you choose when buying a Fan T-shirt? Please click on the option you would choose.

  - Fan T-shirt without sustainability seal



19.90€

- Fan T-shirt with sustainability seal



19.90€

Show this question only if the following conditions are met:

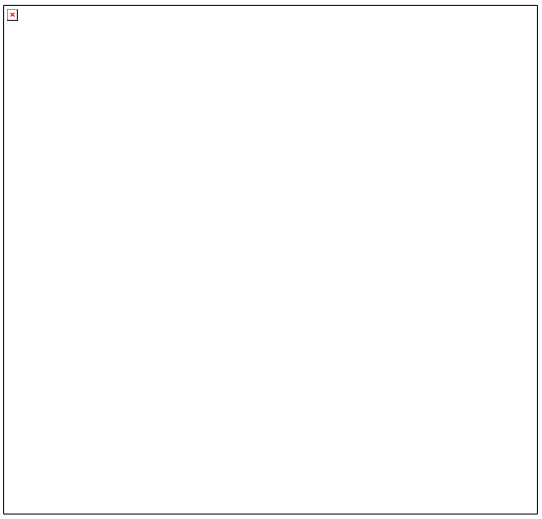
If any of these conditions are met:
Answer to question "Q27 Query purchase intention " is equal to "4"
Answer to question "Q27 Query purchase intention " is equal to "5"
Answer to question "Q27 Query purchase intention " is equal to "6"
Answer to question "Q27 Query purchase intention " is equal to "7"

- **Q157 Multiple choice _ Sustainable fan T-shirt choice**

  (One response required; One response allowed; Fix order of options; Place options in 2 columns)

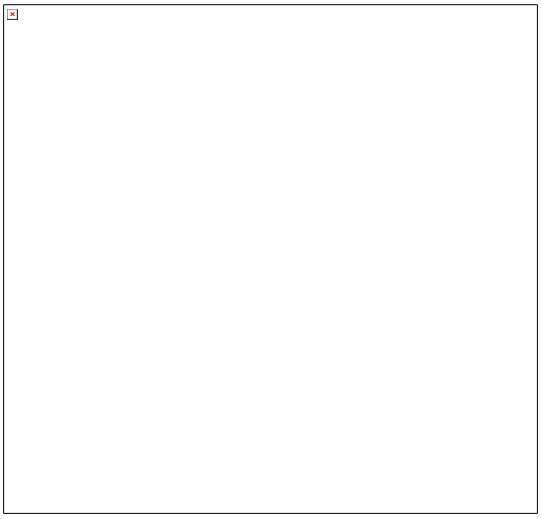
Assuming that the Fan T-shirt with sustainability label meets all your sustainability requirements, which option would you choose when buying a Fan T-shirt? Please click on the option you would choose.

- Fan T-shirt without sustainability seal



19.90€

- Fan T-shirt with sustainability seal



21.90€

Show this question only if the following conditions are met:

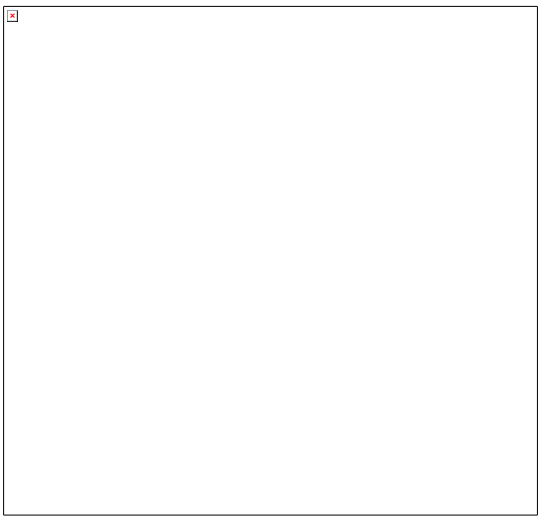
If all of these conditions are met:
Answer to question "Q156 _ Sustainable fan T-shirt choice" is equal to "Option 2"

- **Q158 Multiple choice _ Sustainable fan T-shirt choice**

(One response required; One response allowed; Fix order of options; Place options in 2 columns)

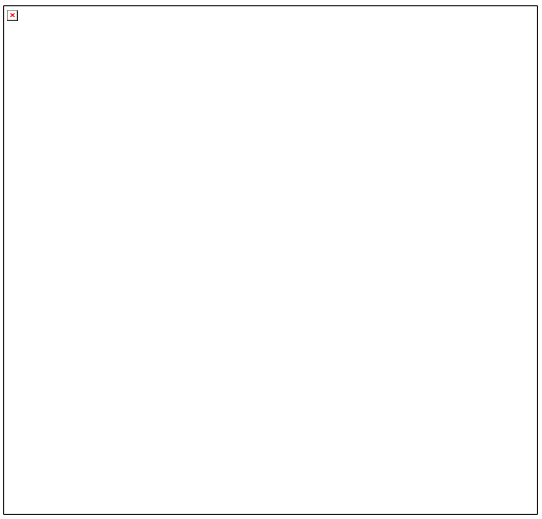
Assuming that the Fan T-shirt with sustainability label meets all your sustainability requirements, which option would you choose when buying a Fan T-shirt? Please click on the option you would choose.

- Fan T-shirt without sustainability seal



19.90€

- Fan T-shirt with sustainability seal



23.90€

Show this question only if the following conditions are met:

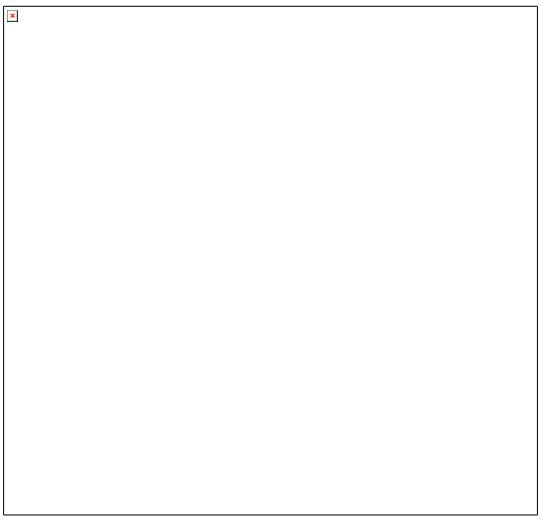
If all of these conditions are met:
Answer to question "Q157 _ Sustainable fan T-shirt choice" is equal to "Option 2"

- **Q159 Multiple choice _ Sustainable fan T-shirt choice**

  (One response required; One response allowed; Fix order of options; Place options in 2 columns)

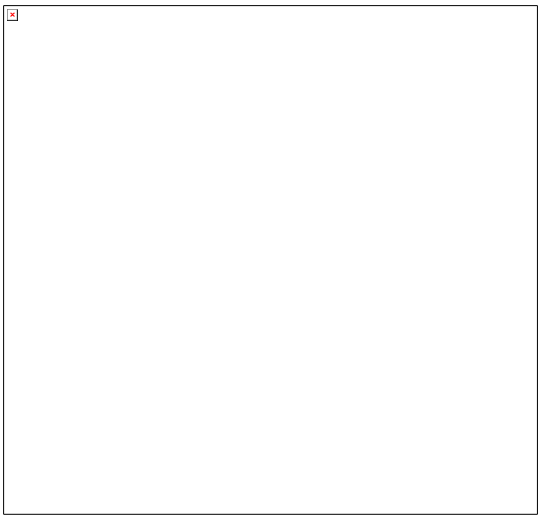
  Assuming that the Fan T-shirt with sustainability label meets all your sustainability requirements, which option would you choose when buying a Fan T-shirt? Please click on the option you would choose.

  - Fan T-shirt without sustainability seal



19.90€

  - Fan T-shirt with sustainability seal



25.90€

Show this question only if the following conditions are met:

If all of these conditions are met:

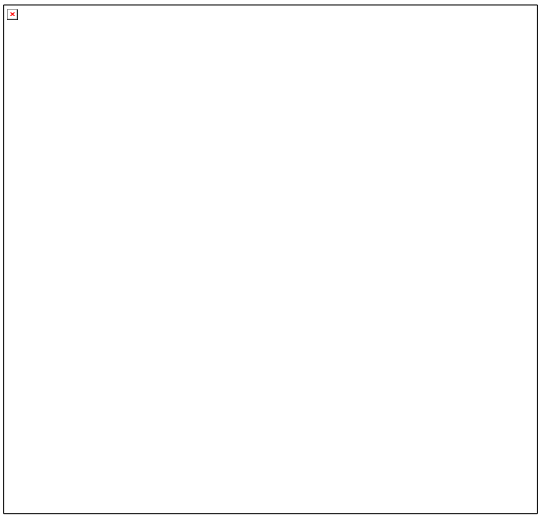
Answer to question "Q158 _ Sustainable fan T-shirt choice" is equal to "Option 2"

- **Q160 Multiple choice _ Sustainable fan T-shirt choice**

  (One response required; One response allowed; Fix order of options; Place options in 2 columns)

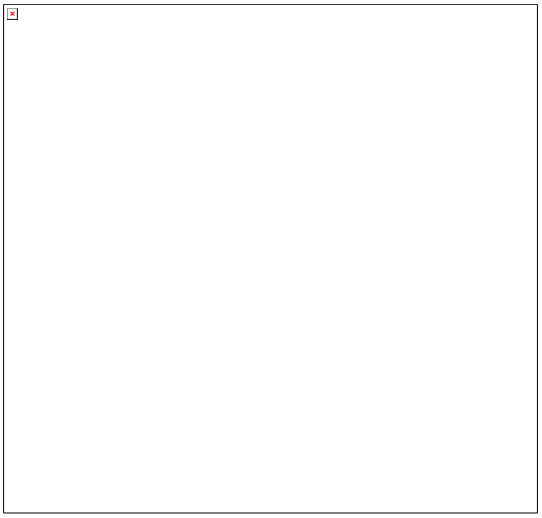
  Assuming that the Fan T-shirt with sustainability label meets all your sustainability requirements, which option would you choose when buying a Fan T-shirt? Please click on the option you would choose.

  - Fan T-shirt without sustainability seal



19.90€

  - Fan T-shirt with sustainability seal



27.90€

Show this question only if the following conditions are met:

XXX

If all of these conditions are met:
Answer to question "Q159 _ Sustainable fan T-shirt choice" is equal to "Option 2"

- **Q168 Simple block Demographics (basic)**

- **Q169 Intro text: No respondent input Introduction Demographics**
  (Required)

Demography

Last but not least, please provide your demographic data. Your information will of course remain anonymous and cannot be traced.

- **Q170 Multiple choice Gender**
  (One response required; One response allowed; Fix order of options; Place options in 4 columns)

  Which gender do you feel you belong to?

  - man
  - woman
  - divers/others
  - prefer not to say

- **Q171 Short answer Age**
  (Required)

  What age group are you in? Please enter your age in the box or leave it blank if you prefer not to say.

- **Q172 Multiple choice Level of education**
  (One response required; One response allowed; Fix order of options; Place options in 5 columns)

  What is your highest educational qualification right now?

  - Lower school leaving certificate
  - Abitur or equivalent degree
  - Apprenticeship
  - Bachelor's degree
  - Master's degree
  - Doctorate / PhD
  - *None of above:* ✖ Not specified

- **Q173 Multiple choice Income**
  (One response required; One response allowed; Fix order of options; Place options in 3 columns)

  What is your approximate annual household income (before tax)?

  - 0 - €13,000

- €13,000 - €19,999
- €20,000 - €39,999
- €40,000 - €64,999
- Over €65,000
- No information

- **Q174 Multiple choice Region (DE)**

  (One response required; One response allowed; Fix order of options; Place options in 4 columns)

  Which federal state do you live in?

  - Baden-Württemberg
  - Bavaria
  - Berlin
  - Brandenburg
  - Bremen
  - Hamburg
  - Hessen
  - Mecklenburg-Western Pomerania
  - Lower Saxony
  - North Rhine-Westphalia
  - Rhineland-Palatinate
  - Saarland
  - Saxony
  - Saxony-Anhalt
  - Schleswig-Holstein
  - Thuringia
  - ☒ I don't live in Germany
  - *None of above:* ☒ Not specified

- **Q175 Short answer _ Email for prize entry**

  (Required)

  If you would like to enter the jersey lottery, please enter your email address in the box below. This way we can contact you if you win.

- **Q176 Complete survey Complete survey**

  Complete survey for participants and not redirect them.

- **Q177 Open-ended response _ Additional comments**

  (Required)

If you have any questions or feedback about our survey or research, you can provide additional comments in the box below.

Appendix 3: Spearman correlations *SA-SCR* of total Sample

Spearman correlations		*SA*
SA	Correlation Coefficient	1.000
	Sig. (2-tailed)	.
	N	636
Sustainable materials	Correlation Coefficient	.520**
	Sig. (2-tailed)	<.001
	N	636
Fair working conditions	Correlation Coefficient	.369**
	Sig. (2-tailed)	<.001
	N	636
Low CO2 emissions	Correlation Coefficient	.492**
	Sig. (2-tailed)	<.001
	N	636
Sustainable supply chain	Correlation Coefficient	.492**
	Sig. (2-tailed)	<.001
	N	636
Local production	Correlation Coefficient	.222**
	Sig. (2-tailed)	<.001
	N	636
Low water & energy consumption in production	Correlation Coefficient	.474**
	Sig. (2-tailed)	<.001
	N	636
Sustainable packaging	Correlation Coefficient	.429**
	Sig. (2-tailed)	<.001
	N	636
Environmentally friendly additives	Correlation Coefficient	.394**
	Sig. (2-tailed)	<.001
	N	636
Perceived relevance of sustainable certification	Correlation Coefficient	.552**
	Sig. (2-tailed)	<.001
	N	636

**. Correlation is significant at the 0.01 level (2-tailed)

Appendix 4: Ordinal regression *SA-SCR* of total Sample

Parameter Estimates

Locations	Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
SA x *Sustainable Materials*	.833	.058	208.974	1	<.001	.720	.946
SA x Fair working conditions	.546	.055	98.065	1	<.001	.438	.654
SA x Low CO2 emissions	.797	.057	195.425	1	<.001	.686	.909
SA x Sustainable Supply Chain	.758	.056	181.427	1	<.001	.648	.869
SA x Local production	.287	.050	32.915	1	<.001	.189	.384
SA x Low water & energy consumption in production	.738	.056	174.995	1	<.001	.629	.847
SA x Sustainable packaging	.645	.055	140.098	1	<.001	.539	.752
SA x Environmentally friendly additives	.564	.053	113.202	1	<.001	.460	.668
SA x Perceived relevance of sustainable certification	.929	.061	233.666	1	<.001	.810	1.049

Appendix 5: Spearman correlations *SA-SCR* of B04

Spearman correlations		*SA*
Sustainability_Atittude	Correlation Coefficient	1.000
	Sig. (2-tailed)	.
	N	161
Sustainable materials	Correlation Coefficient	.539**
	Sig. (2-tailed)	<.001
	N	161
Fair working conditions	Correlation Coefficient	.269**
	Sig. (2-tailed)	<.001
	N	161
Low CO2 emissions	Correlation Coefficient	.495**
	Sig. (2-tailed)	<.001
	N	161
Sustainable supply chain	Correlation Coefficient	.461**
	Sig. (2-tailed)	<.001
	N	161
Local production	Correlation Coefficient	.290**
	Sig. (2-tailed)	<.001
	N	161
Low water & energy consumption in production	Correlation Coefficient	.415**
	Sig. (2-tailed)	<.001
	N	161
Sustainable packaging	Correlation Coefficient	.357**
	Sig. (2-tailed)	<.001
	N	161
Environmentally friendly additives	Correlation Coefficient	.355**
	Sig. (2-tailed)	<.001
	N	161
Perceived relevance of sustainable certification	Correlation Coefficient	.474**
	Sig. (2-tailed)	<.001
	N	161

***Correlation is significant at a 0.01 level (2-tailed).*

Appendix 6: Ordinal regression *SA-SCR* of B04

Parameter Estimates

Locations	Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
SA x Sustainable Materials	.869	.121	51.782	1	<.001	.632	1.106
SA x Fair working conditions	.339	.112	9.254	1	.002	.121	.558
SA x Low CO2 emissions	.817	.120	46.375	1	<.001	.582	1.052
SA x Sustainable Supply Chain	.731	.116	39.532	1	<.001	.503	.958
SA x Local production	.311	.105	8.716	1	.003	.105	.518
SA x Low water & energy consumption in production	.609	.112	29.390	1	<.001	.389	.830
SA x Sustainable packaging	.504	.110	20.953	1	<.001	.288	.720
SA x Environmentally friendly additives	.467	.109	18.401	1	<.001	.254	.680
SA x Perceived relevance of sustainable certification	.847	.123	47.771	1	<.001	.607	1.087

Appendix 7: Mean values *SCR* of total Sample

Mean values

SCR	t	df	Two-sided significance	Sample mean	99% Lower Confidence Interval	99% Upper Confidence Interval
Sustainable Materials	74.821	635	<.001	7.116	6.87	7.36
Fair working conditions	112.458	635	<.001	8.574	8.38	8.77
Low CO2 emissions	76.985	635	<.001	7.053	6.82	7.29
Sustainable Supply Chain	78.128	635	<.001	6.786	6.56	7.01
Local production	65.695	635	<.001	6.616	6.36	6.88
Low water & energy consumption in production	72.797	635	<.001	6.660	6.42	6.90
Sustainable packaging	81.808	635	<.001	7.368	7.14	7.60
Environmentally friendly additives	68.973	635	<.001	6.629	6.38	6.88
Perceived relevance of sustainable certification	80.704	635	<.001	5.086	4.92	5.25

Appendix 8: Mean values *SCR* of B04

Mean values

SCR	t	df	Two-sided significance	Sample mean	99% Lower Confidence Interval	99% Upper Confidence Interval
Sustainable Materials	35.606	160	<.001	6.832	6.33	7.33
Fair working conditions	60.343	160	<.001	8.702	8.33	9.08
Low CO2 emissions	46.880	160	<.001	7.391	6.98	7.80
Sustainable Supply Chain	42.276	160	<.001	7.124	6.68	7.56
Local production	32.923	160	<.001	6.621	6.10	7.15
Low water & energy consumption in production	39.298	160	<.001	6.814	6.36	7.27
Sustainable packaging	44.668	160	<.001	7.422	6.99	7.86
Environmentally friendly additives	37.985	160	<.001	6.938	6.46	7.41
Perceived relevance of sustainable certification	44.032	160	<.001	5.211	4.90	5.52

Appendix 9: Mean values *PLR* of total Sample

Mean values

PLR	t	df	Two-sided significance	Sample mean	99% Lower Confidence Interval	99% Upper Confidence Interval
Transparency	36.489	635	<.001	2.741	2.55	2.93
Strict requirements for certification	45.568	635	<.001	4.292	4.05	4.54
Popularity of seal (organization)	71.990	635	<.001	6.075	5.86	6.29
Clear communication of measures	54.090	635	<.001	4.286	4.08	4.49
Frequent auditing of measures	52.086	635	<.001	4.333	4.12	4.55
Trustworthy partnerships with other organisations	49.709	635	<.001	4.329	4.10	4.55
Communication of long-term goals	60.446	635	<.001	4.970	4.76	5.18
Education of consumers	58.422	635	<.001	4.973	4.75	5.19

Appendix 10: Mean values *PLR* of B04

Mean values

PLR	t	df	Two-sided significance	Sample mean	99% Lower Confidence Interval	99% Upper Confidence Interval
Transparency	19.710	160	<.001	2.882	2.50	3.26
Strict requirements for certification	21.325	160	<.001	4.124	3.62	4.63
Popularity of seal (organization)	38.094	160	<.001	6.211	5.79	6.64
Clear communication of measures	26.796	160	<.001	4.435	4.00	4.87
Frequent auditing of measures	26.952	160	<.001	4.248	3.84	4.66
Trustworthy partnerships with other organisations	24.609	160	<.001	4.050	3.62	4.48
Communication of long-term goals	30.316	160	<.001	4.994	4.56	5.42
Education of consumers	29.196	160	<.001	5.056	4.60	5.51