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

IDENTIFYING THE POTENTIAL OF TOBE'S LI-FI GEOLOCATION SERVICE TO INCREASE VALUE FOR MULTI-BRAND SPORTING GOODS RETAIL STORES IN EUROPE

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19-01-2023

Abstract

The startup ToBe offers software solutions for the innovative data transfer technology Li-Fi. To grow further, the company aims to identify the potential of its *Li-Fi Geolocation* service for the retail sector. In this context, this project aims to advise ToBe based on insights from qualitative expert interviews along with qualitative and quantitative shopper insights. The project focus is on multi-brand sporting goods retail. Recommendations include prioritization and improvement opportunities of the service's features, together with suggestions for value proposition and implementation. The underlying recommendation is to offer a complete software package for the interface between brands and shoppers.

Keywords: Entrepreneurship, Technology Strategy, Li-Fi, Retail, Sporting Goods

Acknowledgements

I would like to express my deepest gratitude to my organization's advisor, Danilo Fattorini, for his invaluable patience and feedback and for giving me the opportunity to support ToBe on this interesting project. I also could not have done this project without my coordinators Prof. Miguel Pinto Fernandes and Prof. Luis Martinez, who always gave me immediate feedback and supported me greatly with their knowledge and advice. Special thanks to all the retail experts who took the time to give me extremely valuable insights in the interviews. It's certainly not a given that, despite their high workloads, they dedicated about one hour of their time to a student project. Finally, I would like to express a big thank you to the shoppers who shared their honest opinions with me in the qualitative interviews, as well as to all the participants who took the time to complete my online survey.

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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1 Introduction

1.1 Challenge Definition

ToBe Srl is an Italian IT startup that offers software solutions for the innovative data transfer technology Li-Fi and is currently mainly active in the cultural heritage sector. To grow further, the company is assessing other potential industries that could benefit from its services. This DRI's challenge is to determine if multi-brand sporting goods retail could be a viable expansion industry for ToBe.

ToBe's *Li-Fi Geolocation* is the service in which ToBe sees the greatest potential for retailers. According to ToBe, the retail type with the most application opportunities for *Li-Fi Geolocation* is large multi-brand retail. Competitors such as *GE* (2015), *Zero1* (n.d.), and *Signify* (n.d.) are already offering the first Li-Fi services for the retail sector. Signify seems to be the company most active in this field. So far, it is mainly present in large food and electronics retail (Interact, n.d.). In consultation with ToBe, the focus of this project is on multi-brand retailers of the sporting goods industry, as there are large retailers that could potentially be interested in applications of the geolocation service. Furthermore, the sports industry has the characteristic that market participants invest a lot in marketing measures to strengthen their image. Accordingly, individual brands need to differentiate themselves in multi-brand retail stores, which could potentially be supported by individual features of the *Li-Fi Geolocation* offering.

To sum up, this project particularly aims to identify how ToBe's *Li-Fi Geolocation* service can add value to multi-brand sporting goods retailers.

1.2 Objective

The overall goal of this DRI is to provide *ToBe* with insights that clarify opportunities and limitations of expanding into multi-brand sporting goods retail. The intention is to determine which features of the *Li-Fi Geolocation* service are most demanded by this industry and how they could be implemented. This requires determining the current situation of multi-brand retailers in the sporting goods industry and whether ToBe's service can help them solve some of their challenges. Moreover, to properly capture the overall potential, it is critical to understand how shoppers could benefit from the *Li-Fi Geolocation* features.

1.3 Methodology & Limitations

To achieve the overall objective, a combination of literature review, qualitative and quantitative research is required. The literature review intends to provide the necessary understanding of the Li-Fi technology and to capture the current situation of multi-brand retail stores. The qualitative research is conducted in the form of semi-structured expert interviews. A variety of retail experts are interviewed to gain up-to-date insights into their challenges and to ask for their assessment of the specific features of ToBe's *Li-Fi Geolocation* service. For the selection of experts, the focus was set on professionals with an overseeing function in multi-brand sporting goods retail companies. In addition, specialists were sought who are involved in the market from a different perspective, such as specialists from single-brand retail and from brands themselves, as well as digital transformation experts for retail. A total of 8 interviews were conducted, including four managers from multi-brand sporting goods retailers (Intersport, Sportler, Sport Schuster, Bründl Sports), one expert from single brand sports retail (FC Bayern Stores), one brand communication expert from Adidas, one data expert from the department store business (Unibail-Rodamco-Westfield), and one expert for store creation (Umdasch). The interviews took 50 minutes on average and the transcripts can be found in Appendix 2. After collecting their insights and identifying the most relevant Li-Fi geolocation features, shoppers' needs for the service are clarified through qualitative interviews and a quantitative online survey. The qualitative shopper interviews with 10 participants are used to concretize the hypotheses from the expert interviews and the quantitative shopper survey with 129 participants then serves to test the formulated hypotheses and resolve the remaining questions.

This approach aims to obtain a holistic analysis by incorporating current literature, retailer insights, as well as qualitative and quantitative shopper insights. However, these methods naturally have their limitations. Although the qualitative expert interviews cover different industries and retail sizes, the findings depend on many retail-specific factors and thus cannot be generalized to sporting goods stores across Europe. The qualitative shopper interviews can only give a rough idea of the potential pain points and cannot directly be applied to society. Even though the quantitative shopper survey with 129 participants is statistically representative, a certain margin of error remains, and the answers given may deviate from actual in-store shopping behavior. Further, about 84% of the participants are German or Italian and thus possible cultural differences with other nationalities are not captured. Finally, the risk of an age bias should not be disregarded, since most participants belong to younger generations. Further analysis would therefore be required to gain more accurate insights into the opinions of older generations.

2 Fundamentals of Li-Fi Technology

2.1 Technology, Benefits & Limitations

Before the potential for multi-brand sporting goods retail can be identified, a solid understanding of the technology must be established. Li-Fi, or Light Fidelity, was first presented to the public in 2011 and is a wireless technology that enables the transmission of data using LED lights. This means that instead of radio frequency, light waves are used for communication (Li-Fi Conference, n.d.). The information is converted into binary data, which in turn can be transmitted to devices such as smartphones by switching the LED lights on and off more than 10 million times per second. This modulation frequency is not visible to the human eye (Oledcomm, n.d.). It allows the same lights to be used for lighting and communication simultaneously (Purelifi, n.d.). For the installation of a Li-Fi system, a transmitter, a transmission channel, and a receiver are required (see App.1.1). The transmitter consists of one or more LED lamps. It regulates the current flow through a circuit to encode the light accordingly. Then the signal is transmitted by the modulated light frequency and demodulated by the receiver (Ji et al., 2018). Compared to radio frequency, Li-Fi brings several advantages. The light spectrum is 10,000 times wider and requires no frequency regulation (Parikh et al., 2012). Additionally, light signals can be restricted to the zone of exposure, which makes it easy to avoid interferences (Purelifi, n.d.). Given the growing concern that intense exposure to radio frequencies could have adverse health effects, the light spectrum is a harmless alternative. In terms of cyber security, Li-Fi also has the advantage that the signal can be protected by physical barriers (Ji et al., 2018). Furthermore, LEDs operate very power-efficiently, and the price of required devices is comparatively low (Karunatilaka et al., 2015). Another decisive advantage of Li-Fi is the precise determination of the location within buildings. By evaluating the data of an LED network, the position of a person with a receiving device can be determined with a margin of error of 2 cm. To date, no other technology can determine the indoor position of a user with such precision (ToBe, n.d.,a). Since Li-Fi was first introduced to the public, several organizations have worked on improvements and public interest in the technology has grown. However, widespread market adoption is not yet apparent because phone and computer manufacturers are not yet integrating the necessary Li-Fi chips into their products. Therefore, most forms of application of Li-Fi are only possible with additional hardware such as dongles, USB sticks or other modifications to the devices (Halper, 2021). Nevertheless, there are several companies that specialize in the development and distribution of various applications of the technology. For certain types of applications, individual advantages of the technology can also be achieved without additional hardware. This is also the case for ToBe’s *Li-Fi Geolocation* service.

2.2 ToBe’s Li-Fi Geolocation Service

ToBe Srl is an Italian-based startup that was founded in 2016. ToBe's offering includes the design, development, and sale of Li-Fi solutions. For lighting and Li-Fi hardware, the startup uses third-party suppliers and focuses on selecting the right tools and developing the software based on the client's needs (Fattorini et al., 2021). Currently, the founder’s team consists of 6 permanent and 3 non-permanent employees. The startup has been operating profitably since its first year. Over the years they have implemented several projects, such as the world’s first Li-Fi installment on a ferry, the implementation of Li-Fi in schools, universities, and many more. Their current focus, however, is the cultural heritage sector. ToBe digitized several museums and archaeological parks across Italy by implementing their *LiFi Art App*, including the Barracco Museum in Rome and the Pompeii Amphitheater (ToBe, n.d.,b).

ToBe's *Li-Fi Geolocation* service makes use of the Li-Fi capability to determine the position of a device with extreme accuracy. The prerequisite is the setup of several LEDs to create a monodirectional communication via light waves. By modulating the LED lights, they send a binary code that can be received by the camera of smartphones and tablets using ToBe’s app. In contrast to other Li-Fi applications, there are no additional modifications needed to common mobile devices. This means this technology is applicable on every smartphone or tablet with an integrated camera. In this use-case, Li-Fi is only applied to determine the location of a device. The content within the app is transmitted via commonly used RF technologies. However, as soon as computer and phone manufacturers integrate Li-Fi chips, also the content within the app can be generated via Li-Fi. The accuracy of the location service makes it possible to satisfy new market needs. On the one hand, visitors can be supported in finding their way within large indoor spaces. On the other hand, the managers of such buildings can interact with their visitors based on their location and monitor their movement patterns. Consequently, ToBe's *Li-Fi Geolocation* service consists of two components. The first one is the content management system which allows ToBe’s clients to manage their maps, create content and associate it with different parts of their maps. They can also access analytics and other additional services. The second component consists of the mobile app for the end-user, which allows visitors to access different services like wayfinding, proximity marketing, and accessibility services (ToBe, n.d.,b).

3 Multi-Brand Sporting Goods Retail Industry Overview

3.1 Industry Characteristics

"**Sporting Goods** means items designed for human use and worn or used in conjunction with sporting, athletic, or recreational activities" (Law Insider, n.d.). There is a great diversity of categories and products in the sporting goods industry. Sports apparel, athletic footwear, and sports equipment are the major drivers of revenue in the overall market (SGI Europe, n.d.). The value of the global sporting goods market is estimated at $165 billion in 2022 (BRC, 2022). According to Andreff (2006), usually a small number of internationally operating manufacturers cover a large part of the global market for the respective sports products of a segment. Alongside the global players, there are small and medium-sized companies that take over the remaining local domestic market. Due to these market characteristics, competition between manufacturers focuses mainly on quality, innovation, and cost reduction rather than pricing. Instead of price variations, sporting goods manufacturers tend to invest in marketing measures to differentiate their products and improve their brand image (Andreff, 2006, 31-33). These features provide good prerequisites for potential applications of the *Li-Fi Geolocation* service. **Multi-brand retail** stores are physical stores that offer their shoppers a variety of brand assortments. The advantage of multi-brand stores compared to single-brand stores is the comparatively high number of visitors, as many appreciate the wide selection and convenience of a one-stop shop. Especially well-known multi-brand retailers benefit from a high proportion of walk-in shoppers. Therefore, it's important for many brands to sell their products in multi-brand stores to stay competitive and to ensure visibility and access to the brand (Mister, 2021). The nature of multi-brand stores makes it easier for shoppers to compare different brands for desired products. In such an environment, shoppers tend to buy brands that are perceived as market leaders because they are seen as safe choices (Hauser&Wernerfelt, 1990). Past research has shown that comparing a product with competing brands leads to the product being perceived as less appealing overall (Hsee&Leclerc, 1998). In addition, a shopper's willingness to pay for a product in this environment decreases (Okada, 2005). All these factors highlight the need for brands to have opportunities to differentiate themselves in multi-brand stores. The turnover of the five largest sport and leisure retailers in Europe totaled more than €32 billion in 2019 (Statista, 2020). The share of e-commerce sales in relation to total retail sales is estimated at 45% in the sports apparel sector (Becker et al., 2022). The two leading retailers in Europe are Decathlon and Intersport (see App. 1.2).

3.2 Challenges

To learn more about the needs of sports retail stores, current challenges and trends must be identified. The Covid pandemic had a negative impact on the sporting goods industry worldwide. However, strong growth in China and the USA enabled the market to recover almost to pre-Covid levels by the end of 2021. According to a press release by McKinsey published in January 2022, global sales of sportswear are expected to grow by 5-10% annually until 2025 (McKinsey, 2022). At that time, however, the war in Ukraine and the associated energy crisis were not yet foreseeable. These current developments also affect the sports retail industry.

According to the former director of product development at Intersport, Thomas Scheck, it's hard to predict **customers' spending power** in the coming winter season. For Scheck, the worst-case scenario would be that only people who are financially better off would be able to afford certain winter sports. The **supply chain disruptions** that are currently taking place in many industries are also causing problems for sports retailers, according to Thomas Vorreiter (Board Member at Bründl Sports). The **shortage of staff** in stores is another challenge mentioned by the retail experts interviewed. According to Iskender Ölmezkaya (Team Lead Retail at FC Bayern), the working conditions in the stores are no longer appealing to the younger generation and therefore it is difficult to find qualified employees. The same applies to many of the clients of Umdasch, an international company specializing in the design and construction of retail stores across several industries. Accordingly, Markus Betz (Key Account Manager at Umdasch) sees internal marketing and employee care as one of the key priorities for retail in the coming years. One of the biggest challenges mentioned by the experts is **competition from online retailers**. Markus Betz considers large online retailers such as Amazon and Alibaba to be the main problem, as they already dominate the market and are increasingly entering the stationary retail sector. Especially during Covid, many consumers migrated to online retail, as Iskender Ölmezkaya confirms. Jane Doe (Brand Communication Director at Adidas), however, is currently observing the opposite trend. With the Covid pandemic fading, people are coming back to the stores because they want to experience, see and touch the products, she reports. Adidas is currently opening more and more stores. Nevertheless, stationary retail must adapt to the challenges caused by online commerce. One consequence of online competition is **decreasing customer frequency** in stores. For this reason, some of the retail experts interviewed see the need to increase average in-store spending as one of their main tasks (see App. 2). Further, the constant possibility of price comparison through e-commerce is a challenge for stationary retail (Brinker et al., 2012).

3.3 Trends

In this context, several trends have emerged in the retail industry, many of which are designed to counteract the growing market power of e-commerce. Those identified as most important based on the literature review were examined in more detail and discussed with retail experts.

In terms of **personalization of shopping**, online retailers are superior to stationary retailers, as it is much easier to collect data from customers online than in a store. Stationary retailers are therefore increasingly trying to collect data from their shoppers to be able to offer a customized shopping journey (Accenture, 2022). The experts interviewed consider this trend to be very relevant. Most already use loyalty programs and offer special deals to participants in return for providing data. The data consists mainly of demographic data, which is collected at registration, and a record of in-store purchases, which can be used to infer one's interests. Most of the retail companies surveyed have already implemented an online shop and therefore also have access to user data via this channel. According to Markus Betz, the biggest challenge for Umdasch's clients is not the data collection itself, but the analysis of it, as it is a time-consuming process and requires specialized employees. Iskender Ölmezkaya also notes that the time at which data is received by the FC Bayern stores is often too late. Information about a shopper is not recorded in the store until the shopper has his loyalty card scanned at the time of payment. Personalized offers can thus only be made available after the transaction has taken place. Jane Doe especially sees potential in digital tools inside the stores to increase personalization (See App. 2).

"**Omnichannel retail** is a strategic approach to delivering a consistent, coordinated, and cohesive experience across all possible brand channels and customer touchpoints" (Intel, n.d.). Retail experts from McKinsey see the future shopper as someone who uses all the channels offered by a retailer. By linking the channels well, the potential of an omnichannel shopper can be exploited, who, according to the experts, buys 1.7 times more often than a single channel shopper and also spends more (Burns&Harris, 2022a). Apple is considered a flagship company in this area due to the range of services offered based on the Apple ID (Burns et al., 2022b). This approach is strongly related to the personalization of shopping, as consistent data collection across all channels can be used to make the shopping journey more personal. The trend also appears to be of great importance for sporting goods retailers, with all of the experts interviewed already offering omnichannel options or working on providing or expanding them. *Click & Collect* is a service that is already offered by most. Beyond that, Sportler provides an app that allows customers to collect vouchers, receive updates about events, and book specialists in advance for personal in-store consulting. Markus Betz considers omnichannel retail to be particularly relevant for companies with numerous stores. For retailers with only a few stores, this approach is relatively uncommon, as implementation is more difficult for them (See App. 2).

Another trend accelerated by Covid is the **shift in priorities for in-store support**. The use of digital tools in stores has become much more widespread. Even though personal advice on product selection is still mandatory, shoppers expect new forms of support in stores. As such, they want to be supported in using the different technologies in the stores, which requires special training for the employees (Burns&Harris, 2022a). Both self-checkouts and mobile POS systems are becoming more widespread. Mobile POS systems allow shoppers to pay anywhere in the store (Cvetkovic, 2022). In Apple stores, shoppers even have the option to scan the barcode themselves using the Apple Store app and leave the store (Sherrod, 2022). The sporting goods retail experts attach great importance to personal customer advice, as most sports products require precise consultation. Beyond that, staff at FC Bayern's stores is being trained to draw shoppers' attention to the various digital tools in the store, which is clearly in line with the trend. When it comes to new payment methods, feedback is mixed. Some argue that they will only consider self-checkouts when staff becomes scarce and attribute great importance to the last personal contact in the store by the cashier. Others are already working on the implementation of self-checkouts and mobile POS systems. However, according to Thomas Vorreiter, implementation is a challenge, since numerous bulky products are sold and some have anti-theft devices attached. Ultimately, there still seems to be a demand for both conventional and new payment methods, and therefore a coexistence will probably prevail at first (see App. 2).

The personalization of shopping, the omnichannel approach, and self-checkouts are in the end also possibilities to improve the **shopping experience**. However, what is crucial for people to come to the store and not buy online is the emotional experience they get in the store, which is seen as an opportunity for retailers to retain shoppers in the long term. To accomplish this, one of the approaches taken by retail stores is to become a destination for recurring community get-togethers (Moore, 2019). Enhancing the shopping experience can also be achieved by introducing digital tools into stores. According to a study by Capgemini, 66% of customers believe in-store automation can enhance their shopping experience by solving problems they encounter while shopping (Bridges et al., 2019, 4). Numerous tools are used in this area, such as screens, QR codes, augmented reality, or robots (Bridges et al., 2019, 8-9). This trend is also clearly visible among sporting goods retailers. However, the approaches to enhancing the shopping experience are different and depend a lot on the specific store. A common approach that can be observed is that of becoming a place for community get-togethers. Sportler, Sport Schuster, and Bründl Sports offer informative and sporting events in or outside their stores (see App. 2). Overall, the retailers surveyed use a variety of **technologies** to enhance the shopping experience. The most common are screens, retail apps, and QR codes. Screens are often used for broadcasting communication content. In some cases, they are also interactive. For example, Intersport provides touchscreens with information about product features, the production process, and support with product selection. Adidas uses interactive shoe walls, where the wall displays information about the product as soon as a shoe is taken off the shelf (see App. 1.3). Retailer-owned apps typically include the customer loyalty program, information about brand offers, an overview of store locations and the option to book events. Intersport has integrated its online store into the app and Sportler enables in-store consultants to be booked via the app. QR codes with links to further product information are often attached to the labels directly by the manufacturers and are free of charge for the brands. In addition, retailers also place QR codes themselves with sustainability information, product recommendations, or storytelling. However, the experts note a low level of use. According to Thomas Vorreiter, only 30 scans were recorded in half a year for a QR code placed in the shop window of a store. On the question of whether there are plans to introduce new technologies in the stores, the mood among the experts is more reactive than proactive. The market is being observed, but new solutions are not being actively sought. In addition, some counterarguments are mentioned. According to Robert Schaflinger (Project Manager at Sportler), many of the digital technologies tried out in the stores have not proven themselves in the long term. Thomas Vorreiter sees the danger of a digital overload in the store, so that personal contact is lost. Overall, however, the retail experts attach great importance to the topic of shopping experience and, according to Markus Betz, digital technologies that increase convenience when shopping will prevail (see App. 2).

Customers are becoming increasingly aware of the issue of **sustainability** and with it the demand for sustainable products. As a result, retailers are striving to act as sustainably as possible from an environmental and social perspective (Burns& Harris, 2022a). Since sustainability is a rather obscure topic, it is also the task of retailers to help customers to act sustainably, for example by providing sustainability information about products via displays (Accenture, 2022). The interviewees attribute great importance to this topic. According to Thomas Scheck, the topic of sustainability is nowadays inevitable for all brands in the sports industry. However, the perception of consumer demand for it is mixed. Some of the experts have the impression that shoppers appreciate it when sustainability-oriented products are offered, but rarely actively ask for them. Jane Doe has noticed an increase in demand at Adidas, especially among the younger generation. According to Christian Betov (Digital & Data Analyst at URW), the department stores of Unibail-Rodamco-Westfield immediately receive backlash on social media if customers have the feeling that the company is not acting sustainably in certain areas. Brands opt for different ways to present their sustainability in-store. At Intersport, for example, brands use posters, labels, or QR codes. Bründl Sports has developed its own evaluation matrix, whereby all products are evaluated in a standardized manner. A QR code is attached to the company's own sustainability label with the possibility to learn more about the topic (see App. 2).

3.4 Approaches to Brand Investment Management

The basic form of brand investment is handled similarly by the multi-brand sporting goods retail experts surveyed. Retailers own the products for sale but provide opportunities for brands to showcase themselves. Named opportunities include time-limited pop-up zones or themed promotions that highlight different categories. Often, these areas are built in collaboration with the brands. Bründl Sports also mentions the possibility for brands to invest in content time on screens or video walls. According to Thomas Scheck, Decathlon pursues a different approach with its consignment business (see App. 2). In this case, the manufacturer assigns goods to a third party authorized to sell them, who receives a share of sales in the form of a commission for the sales service (Grant, 2022). Apart from Decathlon, however, this approach does not seem to be so widespread in sporting goods retail. Normally, brand investments do not take place one-sidedly, but rather represent a collaboration, as the example of Adidas and Intersport shows. Here, a long-term strategy is usually created, based on which annual contracts are negotiated. These yearly contracts define KPIs and the budget. Moreover, the contracts regulate how much budget the wholesaler brings in and how much budget the brand brings in. In the case of cross-brand category activations in retail, the individual brand does not stand out and therefore the retailer is more likely to invest in this case. Whereas in case of specific brand activations, the brand is more likely to invest for increased visibility. The respondents confirmed that brand investments pay off in terms of increased sales or brand visibility, although the exact extent depends on several factors such as the size of the budget and the type of promotion. According to the experts, the proportion of brands that invest in campaigns of this kind tends to be a small number of the big brands. Intersport is talking about the top 5, Sport Schuster estimates that 20-30% invest in temporary special spaces, and Bründl Sports holds advertising agreements with around 30 brands (see App. 2).

4 Potential of ToBe's Li-Fi Geolocation for Multi-Brand Sporting Goods Retailers

4.1 Features of the Service and Their Potential to Address Retail Challenges

The fundamental service of *Li-Fi Geolocation* is **indoor navigation**. Taking a retailer's perspective, this enables easy access to wanted items for shoppers but also for staff. A shopper that enters the store with a clear plan on what he desires to buy, can make use of the app to get navigated to the wanted products time-efficiently. Staff can get navigated to shelf spaces that need to be restocked. It could also help people with disabilities find their way around a store without encountering barriers. Such an indoor navigation system could thus improve the experience of shoppers and would also be in line with the trend of changing priorities for in-store support. The staff would be less busy guiding shoppers to the products and could concentrate on new tasks. Moreover, this could be an opportunity for retailers with staff shortages to create an equivalent level of customer satisfaction with fewer employees.

Another feature of *Li-Fi Geolocation* that could be beneficial for multi-brand retailers is the possibility to expand the **in-store communication space for brands**. Shoppers can receive additional information about a product or brand on their smartphones depending on where they are in the store. This could be advertising content, sustainability information, or product explanation and consulting. This feature could again support retailers with limited staff. Furthermore, it is an opportunity for retailers to incorporate elements that promote their omnichannel approach. From the shopper's point of view, additional information about a product or brand and interactive features could enhance the experience. In addition, shoppers interested in sustainability could receive more information.

Closely related to this point is the ability to use **proximity marketing** such as special offers or recommendations for complementary goods during the shopping process. Shoppers could thus be given access to special offers based on their interests and their position in the store. This would provide a highly personalized shopping experience, as well as an opportunity for retailers to increase the average purchase receipt.

Another feature that could be especially interesting for retailers is the possibility to collect **data from shoppers in the store**. In addition to the usual demographic data that is collected during the registration of the app, personal information about the visit dynamics and purchase decisions can be collected. This could serve retailers as a basis for advancing their personalization efforts. Finally, the ability to use LEDs simultaneously for lighting and communication purposes leads to efficient energy use in a store. This energy efficiency could help retailers keep energy costs low and contribute to the shopper demand for sustainably operating stores.

4.2 Expert Interview Results on the Value of the Li-Fi Geolocation Features

As part of the qualitative interviews, the experts were asked to evaluate the potential of the individual features as well as the overall potential of ToBe's geolocation service for their business. They were given a scale of 1-10 for the rating and were asked for the reasons for their assessment. The scale was chosen to force the interviewees to define a rough direction and serves as a guideline for the relevance of the respective features for retailers. An overview of the results can be found in Appendix 3. In summary, the ratings vary widely and there is no clear trend that one feature is or is not in particular demand by retailers. Therefore, a closer look will now be taken at the reasons behind the individual ratings. In this context, the opinions of experts who are not directly from the multi-brand sporting goods retail are also considered.

On the feature of **indoor navigation**, the top two ratings of Bründl Sports (10) and Intersport (9) stand in strong contrast to the ratings of Sport Schuster (2) and Sportler (2.5). The strong rating of Bründl Sports is partly due to their large rental areas, in which customers struggle to find their way around on busy days and a navigation system is therefore beneficial. Intersport's good rating is based on the convenience for customers to shop efficiently and the accessibility aspect. The counterarguments of Sport Schuster and Sportler are similar. It is anticipated that shoppers like to look around in the store and that this is also in the interest of retailers. Therefore, efficient customer navigation is seen as counterproductive for the business. One factor that is often mentioned overall is that indoor navigation only makes sense for larger stores. The definition of large, however, is very subjective. While Markus Betz (Umdasch) considers a use for stores from 700 square meters, Christian Betov (URW) sees this type of service only making sense from 20,000 square meters. As an interesting aspect, they both mention that it would be useful to be able to search not only by brand but also by category, as this would make life easier for shoppers. Another factor to consider is that indoor navigation especially makes sense for customers who are not frequently in the store. Since these customers are probably not registered in a loyalty program, it requires more effort to make them aware of this service. However, if this group of customers can be convinced to use the service, it can be very valuable for a retailer, according to Christian Betov (see App. 2).

The feedback on the feature that allows expanding **in-store communication space for brands** does not vary quite as much and is more on the positive side ranging from 4.5 to 9.5. The positive aspects mentioned are that shoppers are given the opportunity to engage more intensively with a product or brand and that it's a good platform for brands. However, some limiting factors are also identified. The retail space is often changed regularly at multi-brand retailers, which would require additional work to change the maps. In sports stores with a strong focus on advice, such as Sport Schuster, this feature does not seem to be very attractive either, as customers usually have direct access to advisors. In addition, a large percentage of shoppers must use this service to make it worthwhile for brands to invest in this platform. This in turn requires investments from retailers to create awareness (see App. 2).

Most of the experts interviewed see the possibility of generating additional purchases with the help of **proximity marketing** in the store as very useful. Thomas Scheck (Intersport) attributes great potential to the feature to counteract the problems caused by declining customer frequency. However, the rating varies relatively widely here with a range of 2.5 to 9, as there are company-specific concerns regarding the benefits. Robert Schaflinger sees the feature as relevant primarily for younger generations, which has a rather little effect with respect to the entire customer base of Sportler. Marco Moosburger (Sport Schuster) considers implementation as a problem, as it would require a widespread use of the app by shoppers and a complicated onboarding of the brands. Thomas Vorreiter (Bründl Sports) is concerned that customers could then be too busy with their smartphones while shopping and neglect physical products and personal contact. Positive feedback can be seen from the external experts. According to Iskender Ölmezkaya (FC Bayern), the feature could help counteract the frequently observed customer behavior in stores, where shoppers use their smartphones to check online whether the product is available at a lower price. The possibility of implementing advantages from e-commerce in stationary retail is also highlighted positively (see App. 2).

The retail specialists surveyed are currently conducting **data collection** to varying extents. What most of them do is to collect demographic and purchase data using loyalty programs. The companies that already have apps use them to collect customer data on purchases, preferences, and event bookings. Sportler and Bründl Sports also use customer frequency trackers in their stores and can thus record how many people are in the store. The department store company URW uses anonymized mobile data tracking. In this way, the flow of visitors from different zip codes can be recorded in the store. It does not track who the individual customers are, but it does show where they come from and, to a certain extent, how long they stay in the store. None of the respondents have yet recorded the behavior of the customers in the store itself. Most feedback on the question of how relevant it would be for the experts to collect more data on customers in the store is generally positive, with a rating between 6 and 10. The exception is Sportler, with a rating of 2, as recording customer data in the store itself is seen as rather irrelevant. Apart from that, the potential to increase the shopping experience through a more personalized shopping journey is seen as high. However, some factors are mentioned that could have a limiting effect. Shoppers must be told transparently what is done with their data, whether it is sold on or not. At one point, shoppers must agree to the collection of data, which, according to Thomas Scheck, could be difficult, especially with the younger generation, since they are raised to disclose as little data about themselves as possible. Another limiting factor can be the price for the data collection service. Bründl Sports has considered more intensive data collection in the store in the past, but the investment for the required technologies was not in relation to the benefits. Ultimately, it also depends on the percentage of shoppers who would use the service and how well the data can be analyzed. If a customer share of about 30-40% use the app, Christian Betov believes it would bring very large benefits to data collection (see App. 2).

At the end of the interview, the experts were asked to assess the **overall potential** of the *Li-Fi Geolocation* offer to increase the shopping experience and therefore brand investments. The aim of this question is to find out to what extent the market readiness of the service is estimated with the current features and where there is potential for improvement. The overall rating is mixed, ranging from 2.5 to 9. Multi-brand sports retailers particularly highlight the opportunity to reach a young audience with this type of digital service, as well as having a new method for data collection. In addition, the potential to enhance the customer and brand experience, as well as to increase the average receipt, are key factors for a positive overall rating. The factors that lead to a low assessment focus primarily on three aspects. First, there is uncertainty about how well the technology will ultimately work in practice, as none of the experts have heard of Li-Fi before. Furthermore, there are concerns about the feasibility of implementation, since a large proportion of both shoppers and brands would have to use the service to make it worthwhile. Finally, of course, the price is also a decisive factor. Apart from Sportler, which sees this type of service as generally not relevant for sports retail, the features of the service are not fundamentally questioned. Also, some extra advice is given. It is pointed out that the legal situation regarding data collection varies greatly between countries in Europe and that good coordination is needed in this regard. If this point is given, then from the brand perspective of Adidas potential is seen to invest in such a service. Moreover, it’s expressed that the main benefit seems to be more on the retailer side at the moment and that the use of further features that increase the benefit for the customer should be considered (see App. 2).

4.3 Results Discussion

In terms of the **indoor navigation** feature, it can be summarized that it probably only has potential in large stores. A more precise determination of the store size above which the feature is considered to add value is still required. In any case, the benefit from a retailer's point of view seems somewhat unclear, since there is the fear of lowering the purchase receipt by shoppers finding desired products more effectively. Therefore, this feature seems to be relevant for retailers only in certain stores and only in combination with other features. However, increasing convenience for shoppers through navigation support could also be an incentive to visit stores more often. Thus, the need for indoor navigation from the shoppers' point of view must be investigated further. The overall positive assessment of the possibility for brands to expand the **in-store communication** space with the help of the app suggests that there is a need in this area. However, the question arises as to what extent the effort required to implement this function in the app is in proportion to other alternatives already in use, such as interactive touchscreens or QR codes. This could be an exclusion criterion, especially for stores with regular inventory changes. The opportunities for **proximity marketing** could be specifically rewarding for retailers. However, the function is mainly rated as attractive for younger generations. Thus, the main problem is seen in the fact that it could be difficult to convince enough shoppers to use the app to make it worthwhile overall. Whether this assumption is correct must be examined from the shopper's point of view. In terms of **data collection**, there are many advantages for retailers overall. The greatest obstacle is seen to be the willingness of shoppers to share their data for the service. Whether data sharing is indeed especially a problem for younger generations must therefore also be examined from the shopper's point of view.

Ultimately, all these features are only relevant if they add value for shoppers. Therefore, the only way to properly assess whether an investment is worthwhile is to understand their needs.

5 Shoppers’ Need for the Features of Li-Fi Geolocation

5.1 Qualitative Shopper Insights

To get an initial sense of shoppers' pain points in sporting goods stores, 10 shoppers with different demographic characteristics were interviewed qualitatively. They were asked about their perceived pain points in stores in general, as well as about the specific pains that could potentially be solved by ToBe's *Li-Fi Geolocation* offer. A transcription of the interviews can be found in Appendix 4. Regarding the generally perceived pain points, there appear to be trends. Respondents seem to have trouble finding certain things quickly, including employees, unfamiliar brands, individual products, or the right size. Also, the feeling of being overwhelmed by the mass of products appears to be a common theme. Another problem mentioned is the insufficient knowledge of employees about the products on sale. Respondents have the experience of receiving poor advice in larger sports stores or only being well-advised on top-selling brands. This openly formulated question aimed to find out which pain points are consciously perceived. The service could possibly contribute to the mitigation of the problems with wayfinding, as well as the lack of advice. Thus, the first assumption is that these problems seem to have a relatively high priority. In the second step, respondents were asked about their perception of each problem that could potentially be solved by the service.

The following pain points are seen as potentially solvable by the individual features: Difficulty finding a desired product, difficulty finding the accessible path, lack of information about products, the feeling of finding better deals online than in stores, and too little information about preferred brands. Contrary to the first assumption, it does not seem to be a real problem for shoppers to find the products in the store. Most find that large sports stores are well organized, and if something can't be found, a salesperson is usually on hand quickly to show the way. Only one respondent has experience using crutches in a sporting goods store. In his case, finding an accessible route was not a problem. The possibility to get more information about products in a sports store seems to be very interesting for shoppers. Above all, they would like information that supports them in making their product choice, information about the manufacturing process and sustainability, as well as top-level information like reviews and rankings. When asked about the perception of finding better offers online than in the store, the feedback is very balanced. The goal here is to find out whether shoppers in the store feel they can get a better offer for a desired product online. This subliminal feeling could possibly be counteracted by proximity marketing in the store. However, no clear tendency can be identified here. There appears to exist some interest in getting more information about product news or special offers of favorite brands or categories in a sports store. Yet the way in which the information is provided seems to be the decisive factor here. The interviewees clearly indicate that they only want information about self-selected brands and only want it in the store itself.

5.2 Formulation of Questions and Hypotheses

According to the qualitative interviews with retail experts and shoppers, the indoor navigation feature seems to play a rather minor role overall. Whether this feature is actually considered beneficial by only a minority of shoppers is to be examined. If people who rely on an accessible route have problems finding it, needs further investigation. Retailers as well as shoppers seem to have a great need for expansion of the in-store communication space. From the shopper's point of view, information about products seems to be relevant primarily, but also about brands to a certain extent. Whether this tendency also applies to the majority is to be investigated further. In addition, it is still an open question whether a large proportion of shoppers feel they can find better deals online and would therefore support proximity marketing offers. In this context, two hypotheses to be tested are of particular interest: H1: "Shoppers who agree with the sentiment of finding better deals online than in-store rate the 'Personalized Live Deals' feature higher"; H2: "Younger generations of shoppers rate the 'Personalized Live Deals' feature higher than older generations". The second hypothesis is related to the retail experts' view that proximity marketing is primarily of interest to younger generations. From the analysis of retail trends, it became apparent that the topic of sustainability is becoming increasingly important to sporting goods customers. A prerequisite for the *Li-Fi Geolocation* service is that a store is 100% illuminated with LEDs. By using these energy-saving lamps for both lighting and data transmission, the energy efficiency of a store can be improved. With regard to the social aspect of sustainability, the technology could support people with physical disabilities in navigating through a store without barriers. Thus, the aim is to identify the extent to which these aspects can contribute to satisfying the sustainability needs of shoppers. Finally, the question must be clarified to what extent shoppers are willing to download the app, register, and, above all, agree to the disclosure of demographic and location data. In this context, the hypothesis that emerged from the expert interviews is to be tested: H3: "The willingness to allow the app to track the in-store location and send notifications is lower among shoppers from younger generations". An overview of the questions and hypotheses can be found in Appendix 5.

5.3 Quantitative Shopper Insights

From the qualitative research with industry experts, it became apparent that the potential of the *Li-Fi Geolocation* service depends largely on how many shoppers ultimately use it. It is therefore of great importance to quantitatively investigate the relevance of the respective pain points for shoppers and how they evaluate the personal benefit of the individual features. In this context, an online survey with 21 questions was created and addressed to participants who practice sports and occasionally buy equipment or apparel for it. The survey was released on the 27th of October 2022 and stopped 20 days later on the 16th of November. A summary of the results can be seen in Appendix 6. A total of 129 participants from 12 different countries took part, with a focus on Germans (58%) and Italians (26%). The gender proportion of the sample is quite balanced with 53% Male and 47% Female. Four generations are represented, with most participants being Millennials (61%) and GenZ (21%). This is a comparatively athletic sample, with 57% practicing sports at least 3 times a week. The types of sports are diverse, with a focus on fitness and winter sports. Around 47% of respondents buy sports products at least every third month and only around 5% buy less frequently than once a year. When it comes to buying sports products online, there are no clear favorites in terms of the type of online retailer. Customers buy from websites of multi-brand sporting goods companies that also have stationary retail, as well as from the brand's own websites and large online retailers such as Amazon. Only the purchase via social media is not widespread yet. There are no clear favorites when it comes to stationary retail shopping. The respondents shop both in large multi-brand sporting goods stores and in small, specialized sports stores. Only department stores do not appear to be their first choice when buying sports products (see App. 6).

The next step is to assess the relevance of each pain point and the value of the associated Li-Fi geolocation feature. Regarding the statement that one has **problems finding products** quickly in a large sports store, a total of about 47% of the participants somewhat or totally agree. Although this is still a sizeable share, it confirms the assumption from the qualitative analysis that the minority of shoppers have problems with this. Regardless of that, the **indoor navigation** feature seems to be demanded, as it ranks second best in terms of the average value of the features. Almost 35% of respondents rate the value of indoor navigation as high, around 43% as moderate, and only around 3% attribute no value to this feature (see App. 6). About 73% of those who previously disagreed with the statement rate the value of the feature as moderate or high. Consequently, there is no significant statistical dependence between the variables of pain-point perception and feature valuation, which is confirmed by a contingency analysis (See App. 7.1). Thus, the feature seems to be interesting even for those who do not consciously have problems finding products in the store. As expected, a large proportion (43%) of respondents have no experience with the topic of **accessibility**. About 33% somewhat agree that there are accessibility issues in sports stores. Only a small proportion completely commits in the positive or negative direction. This suggests that participants are unsure about this issue and presumably few have any longer-term experience with it. Therefore, more detailed research with an affected target group is needed regarding the prevailing problems. What should not be ignored, however, is that a proportion of 37% attributes a high value to the corresponding feature (see App. 6).

Overall, about 74% somewhat or totally agree with the statement that they would like to have **additional information about products** in the store that goes beyond the current standard. This confirms the tendency perceived in the qualitative research. Consequently, the **location-based content** feature also scores best in the average value evaluation. Around 40% attribute high value and around 42% attribute moderate value to the feature (see App. 6). As with indoor navigation, about 69% of those who previously disagreed with the pain point statement rated the value of the feature as moderate or high. A contingency analysis likewise reveals no statistical dependence between the pain point rating and the feature value. This means that a large proportion of those who do not feel they receive too few information about products in stores are also interested in location-based content (see App. 7.2).

Overall, about 57% somewhat or totally agree with the statement that they would like to receive more updates about product releases or special offers of preferred brands or categories in a sports store. Therefore, the tendency here is not quite as clear as with product information. This corresponds to the assumptions from the qualitative shopper insights. The associated feature for **brand and category updates** performs worst overall. Compared to the other features, a comparatively low proportion of about 26% assign a high value here. Overall, 35% see no or low value in this feature. One possible reason for this, mentioned several times in the qualitative shopper research, could be that an overload of information has an annoying effect. A clear correlation can be observed between the agreement with the statement and the rating of the feature. Thus, this feature does not seem to be interesting for the general public, but rather exclusively for the group of shoppers, who feel the pain of not getting enough updates from favored brands (see App. 7.3).

A large proportion of about 74% somewhat or totally agrees with the statement "I would like to buy sporting goods in a store more often, but I usually find a better deal online" (see App. 6). This is a more definite trend than assumed after the qualitative shopper research. The first hypothesis to be tested on this point, that shoppers who agree with the feeling of finding better deals online than in-store will rate the **personalized live deals** feature higher, cannot be confirmed. In fact, 78% of the participants who disagreed with the pain point attribute a high or moderate value to the feature. In addition, 22% of those who agreed with the pain point see no or low value in the feature. Consequently, no statistically significant dependence between the pain point perception and the feature evaluation can be determined by a contingency analysis (see App. 7.4). Overall, the average rating of the feature is the third best. Around 79% assign it a high or moderate value. However, the proportion of people who attribute no value to this feature is also the highest compared with the other features, at around 9% (see App. 6). Thus, the next step is to test the second hypothesis to identify whether proximity marketing is indeed more favored by younger generations. This hypothesis can be confirmed. Generation X and Boomers together attribute a low value to the feature relatively more often. A statistically significant dependency of the feature evaluation on the generation can be proven by a contingency analysis. Nevertheless, about 61% of the older generations still assign a moderate or high value to personalized live deals (see App. 7.5).

When asked which of the aspects are most important to them when it comes to the **environmental and social responsibility** of sports stores, participants were requested to rank 8 given topics in order of relevance. The aim of this question is to find out how important the factors of energy efficiency of sports stores and accessibility for people with disabilities are to customers. Energy efficiency is ranked 5th and accessibility 7th, so these aspects still seem to be perceived as rather marginal in the overall sustainability picture (see App. 6). After evaluating the potential of each feature, the next task is to understand the **shoppers' willingness to complete the steps required** to use the service. The first step is to download the app, which is free for shoppers. For this, the overall balance is positive, with a total of about 54% either very willing or somewhat willing to do so. Only about 16% would not be willing at all. When it comes to the second step of creating an account, however, a total of around 66% of the people who are either not at all willing or not so willing have to be convinced. The results are very similar for the associated sharing of personal data (see App. 6). Here, the proportion of those not willing to do so is only slightly higher, and the majority chose the same answer as for the account creation question (see App. 7.6). This suggests that this step may be more a matter of inconvenience than a problem with sharing demographic data. In order to use the app's functions in their entirety, shoppers would have to allow the app to track their position in the store and send notifications during use. Again, a total of about 62% need to be convinced. Especially the share of those who are not at all willing to do this is very high at around 36%, which suggests a higher unwillingness to pass on this type of data (see App. 6). The hypothesis that especially shoppers from younger generations are less willing to allow the app to track their location in the store could not be confirmed. In fact, it is primarily shoppers from older generations who frequently indicate that they are not willing to do this at all. However, the contingency analysis shows no statistically significant dependence of the approval of tracking on the generation of a shopper (see App. 7.7). The results are somewhat similar for the next step, which requires shoppers to connect their smartphones to a wireless connection. This appears to be inconvenient for about 57% of shoppers. The final requirement for shoppers is to hold the smartphone in their hand while navigating through the store so that the signal can be captured by the phone's camera. More shoppers are likely to do this, with a total of around 53%.

5.4 Results Discussion

From the shopper's perspective, the location-based content feature is the most attractive. Both the agreement with the corresponding pain point and the feature valuation is very high. The features with the second highest ratings are indoor navigation and live deals, but a clear ranking between the two is not possible. Even though the minority of shoppers seem to have problems finding products, the value of the indoor navigation feature is rated well. Consequently, the feature doesn't seem to solve a conscious problem, but shoppers would definitely appreciate a service that allows them to find products even more efficiently than they do now. Regarding the need for barrier-free navigation, further investigation with an affected target group is required. Personalized live deals don't seem to be able to counteract the feeling of knowing that there might be better deals available online. Nevertheless, the feature is highly rated and is particularly attractive to younger generations. Overall, the feature for brand updates scores worst. Even though the agreement with the corresponding pain point is rather high, a large proportion doesn't attribute value to this feature. Thus, there may be a risk of annoying this share with the feature. The Li-Fi service as a whole does not appear to address customers' most important sustainability needs. The two biggest barriers for shoppers to use the service seem to be the permission for location tracking and the effort to connect the phone to a wireless connection. The permission for location tracking appears to be independent of the generation.

6 Recommendations for ToBe

The challenges in multi-brand sporting goods retail that can be addressed with the *Li-Fi Geolocation* service are primarily the staff shortages and the impacts of online commerce. Here, the service may be applied to compensate for declining customer frequency and to satisfy the need for the personalization of shopping and an omnichannel approach. From the qualitative interviews, it became apparent that potential collaborations are most appropriate with multi-brand sporting goods companies that operate multiple big stores.

From the retailers' point of view, the **indoor navigation** feature could have the risk of lowering the average shopping receipt due to the increased efficiency of the shoppers. Shoppers would appreciate the feature, but it doesn’t represent a solution to a pressing problem for them. Thus, this feature should not be treated as the main feature of the service but should be seen alongside the others as one that contributes to the shopping experience. Shoppers should have several ways to navigate to products. Alongside the search for specific products, there should also be a search function for brands and categories. The barrier-free navigation function could be a great added value for those affected. However, it needs to be verified whether there truly exist problems with route finding. The **location-based content** feature has the greatest potential but also the biggest risk factors. There is a strong need for additional information about products, but there are already many technologies that try to solve this problem, especially QR codes and interactive screens. In addition, it must be very easy for employees in sports stores to change the location for the content when the inventories change. Since all of the 8 largest sporting goods retailers (see App. 1.2) already offer apps with brand updates and since the feature seems attractive only to a small audience, it is recommended to focus on product-related information. The ability for in-store data collection in combination with **proximity marketing** would be a novelty and the biggest specific advantage of Li-Fi technology in this industry. In theory, this feature brings value to retailers through the potential for increasing the average receipt and attracting younger audiences. However, it seems to require some convincing in this industry on the implementability of the feature. Hence, it is essential that the **data collection** is compatible with the existing collection methods of retailers to guarantee a seamless analysis. In addition, there must be sufficient incentives for shoppers so that a significant proportion can be convinced to use the service. In this respect, it is recommended to implement additional features that are specifically valuable for shoppers. For example, it could be examined whether a self-checkout system can be integrated into the app to increase convenience for shoppers.

Overall, ToBe's **value proposition** to retailers should not be limited to the geolocation technology, but rather offer a full software package for the interface between brands and shoppers, which has unique capabilities due to Li-Fi technology. Since retailers in this industry are not actively looking for new digital solutions, ToBe’s service needs to be even more convincing. It is proposed to offer a two-sided business model for retailers that in a way acts as a platform between shoppers and brands. As many of the large sporting goods retailers have already implemented apps, it would be reasonable to integrate the Li-Fi features into them. Providing an extra app would involve the risk that it might compete with existing apps. In addition, it would probably also lead to confusion among shoppers. Integration would also allow retailers to benefit from their established user base. Already registered shoppers benefit from new features and brands get a new opportunity to showcase their products. ToBe's **revenue model** is based on client payments for hardware, its setup, and software development. Additionally, it is advisable to charge license fees that are linked to the amount of shopper data collected, as these ultimately add the most value for the retailer. In return, ToBe could provide technical support.

For **implementation** from a retailer perspective, it would be worth considering allowing brands to set up location-based content for free. Usually, only the biggest brands have the budget for special in-store promotions. To create value for shoppers, it should therefore be in the interest of retailers to integrate the features for as many products as possible. Retailers could still benefit financially from the service by selling the obtained shopper data to the brands. The prerequisite here is that the data evaluation is compatible with most existing methods and works across countries. Since app registration represents the first hurdle for shoppers, it is recommended to enable shoppers to use the indoor navigation and location-based content features even without registration. This could help to reach the critical mass for the app faster. For personalized live deals, shoppers would then have to register. Since the number of registered shoppers who agree to location tracking is crucial for retailers' value creation, further incentives should be created. First-time registrations could be rewarded with special live deals, for example. To make it easier for shoppers to connect their phones to Li-Fi, a link should appear directly in the app.

This approach could leverage network effects, as brands and retailers benefit the more shoppers use the features and shoppers benefit the more brands provide additional product information. In addition, the switching costs for retailers are rather high when the features are integrated into the company's own apps, which could benefit ToBe. Ultimately, however, ToBe's service must offer seamless functionality at a reasonable price to add more value to retailers than existing in-store digital solutions and increase convenience for shoppers.

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Appendix 1: Literature Research

Appendix 1.1: Li-Fi Downlink System

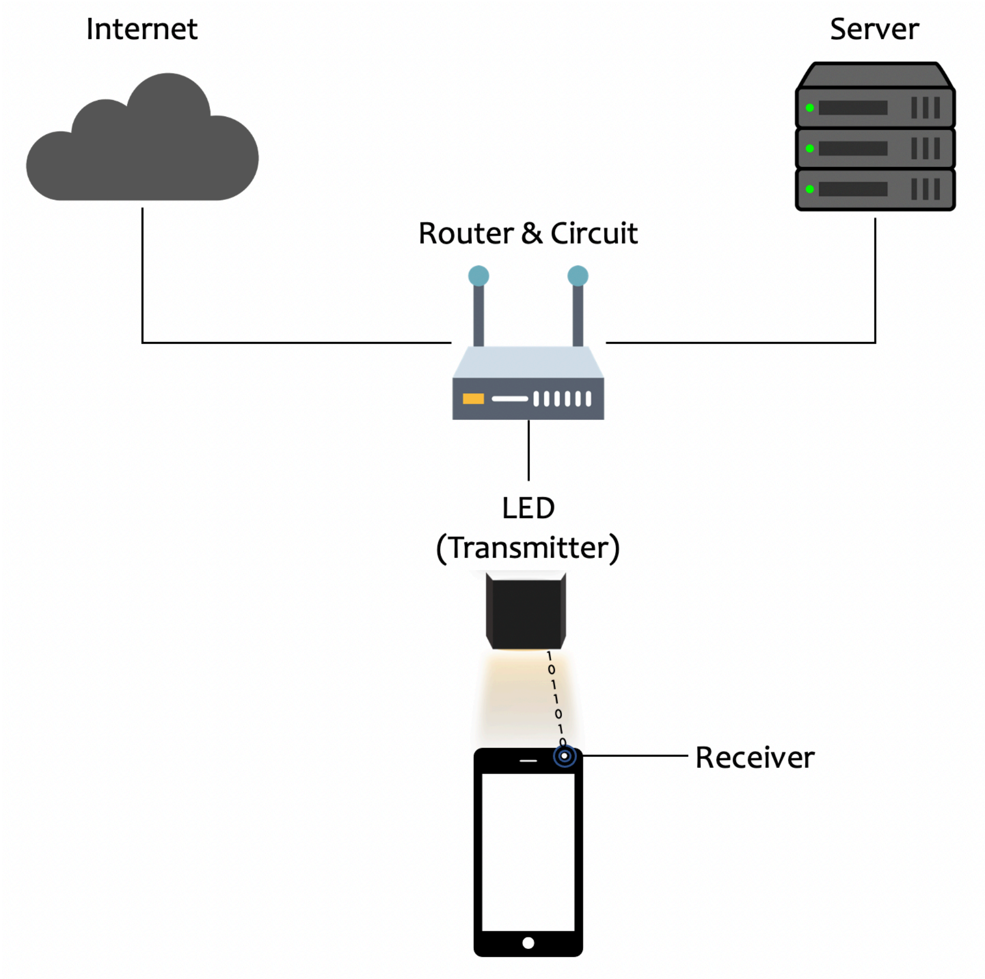


Figure 1: Li-Fi System, own illustration based on (purelifi, n.d.)

Appendix 1.2: Leading Sport & Leisure Retailers in Europe

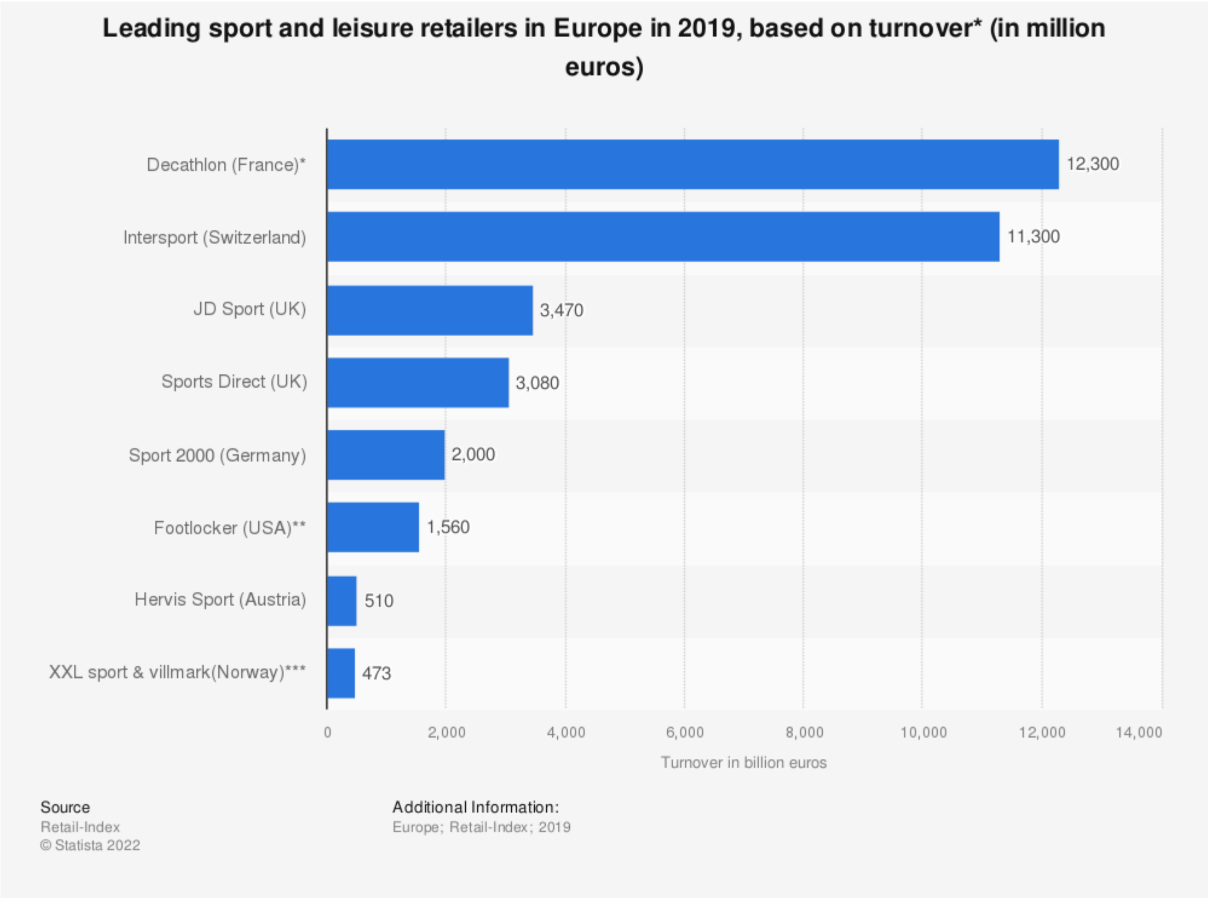


Figure 2: Leading sport and leisure retailers in Europe in 2019, based on turnover* (in million euros) (statista, 2020)

Appendix 1.3: Interactive Wall – Adidas Terrex Store Munich

Figure 3: Interactive Wall (own picture, taken at the Adidas Terrex Store in Munich)

Appendix 2: Expert Interview Transcripts

To Be Seeding Innovation × NOVA SCHOOL OF BUSINESS & ECONOMICS

Interview – Multi-Brand Retail Expert

INTERSPORT®

THOMAS SCHECK – FORMER DIRECTOR OF PRODUCT DEVELOPMENT FOR INTERSPORT EXCLUSIVE BRANDS

1) Entry Questions

- How long have you been working in retail?
  - *At Intersport for more than 22 years*

- What is your job title?
  - *Former Director of Product Development for Intersport Exclusive Brands*

- What were your daily tasks in this position?
  - *Development of Intersport's own products, which are in the entry-level or mid-price range. I did this on-site in the product development department in Germany and Austria but was also responsible for sales and production in Asia.*

- With more than 65,000 employees and 5,400 stores in 42 countries, Intersport is one of the world's largest sports retailers.
  What do you think are Intersport's key success factors?
  - *The key success factor is the brand. Besides Decathlon, Intersport is the biggest brand that embodies sport. The main asset is that we have very trained personnel in the stores, who can give you the appropriate information about*

all products. This is very important in the hardware and footwear sector, where technical expertise must be ensured across the various sports.

- How would you describe Intersport's fundamental vision or strategy?
  - *The vision is that everything related to sports should be associated with Intersport. This is becoming even more important in today's world, due to the current trend of "fit is healthy".*

- How many square meters do your stores approximately have on average?
  - *We recommend that stores should be no smaller than 300 m2 and our megastores have up to 15.000 m2.*

- How many brands do you sell in your stores?
  - *4 in-house brands (McKinley, Energetics, Firefly, Pro Touch)*
  - *69 external brands*

- What categories do you sell in your stores?
  - *Outdoor*
  - *Running*
  - *Training*
  - *Winter*
  - *Soccer*
  - *Bike*
  - *Yoga*
  - *Other ball sports*

  Winter sports is our biggest category with about 35%, followed by outdoor, running and soccer.

2) Main Part

a. <u>Questions on relevant trends</u>

- What would you consider your biggest challenges in retail over the next 5 to 10 years?
  - *Retailers must be able to maintain their position in the face of online retailers and the price wars on online platforms. This is only possible if retailers specialize increasingly and focus on products that are difficult to buy online, thereby creating added value. An example of this would be insoles for ski boots. The soles have to be custom-made and can therefore not be bought online. The soles are sold in the store only in combination with ski boots and are therefore bought as a bundle. The focus is moving more toward technical products, and basic clothing is losing ground in the store, except for functional clothing.*
  - *The topic of sustainability is also an important factor in competing against the online market. Sustainable products are more likely to be found in sports stores than online.*

- How important do you think the **personalization** of in-store shopping will be in the future?
    - *This is absolutely important. Intersport was one of the first to offer customer cards. People share their age, gender and sporting passion in the customer card. Based on this, they are made aware of certain offers.*

- In what way do you think the **shopping experience** will play a role in your business?
    - *It is increasingly important. The showcase company in this area is L&T from Osnabrück. During summer, they have an artificial wave on the first floor, on which the customer can directly try out the sports equipment. In winter, it is converted into an ice-skating hall for the same purpose. Creating a shopping experience is very important.*

- How important do you think it is for you to implement an **omnichannel** offering?
    - *People have to work more hours nowadays and have less time to visit stores. Thus, it develops in the direction that people inform themselves about something besides work or in the evening and then the product must be available quickly. This happens either via advance reservations in the store, where you can quickly pick up the product in the evening, or it is sent directly to your home. Intersport was a pioneer in this area.*

- How do you see the trend toward new priorities for **in-store support**? (less for transactions, more for personal consulting)
    - *Intersport has no self-checkouts yet, because so far we haven't had a problem with staff shortages in the sales area. But that will certainly come more and more. I estimate that it will take about 2-4 years until we are at that point.*

- Do you observe a change in behavior among your shoppers with regard to **sustainability**?
    - *In contrast to the food industry, things have gotten off relatively slowly in the sports industry. Currently, however, it's coming at you like an avalanche, because the media are spreading it more and more. It is no longer possible for a product not to be labeled as sustainable in some way. There are no companies left that do not pay attention to this topic. Even products made in China can be sustainable. Contrary to the opinion of many, it is also common practice in Asia.*
    - *Brands have different ways to present their sustainability in the store. This can be done via posters with the product life cycle, labels or QR codes. The pioneer here is the company Icebreaker, where you can see which merino sheep the garment comes from by scanning a QR code. People who are interested in this topic use such offers. In the mountain sports sector in general, Vaude is considered a pioneer.*

- Where do you see the priorities for your shoppers in the future?
    - *If you leave aside the current situation with the Ukraine war and the energy crisis, customers have evolved to buy fewer entry-level models and place more*

value on high-quality, durable and technically innovative products that have been produced sustainably.
- *If you take into account the current situation, it's hard to say because you don't know how the spending power will develop in the coming winter season. If, for example, ski resorts have to reduce their operations and everything becomes more expensive, the question arises whether people will still go on vacation. Or it comes to the point that there is a clear separation between the different social classes and only financially advantaged can afford certain winter sports.*

- What types of technologies are you currently using to improve the in-store customer experience?
  - *Touchscreens with product explanations*
  - *Promotional items from the industry*
  - *Technical assistants who communicate with you via screens and can explain product features, the production process and assist in product choice*
  - *QR codes with further information about the specific product and recommendations for complementary products*
  - *Intersport App*
  - *We have tried several other technologies. We worked with sounds, for example from ski slopes or waves. We also try to do a lot with lighting to clearly divide the different areas.*

- Are you planning to implement (further) technologies to improve the customer experience and if so, which ones?
  - *New technologies are not explicitly planned, but there are always new technologies to deal with. One example is fragrances, which are used to stimulate the purchasing behavior of shoppers.*

- Are you observing any other trends at Intersport?
  - *Average in-store spending needs to increase as the frequency decreases. Therefore, you need to work on how to sell more products to one person.*
  - *Robotics is also an interesting trend. In hotels, for example, there are already robots that clear the table. One scenario could be that the consultation is still done by a sales employee and the product handover is then done by a robot.*

- How do you manage brand investments in the store?
  - *We don't have a consignment business yet, so all the products that are in the store have already been paid for. At Decathlon, for example, the space in the stores is rented and the rent is paid according to the sales per square meter.*
  - *One exception is Nike. Nike has 10 areas within Europe that they control themselves. In these areas, Nike product novelties are available earlier than in all other stores.*
  - *We have certain themed promotions in the stores highlighting different areas. Examples are the Women's Day or the Ski Wax Evening. In this case, the brands are requested by the stores for the individual promotion days and not the other way around.*

- *We have certain sales areas that are prepared by the brands themselves.*
- *For new product launches, we as Intersport negotiate how much earlier we are allowed to sell the products exclusively.*
- *At the beginning of the year, the marketing budget is set by the respective brand and invested in Intersport. This budget is then used for various activations throughout the year.*

- Can you share any figures on how much you charge for these promotions?
  - *Confidential*

- Can a significant increase in sales be observed with these promotions?
  - *Yes, it promotes customer loyalty. It may not have an immediate impact, but on the one hand you promote the product and on the other hand you strengthen the brand value of a store.*

- How big is the share of brands that invest in special promotions or spaces?
  - *Only the Top 5. Nike, Adidas, Asics, Lowa, Amer Group*

b. Questions about the importance of the features of ToBe's LiFi Geolocation service

- On a scale from 1 – 10: How relevant do you expect an **indoor navigation** system to be in your stores in the future?
  - *9*
- Why?
  - *Initially, I would have said 8, but because of the topic of accessibility, I say 9. This is an important point because it makes shopping easier for the affected persons. In general, the customer wants to be in the store as short as possible and find the products quickly, so I consider this feature important.*

- On a scale from 1 – 10: How relevant do you think it is to extend the **in-store communication** space for brands?
  - *7*
- Why?
  - *When deciding on a purchase, it is on the one hand about the technology and on the other hand about the feeling in the hand and the optical liking. Therefore, not all is about the technical aspects.*

- On a scale from 1 – 10: How relevant do you think it is to use **proximity marketing** in your stores?
  - *9*
- Why?
  - *The retailer must try to sell more. If a customer is standing in front of a product for a longer time and is perhaps unsure whether to buy it or not, the service could be used to convince the customer to buy.*

- How are you currently collecting data from in-store customers?

- *With the help of loyalty cards*

- On a scale from 1 – 10: How relevant do you think it is to collect more **data** about your in-store customers?
  - *6*
- Why?
  - *It always depends on what you do with the data. It must be secured whether the data is resold or not. The next generation is more raised to pass on as little data as possible. You have to deal with this issue because you have to agree to the data collection at one point in the app. For ToBe, of course, it's a selling point.*

- What progress have you made in converting your stores to LED lights?
  - *Approx. 70%. All newly opened stores have 100%.*

- On a scale from 1 – 10: How do you rate the **overall potential** of this technology to increase shopper experience and therefore brand investments?
  - *9*
  - *It is very important that the average purchase receipt per consumer goes up. It is important to achieve customer loyalty, which is also accomplished by proactively addressing customers as long as it is not too intrusive. The younger generation expects new digital solutions. I think that the proportion of people who want to use such a service will also agree to the data being passed on.*

Interview – Multi-Brand Retail Expert

ROBERT SCHAFLINGER – PROJECT MANAGER WITH A FOCUS ON STORE FITTING

1) Entry Questions

- How long have you been working in retail?
  - *31 years*
  - *Since 4 years with Sportler*
  - *Previously 27 years with a store fitting company*

- What is your job title?
  - *Project manager with a focus on store fitting*

- What are your daily tasks?
  - *Coordination of store remodeling and new construction projects, internally with the procurement department, as well as externally with architects and other stakeholders.*

- According to your website, you successfully operate 27 stores in the three categories "Best in the alps", "Alpine" and "Bike". Most of them are located in Northern Italy, but you also have 4 stores in Austria.
  What do you think are Sportler's key success factors?

- *Sportler celebrates its 50th anniversary this year. The company has already been passed from the founder to the next generation. As success factors I would see on the one hand the healthy down-to-earth approach that comes from the fact that it is still a family business. On the other hand, the company has always strived to look beyond the local market and has thus also gained a foothold relatively early in areas such as online commerce.*

- How would you describe Sportler's fundamental vision or strategy?
  - *Our purpose is to make the world a sportier place. We accelerate the cultural shift toward a sustainable, healthy lifestyle and a resource-efficient, happy society.*

- How many square meters do your stores approximately have on average?
  - *Our smallest store in Arco has about 200 m2 and the largest has about 5.500 m2, so it is difficult to give an average store size. I would estimate around 2000 m2.*

- How many brands do you sell in your stores?
  - *551 (according to the website)*

- What categories do you sell in your stores?
  - *Winter sports*
  - *Mountain & Outdoor*
  - *Running*
  - *Bike*
  - *Other Sports & Leisure*

2) Main Part

a. <u>Questions on relevant trends</u>

- What would you consider your biggest challenges in retail over the next 5 to 10 years?
  - *I am not specialized enough in this strategic area to be able to provide precise information. Of course, the question is how the sports industry will develop with regard to online retail. I believe that stationary retail will continue to have its justification. I can imagine that it will be important to offer a healthy mix of online and stationary retail.*

- How important do you think the **personalization** of in-store shopping will be in the future?
  - *That is definitely important. Our marketing department considers this topic to be very relevant and it will probably become even more important in the future.*

- In what way do you think the **shopping experience** will play a role in your business?
  - *As a company, we placed great emphasis on the shopping experience relatively early on. At that time, it was not achieved so much by means of digital*

tools, but with other actions. For example, we already had a real helicopter in a store about 10 – 15 years ago. In other stores, we have a seaplane or a gondola. It has always been important that the customer gets added value when he goes shopping with us. We also care a lot about a feel-good atmosphere, which is achieved with a lot of natural elements, such as greenery in the store. We have also tried digital gimmicks in our stores, but in the long run many of the technologies were not very interesting for the customers.
  - *We also host some events in the stores, such as workshops, lectures and also sporting events outside the buildings.*

- How important do you think it is for you to implement an **omnichannel** offering?
  - *We have already implemented this relatively successfully. For example, we have a customer app that can be used to collect vouchers, provide updates on events, and book experts for in-store consulting.*
  - *Click & Collect and online orders in the store if something is not directly available are also possible.*

- How do you see the trend toward new priorities for **in-store support**? (less for transactions, more for personal consulting)
  - *We have a strong focus on consulting. The expert bookings that are possible with us definitely go in this direction. Customers can pre-book a 30-minute appointment via our app, during which the staff will focus exclusively on the customer's concerns. Regarding self-checkouts, it is not too relevant for us. In this area, personal contact is still in the foreground for us.*

- Do you observe a change in behavior among your shoppers with regard to **sustainability**?
  - *We have an employee who deals exclusively with the topic. We are noticing this trend to some extent, but it is not the case that everyone is now only asking for sustainably produced products.*

- Where do you see the priorities for your shoppers in the future?
  - *Customers want an attractive overall package of shopping experience, selection, price and service. Since our products are more in the premium range, it is also very important that we act credibly and authentically. We have the claim to be best in the alps and therefore choose our store locations close to the mountains and not in places that have no connection with mountains.*

- What types of technologies are you currently using to improve the in-store customer experience?
  - *We have large screens on which we show certain communications or sports broadcasts.*
  - *QR codes are also used, but most of the time they are already included on the manufacturer's labels.*

- Are you planning to implement (further) technologies to improve the customer experience and if so, which ones?

  - *We are mainly working on our app to improve the personalization of shopping.*

- How do you manage brand investments in the store?
  - *We do not have brand shopping in our stores, but we always offer brands opportunities to stand out. One example would be our pop-up zones, where different brands can stand out for a month or two.*
  - *Apart from that, we manage brand investments through the wrike software.*

- Can you share any figures on how much you charge for these promotions?
  - *Confidential*

- Can a significant increase in sales be observed with these promotions?
  - *Yes, one can observe a significant increase.*

- How big is the share of brands that invest in special promotions or spaces?
  - *Rather the larger brands, how many exactly I cannot say.*

b. Questions about the importance of the features of ToBe's LiFi Geolocation service

- On a scale from 1 – 10: How relevant do you expect an **indoor navigation** system to be in your stores in the future?
  - *2-3*
- Why?
  - *I think that the customer also enjoys walking through the store and doesn't want to go straight to the product. In a way, we also want to keep customers in the store as long as possible. When we design the store, we also plan the interior with the idea that the customer will take away as much as possible on their way through the store, in terms of products but also in terms of experience. Therefore, efficient indoor navigation would be rather counterproductive.*
  - *Of course, it can also have an advantage, especially for the larger stores.*

- On a scale from 1 – 10: How relevant do you think it is to extend the **in-store communication** space for brands?
  - *7-8*
- Why?
  - *The possibility for the customer to get more information about products based on their position in a store could be definitely interesting.*

- On a scale from 1 – 10: How relevant do you think it is to use **proximity marketing** in your stores?
  - *2-3*
- Why?

  - *It depends very much on the type of customer. For young, digitally affine customers, this could of course be an interesting feature. But when I look at our customers as a whole, I would consider it less relevant.*

- How are you currently collecting data from in-store customers?
  - *We have a customer frequency measurement in every store.*
  - *We can do a lot via our app. This allows us to see what customers are buying, what they prefer and what events they are booking.*
  - *With the help of our loyalty cards, we can also record who bought what, when and how. This allows us to segment customers and thus to address them in a more personalized way. We do not record behavior in the store.*

- On a scale from 1 – 10: How relevant do you think it is to collect more **data** about your in-store customers?
  - *2*
- Why?
  - *In consultation with the marketing team, we consider this topic of data collection during the shopping process to be rather less relevant.*

- What progress have you made in converting your stores to LED lights?
  - *100%.*

- On a scale from 1 – 10: How do you rate the **overall potential** of this technology to increase shopper experience and therefore brand investments?
  - *3*
  - *I think overall, tools of this kind that contribute to data collection are in demand in the retail industry, but I don't see this topic as being that relevant in our sports retail business yet.*

Interview – Multi-Brand Retail Expert

MARCO MOOSBURGER – FLOOR / CATEGORY MANAGER FOR HIKING EQUIPMENT & CLOTHING

1) Entry Questions

- How long have you been working in retail?
  - *More than 20 years in sport retail*
  - *Since 3,5 years at Sport Schuster*

- What is your job title?
  - *Floor / Category manager for hiking equipment & clothing*

- What are your daily tasks?
  - *Space management*
  - *Staff management*
  - *Responsible for providing the goods for the category and the setup of an appropriate product presentation*
  - *Sales*
  - *Customer relation*

- Sport Schuster is considered the traditional store for sports in Munich. You have a long history and a very credible image with employees who are outdoor enthusiasts themselves.

How would you describe Sport Schuster's fundamental vision or strategy?
- *Become the number 1 sports store in Germany*
- *We want to support our customers in the best possible way in all sporting situations and equip them appropriately to enable them to have the most fun possible outdoors.*

- How many square meters does your store have?
  - *5.000 m2*

- How many brands do you sell in your store?
  - *440 (according to the website)*

- What categories do you sell in your stores?
  - *Clothing, footwear and equipment for mountain sports, winter sports, training and urban outdoors (according to the website)*

2) Main Part

a. <u>Questions on relevant trends</u>

- What would you consider your biggest challenges in retail over the next 5 to 10 years?
  - *The combination of ecom and retail.*
  - *Our aspiration is to maintain the current standard at Sport Schuster.*
  - *Our task is to continue to convince customers to come into the store thanks to our professional advice.*

- How important do you think the **personalization** of in-store shopping will be in the future?
  - *Sport Schuster has very well-trained staff, so the personalization is done in the form of personal consulting and this approach will stay the same in the future. Especially after covid, shoppers enjoyed personal consulting in the store.*
  - *There is a bonus program for regular clients*
  - *In ecom, purchase data gets collected to identify patterns.*

- In what way do you think the **shopping experience** will play a role in your business?
  - *The shopping experience plays an important role to gain loyal customers. Sport Schuster is a sponsor of the Tegernsee run and offers a weekly running meeting in collaboration with Adidas. This strengthens the bond with the store.*
  - *There are also climbing courses of the German Alps Association on the 22-meter-high climbing wall in our store, which stretches across all floors and is visible to the customer.*
  - *We also organize events, such as presentations by sports doctors.*
  - *In our day-to-day business, we do not have specific offers for this purpose.*

- How important do you think it is for you to implement an **omnichannel** offering?

  - *Sport Schuster offers retail & online shopping and we provide services like click&collect. We try to improve the connection between the two channels even more in the future*

- How do you see the trend toward new priorities for **in-store support**? (less for transactions, more for personal consulting)
  - *No self-service checkouts are planned in the near future and our personal consulting is already at a high level.*

- Do you observe a change in behavior among your shoppers with regard to **sustainability**?
  - *Partly, most customers appreciate sustainable aspects, but few ask exclusively for sustainable versions.*
  - *We only sell high-quality outdoor brands in our store. These are usually committed to the topic of sustainability.*

- Where do you see the priorities for your shoppers in the future?
  - *I think that our customers' priorities are to get quality products and that they are readily available in the store.*

- What types of technologies are you currently using to improve the in-store customer experience?
  - *We offer a bonus program via our web shop. There are special promotions on selected items for program participants. Transactions are registered with the bonus card at the checkout. We do not yet offer an app.*
  - *Many brands have QR codes on their labels with a link to additional product information. However, these are rarely used because customers ask staff if they want to know more about the product. Brands do not have to pay any fees for the QR codes with us, as they are placed on the labels directly by the manufacturer.*

- Are you planning to implement (further) technologies to improve the customer experience and if so, which ones?
  - *At this time nothing is planned.*

- How do you manage brand investments in the store?
  - *We offer changing highlight areas for brands. These special areas are set up in cooperation with brands.*

- Can you share any figures on how much you charge for these promotions?
  - *Confidential*

- Can a significant increase in sales be observed with these promotions?
  - *It's not a 10-20 percent jump in sales but a significant increase can certainly be seen.*

- How big is the share of brands that invest in special promotions or spaces?

- *Since special spaces are limited not everyone can have special promotions simultaneously. Around 20-30% have temporary special spaces.*

b. Questions about the importance of the features of ToBe's LiFi Geolocation service

- On a scale from 1 – 10: How relevant do you expect an **indoor navigation** system to be in your stores in the future?
  - *2*
- Why?
  - *Customers like to walk through the store and look at the different items. If someone only wants one particular item and wants to save time, he would rather use click&collect.In addition, the personal contact with the customer is very important at Sport Schuster.*

- On a scale from 1 – 10: How relevant do you think it is to extend the **in-store communication** space for brands?
  - *4-5*
- Why?
  - *In general, it is interesting, but currently customers ask staff if they want to know more about a product*
  - *The QR codes on the brand labels, which link to further information, are rarely used at the moment, so it does not seem that there is a great need for these kind of services.*
  - *In the future it could become more relevant.*

- On a scale from 1 – 10: How relevant do you think it is to use **proximity marketing** in your stores?
  - *2-3*
- Why?
  - *It makes sense to offer more to a customer willing to buy, but the implementation is not really realistic as customers would need to download the app and it would also require onboarding of brands, which would be a big effort.*
  - *Currently, Sport Schuster provides only two offers that give a discounted price on a complementary set.*

- How are you currently collecting data from in-store customers?
  - *Mainly through the cash desk scans, which allow us to collect data from participants in the bonus program.*

- On a scale from 1 – 10: How relevant do you think it is to collect more **data** about your in-store customers?
  - *7-8*
- Why?
  - *Data collection is very important in order to provide the best offer to our customers.*

- *The procedure should be the same as it is now, so that customers get added value in the form of discounts or vouchers for providing their data.*

- What progress have you made in converting your stores to LED lights?
  - *No answer possible.*

- On a scale from 1 – 10: How do you rate the **overall potential** of this technology to increase shopper experience and therefore brand investments?
  - *2-3*
  - *It would require regular customers and brands to have and use the system, so there is a long way to go before that happens.*

Interview – Multi-Brand Retail Expert

THOMAS VORREITER – BOARD MEMBER (MARKETING & EXPANSION)

1) Entry Questions

- How long have you been working in retail?
  - *Since 25 years with Bründl Sports*

- What is your job title?
  - *I am part of the board of directors and my focus is on marketing and expansion.*

- What are your daily tasks?
  - *Our marketing team now consists of 9 people who are responsible for different areas of marketing. This includes visual merchandising, facility management, and the coordination of construction projects. We also work intensively on the topic of sustainability.*

- According to your website, you are a family business that successfully operates 31 stores, making you one of the largest sports retailers in the Austrian Alps. Your focus is primarily on skiing and mountain sports. In addition to conventional sales, you also offer services like equipment rentals, ski depots, and ski preparation.
  What do you think are Bründl's key success factors?
  - *For us, it's always about the people. On the one hand, internally in terms of our colleagues and, on the other hand, in terms of our customers and partners. We are very well established in the stationary retail sector, also in terms*

of digital tools in the stores. We offer the possibility to book ski rentals online in advance, which is very well appreciated. In short, we value personal interaction with people.

- How would you describe Sportler's fundamental vision or strategy?
  - *We are setting off into the Bründl Sports future with courage, vision, curiosity and innovative power. We never stop questioning accepted ideas, developing and reinventing. And all this with a great aim that drives and connects us all: creating magic moments for our customers.*

- How many square meters do your stores approximately have on average?
  - *Our stores vary between 100 m2 and 3000 m2.*
  - *Many of the smaller stores are right next to ski lifts. However, the trend in recent years has been towards larger stores because we can better implement our business model there.*

- How many brands do you sell in your stores?
  - *187 (according to the website)*
  - *We make about 80% of sales with 20% of the brands.*

- What categories do you sell in your stores?
  - *Alpine skiing*
  - *Ski touring*
  - *Cross country skiing*
  - *Snowshoeing*
  - *The primary business is winter sports, but summer mountain sports like mountain biking, trail running, and other outdoor sports are also becoming increasingly important.*

2) Main Part

c. <u>Questions on relevant trends</u>

- What would you consider your biggest challenges in retail over the next 5 to 10 years?
  - *The customer frequency in our stores is a challenge since the trend is definitely going in the direction of online.*
  - *In recent years, Covid in particular has been a big challenge.*
  - *Sustainability is a big topic.*
  - *Supply chain disruptions are also challenging.*
  - *The current energy crisis is affecting us as well.*

- How important do you think the **personalization** of in-store shopping will be in the future?
  - *This is an important topic. In recent years, we have relied a lot on the watering can principle in marketing. We haven't been able to target people as much because of the tools we had available. We are currently working on*

implementing a CRM system and plan to have it ready by September 2023. This will then allow us to target customers more specifically based on data. As part of this, we will then also provide loyalty programs that provide benefits to customers and allow us to collect data on purchases.

- In what way do you think the **shopping experience** will play a role in your business?
  - *We have just completed a major project with our flagship store in Kaprun, which opened last year. The store has 2.500 m2 and includes a restaurant serving seasonal, regional, and biological food. We have always offered customers free drinks to lift their mood and extend the length of their stay. The restaurant was the next step in that direction and helps us increase the average receipt in the store.*
  - *Other experiences for customers include a glass walkway reaching out of the building 25 meters above the ground with a mountain view and a selfie point. Every day, about 200-250 people take advantage of this offer.*
  - *To keep the kids moving, we have a slide that crosses several floors.*
  - *We also have a bouldering wall.*
  - *Then we are looking into making our competencies visible. The areas for ski service, boot fitting, and repair tailoring are separated from the store only by glass and thus visible to customers.*
  - *We also offer events, like ski touring, trail running events, or events with celebrities.*

- How important do you think it is for you to implement an **omnichannel** offering?
  - *We do not yet have an online store for buying our products, but are currently working on creating one. It will be ready in about two years. For the rental area we already have an online booking system and are currently looking into the development of an app. In addition to bookings, this should also help to minimize waiting times for customers.*
  - *After the completion of our online shop, we will also aim to develop an app for our actual stores.*
  - *Generally, our focus in these areas is on our regular customers. We currently have 140,000 loyalty card holders.*
  - *We have several data sets and want to connect them in the future.*

- How do you see the trend toward new priorities for **in-store support**? (less for transactions, more for personal consulting)
  - *Most of the checkouts in our stores are not really up to date anymore, if you compare it with the payment process in Apple stores. I think mobile payment is an important topic, but it is not yet in use in our company. We will be implementing a new inventory management system at the end of next year, which will make this possible. A lot will happen in this area in the next few years. However, the aim is not to save on employees, but to make life easier for our customers. Implementation will be challenging because we sell a lot of bulky products and there are also anti-theft devices attached to the products that first have to be removed.*

- *The traditional location of the cash desks at the exit will also change because these areas are strategically important for sales and cash desks can also be in other locations in the store.*
- *We currently have a Quick Pay checkout in our flagship store, where you can pay for small items quickly.*

- Do you observe a change in behavior among your shoppers with regard to **sustainability**?
  - *We mark our sustainable products in the store with the B-Green label, which is based on our self-developed evaluation matrix. We evaluate our products based on ecological, social and economic sustainability criteria and mark high-scoring goods with the B-Green label.*
  - *For people who want to dive deeper into the topic, QR codes are attached to the labels.*
  - *Customers actively looking for sustainable products in stores are still not very common, but they are on the rise. We recently did a customer survey where we asked our customers about sustainability. The priority of sustainability was 5-6 on a scale of 1-10. In another survey two years ago, we asked customers what was important to them when building new Sport Bründl stores. We did not list the topic of sustainability, but we did have a field for open comments. Here, sustainability was one of the main topics.*

- What types of technologies are you currently using to improve the in-store customer experience?
  - *We use screens and video walls. In our flagship store we have about 50 digital touchpoints where, based on the zone in the store, content is played. The screens are not interactive until now because our online store is not yet ready.*
  - *For people who want to dive deeper into the topic of the sustainability of the products, QR codes that link to more sustainability information are attached to labels. However, customers don't use it that often. For example, we observed the use of the QR codes located in a shop window. There were only 30 scans in half a year. In general, more and more QR codes are being used in stores.*

- Are you planning to implement (further) technologies to improve the customer experience and if so, which ones?
  - *A year ago, we developed a new system for our screens in the store. We are rather reserved when it comes to technologies like magic mirrors because we don't want to have a flood of digital surfaces in the store. The focus is still on personal interaction.*

- How do you manage brand investments in the store?
  - *We have a catalog of possibilities. Brands can then decide, for example, whether they want to show 30 seconds of content on a screen, the video wall, the billboard or in the shop window. We have both digital and analog options for this purpose. Brands can also invest in spaces of newsletters or catalogs. Visibility is becoming an increasingly important aspect for brands.*

- Can you share any figures on how much you charge for these promotions?
  - *Our purchasing department negotiates the conditions. There is usually a committed and an uncommitted amount. In the uncommitted part, no explicit measures are defined. In the tied part, the brands define certain measures and expect reports on how they have performed.*

- Can a significant increase in sales be observed with these promotions?
  - *I think for the brands, visibility is the main focus. How exactly the activations influence their sales, I cannot say.*

- How big is the share of brands that invest in special promotions or spaces?
  - *We have advertising agreements with about 30 brands. It's mainly about the most important brands. We set ourselves a limit at which investment amount it is worthwhile for us to provide such special activations.*

d. <u>Questions about the importance of the features of ToBe's LiFi Geolocation service</u>

- On a scale from 1 – 10: How relevant do you expect an **indoor navigation** system to be in your stores in the future?
  - *10*
- Why?
  - *In our case, this could be useful for the large rental areas. The customers have to pass through different stations in these. First, data must be recorded at check-in, then it's on to ski and ski boot hand-out, and finally to payment. After that, it is also important for the customers to know where the ski depot and the ski service are.*
    For us, it is a challenge to make this process as smooth as possible for customers. Especially on busy days, it is sometimes not easy for customers to understand where they have to go next, especially since the employees do not have much capacity at peak times. In the past, we have tried to manage this problem with extra staff or directional signs on the floor or ceiling, which is not very visually appealing.
  - *Navigation in the store would also be interesting. We try to organize the individual categories very clearly, but for a store with 4-6 floors it could be quite helpful. You could also be guided to the experiences, such as the glass walkway or the restaurant.*

- On a scale from 1 – 10: How relevant do you think it is to extend the **in-store communication** space for brands?
  - *5*
- Why?
  - *We are constantly changing our retail space and so content linking to in-store items would probably be a lot of work for us internally.*

- On a scale from 1 – 10: How relevant do you think it is to use **proximity marketing** in your stores?
  - *6*
- Why?
  - *For the same reasons as the previous question. I also ask myself to what extent it makes sense to encourage customers to look at their smartphones a lot. We want to inspire customers with our products on the shelf and promote personal contact between customers and employees.*

- How are you currently collecting data from in-store customers?
  - *We use frequency trackers in all stores to record how many people go into the store, and in the flagship store we also know how many people go into the restaurant or onto the glass walkway. We cannot record how customers move around in the store.*

- On a scale from 1 – 10: How relevant do you think it is to collect more **data** about your in-store customers?
  - *7*
- Why?
  - *We have looked at various technologies in the past that allow for such data collection and have always decided against it. On the one hand, it's about the information, but then it's mainly about what you do with it. We have not been convinced by the interpretation possibilities of this kind of data considering the investment. In the future, however, this topic will become more important.*

- What progress have you made in converting your stores to LED lights?
  - *In-store 97-98%.*
  - *In the stores themselves, we have almost 100%, only in some areas of the workshops or warehouses, not everything is equipped with LEDs yet.*

- On a scale from 1 – 10: How do you rate the **overall potential** of this technology to increase shopper experience and therefore brand investments?
  - *8*
  - *I didn't know this technology, but it sounds exciting. On the one hand, you have to see what can be used internally, for example, data collection. On the other hand, you have to see what the customer can use. I think especially in the future there will be more of these technologies. Of course, the price for this service is a decisive factor.*
  - *For our company, there would already be a need for indoor navigation, especially in the rental area.*

To Be Seeding Innovation × NOVA School of Business & Economics

Interview – Single-Brand Retail Expert

ISKENDER ÖLMEZKAYA – TEAM LEAD RETAIL

1) Entry Questions

- How long have you been working in retail?
  - *More than 20 years*
  - *12 years at Esprit*
  - *At FC Bayern since 2015*

- What is your job title?
  - *Team Lead Retail*

- What are your daily tasks?
  - *Implementation of the FC Bayern philosophy in the stores*
  - *Ensuring the availability of the right products in the right stores*
  - *Employee management & development*
  - *Project management of new stores*

- How many stores of FC Bayern are there?

  - *There are two categories of stores: fan stores and brand stores. In fan stores, the focus is on selling fan merchandise on match days, while brand stores are about presenting the brand itself.*
  - *Oberhausen, Airport Munich (2), Allianz Arena, Ingolstadt, Neuhauser Straße, Pasing Arcaden, Säbener Straße, Irschenberg, FC Bayern World, Hofbräuhaus*
  - *So in total there are 11*

- How would you describe FC Bayern Store's fundamental vision or strategy?
  - *The stores are the point of contact for fans and give them the feeling of being with the club.*
  - *On the one hand, the vision of the stores is to generate revenue and get every visitor to buy a product, ideally a jersey, as that is our most important asset. On the other hand, the vision of the club ("Mia San Mia") should be clearly presented in the stores.*

- How many square meters do your stores approximately have on average?
  - *The 2 largest stores (Allianz Arena, FC Bayern world) have 1000 m2.*
  - *The remaining stores vary from 35 to 300 m2 (average 56romm y. 250-300).*

- Which partner brands are visible within your stores?
  - *Most of the partnerships are in the brand stores*
  - *The stores cooperate with big brands like Adidas or Audi*
  - *There are also many licensing collaborations with wineries, local partners, Rösle barbecues, and more.*

2) Main Part

a. Questions on relevant trends

- What would you consider your biggest challenges in retail over the next 5 to 10 years?
  - *Many customers have switched to e-commerce during Covid. Therefore, it will be very important to develop an omnichannel approach to bridge the gap between e-commerce and retail. Compared to normal retail business, FC Bayern benefits greatly from match days when 75,000 fans come to the Allianz Arena and generate a lot of traffic.*
  - *It will be highly relevant to offer a differentiating shopping experience that cannot be offered online.*
  - *It will also be essential to connect to the digital world in the stores.*
  - *A major challenge is the lack of staff in stores. For the younger generation, working conditions in retail are not attractive (e.g. late and weekend shifts). It is difficult to find qualified employees.*

- How important do you think the **personalization** of in-store shopping will be in the future?
  - *Very important. We collect data from our club members. For example, we would send a member a birthday message with Thomas Mueller's picture if we knew he preferred to buy his jerseys.*

- *Often, we receive the data too late. We only see the information about a fan after he has used his membership card at the checkout. With this information, we can then send the fan personalized promotions. We can still improve in this area.*

- In what way do you think the **shopping experience** will play a role in your business?
  - *Our challenge is that we offer a 10% discount to club members in stores. Therefore, we cannot offer too many discounts for everyone.*
  - *In our stores we have activations such as some forms of contests with the possibility of winning coupons or raffles. However, we could do more in this area.*
  - *In terms of the shopping experience without financial triggers, we offer several things in the flagship stores:*
  - *Gaming areas*
  - *Selfie points with augmented reality allow you to take a photo with a player of your choice. (send directly to phone)*
  - *Audi displays a small Kuka robot that shows how the cars are built*
  - *In stores, we need to balance customer experience with customer flow. We don’t want customers to stay too long if the store is busy.*

- How important do you think it is for you to implement an **omnichannel** offering?
  - *We currently offer Zalando Connected Retail, which allows a customer to order online and have the goods delivered from our stores.*
  - *We are currently working on transferring our e-commerce to the Scale platform (AboutYou).*
  - *This will enable us to implement an omnichannel approach.*
  - *Our next steps are to display online which products are available in the store and to introduce Click&Collect.*
  - *By mid-2023, we should be able to operate via an omnichannel.*

- How do you see the trend toward new priorities for **in-store support**? (less for transactions, more for personal consulting)
  - *Not yet. Due to the pandemic, the use of contactless payment methods has increased sharply. Before Covid, 60% paid contactless and 40% cash. Today, the percentage is 80% contactless versus 20% cash. This shows that the majority are paying by card.*
  - *We are currently working with our payment provider on a tap-to-phone solution. The goal is to allow fans to pay anywhere in the store (similar to Apple stores).*
  - *I have the impression that the typical German still likes to stand in line to pay. So there is still a demand for the classic checkout. However, we have already reduced the checkouts. Our store in the Allianz Arena has 15 checkouts, and in FC Bayern World there are only 6. So there is a clear trend toward fast checkouts or tap-to-phone solutions.*
  - *So far, fans aren’t making much use of the new checkout options because they’re not familiar with them and also need to get used to them.*
  - *As far as in-store personalized service is concerned, our focus is on taking care of customers and making them aware of the special offers in the store. So it’s*

not so much about customer advice in the classic sense, but more about customer activation.

- Do you observe a change in behavior among your shoppers with regard to **sustainability**?
  - *Yes, can clearly be seen.*
  - *We had a transformation in terms of sustainability. We pay a lot of attention to where our products come from and that environmentally friendly materials are used. Sustainability is a very high priority for us and we have a team dedicated to this area. An exemplary project is the offer of bags made with recycled turf from the Allianz Arena. Sustainability is demanded by our fans, but it is also our own aspiration.*

- Where do you see the priorities for your shoppers in the future?
  - *Sustainability*
  - *Availability of products in the store*
  - *Quality and durability of products*
  - *Reflection of FC Bayern in the store to give customers a home feeling*

- What types of technologies are you currently using to improve the in-store customer experience?
  - *We're starting to put QR codes on products to give customers more information about the features or the story behind the product. The usage of these codes depends a lot on the day. When it's not busy it is used more, on a game day with a lot of foot traffic it is used less. (see question on customer experience for more information)*

- Are you planning to implement (further) technologies to improve the customer experience and if so, which ones?
  - *We are not planning anything specific but are monitoring the market.*
  - *Things like Amazon's Go Stores might be interesting to us as well.*
  - *We are not yet at the level of Amazon, but there will come a time when we will have to rethink. On the one hand, this is due to the employee shortages, but also because of the new generation that we are facing.*

- Do you have an in-store brand investment offer for your partners?
  - *We have sponsorship, licensing, and premium licensing deals. To leverage the FC Bayern brand, our partners have to invest. This is therefore not comparable to the conventional brand investments in multi-brand stores.*

b. Questions about the importance of the features of ToBe's LiFi Geolocation service

- On a scale from 1 – 10: How relevant do you expect an **indoor navigation** system to be in your stores in the future?
  - *3*
- Why?

  - *It depends a lot on the size of the stores. It can make sense for larger stores, but our stores are not very large and have a simple layout. I could imagine that it makes sense for the Allianz Arena to make it easier for the spectators to navigate.*

- On a scale from 1 – 10: How relevant do you think it is to extend the **in-store communication** space for products?
  - *6-7*
- Why?
  - *Especially with higher priced products it makes sense to get more information about a product, because you can't manage to take care of every fan in a way that all relevant information is passed on. I think that it could have an added value in the purchase decision of the customers. Of course, the technology has to work very well.*

- On a scale from 1 – 10: How relevant do you think it is to use **proximity marketing** in your stores?
  - *9*
- Why?
  - *It's definitely an added value if you can motivate the fan in the store to buy additional products.*
  - *It can be often seen that customers stand in the store and search their smartphones to see if the same product is available online at a lower price. Perhaps targeted offers in the store could help against this.*

- How are you currently collecting data from in-store customers?
  - *We do not collect data during the shopping process so far. The data we have, we collect through registrations from the newsletter or memberships. Who buys from us, we thus recognize only at checkout.*

- On a scale from 1 – 10: How relevant do you think it is to collect more **data** about your in-store customers?
  - *8-9*
- Why?
  - *I see it as very relevant, especially for customers who are not yet members and about whom we consequently know nothing at all. However, we would need a smooth, attractive solution to collect the customers' data. Typing in demographic data is not very convenient.*

- What progress have you made in converting your stores to LED lights?
  - *Approx. 70%*
  - *Especially the older stores still need to be converted.*

- On a scale from 1 – 10: How do you rate the **overall potential** of this technology to increase shopper experience?
  - *5*

- *After this interview, I would rate the overall potential at 5, as there are still many unanswered questions. However, if the technology works smoothly, then it may have potential, especially regarding the next generation.*

To Be Seeding Innovation × NOVA SCHOOL OF BUSINESS & ECONOMICS

Interview – Brand Communication Expert

adidas

JANE DOE (fictitious name due to confidentiality requirements)

DIRECTOR BRAND COMMUNICATIONS

1) Entry Questions

- How long have you been working with retail?
  - *For about 9 years*

- What is your job title?
  - *Director Brand Communications*

- What are your daily tasks?
  - *Working on any consumer-facing touchpoint*
  - *Overseeing what a customer is seeing for a specific category within Adidas. Including everything from PR to social media, advertising, billboards, digital advertising and the communication in retail stores.*

- How would you describe Adidas' fundamental vision or strategy?
  - *Own the game strategy:*
    Own the Game' is our strategy that guides us through to 2025 – a plan rooted in sport. Sport is adidas' past, present, and future. 'Own the Game' puts the consumer at the heart of everything we do and is brought to life by our people. Our strategic focus is on increasing brand credibility, elevating the experience for our consumer, and pushing the boundaries in sustainability. The

execution of our strategy is enabled by a mindset of innovation across all dimensions of our business as well as our digital transformation. We own the game and will drive significant growth.

- *Purpose:*

  "Through sport, we have the power to change lives."

- At which kind of retail partners do you sell your products?
  - *The three major buckets are mono-brand stores (Adidas-owned, online & offline), mono-brand franchise stores (only offline) and wholesale (online & offline)*
  - *We sell through a variety of wholesale retail classified by different factors.*

- How many brands are sold alongside you in these stores?
  - *It´s not possible to estimate a number as there are too many when considering Adidas as a whole.*

- What is your strategy to distinguish from other brands in wholesale stores?
  - *Right now, we're not focusing so much on how we differentiate ourselves from other brands, but on how we show what we want to convey as a brand. Whether that's a specific product feature or the purpose of our brand also depends a lot on the category. The lifestyle category is more about emotions, while the sports category is more about technical aspects or the opportunity to test products in the store.*
  - *It´s also highly dependent on the space and the budget we have available in wholesale.*

- What are the main categories you sell in these stores?
  - *Adidas as a whole is divided into a lifestyle sector, which includes Adidas Originals and sportswear, and a performance sector. The three largest performance pillars are soccer, running and outdoor. In addition, we offer products for several other sports.*

2) Main Part

a. <u>Questions on relevant trends</u>

- What would you consider your biggest challenges in retail over the next 5 to 10 years?
  - *Covid had many consequences for retail. Initially, everyone thought retail was dead because everyone migrated to ecommerce and the online experience also improved a lot. Now that we are leaving Covid behind, we can see the opposite trend. People are coming back to the stores because they want to experience, see and touch the products. Most in the industry didn't expect that. Right now, we are opening more and more stores.*
  - *Another big trend is how to bring digital and retail together, especially how to use digital technology in stores. An example is virtual testing, where you can see yourself in a mirror with different products without having to try them on. Gamification is another big topic, especially for the GenZ target group. You*

have to give customers an experience, so they want to stay in the store. Digital solutions in retail stores have to go beyond click&collect.

- How important do you think the **personalization** of in-store shopping will be in the future?
  - ➢ *That's very important. It's something we're looking at mostly online because it's easier to get data and do a,b testing. But it's certainly important for retail stores as well. In-store digital tools would be a good way to do that. For example, virtual testing mirrors could directly recommend pieces that might fit the current selection. Personalization is key in the future.*

- In what way do you think the **shopping experience** will play a role in your business?
  - ➢ *I believe this is the future, especially when you consider the generation that is growing up with digitalization. There are many ways to improve the shopping experience by introducing digital tools in stores. One example would be screens in the fitting rooms where you can have a different size or color delivered directly to your dressing room. It's important to make simple steps in the63roming process more efficient. This in'ludes things as simple as having your purchases delivered to your home if you'don't want to carry bags. So it's all about improving the shopping experience and making the shopping journey more efficient.*

- How important do you think it is for you to implement an **omnichannel** offering?
  - ➢ *As already mentioned, this is an important trend. We do click&collect, shipping from stores or trade shows. Since I am not specialized in this area, I cannot give you more information about what is done beyond that.*

- How do you see the trend toward new priorities for **in-store support**? (less for transactions, more for personal consulting)
  - ➢ *This is linked to the goal of making the shopping journey more efficient. We are working to specialize our employees more and more in product features and the right selection. Because we have such a diverse portfolio, training employees has always been a priority. However, we are trying to make them even more specialized in certain areas, such as running, and teach them about the sustainability aspects of the products. We are also working out ways to increase the efficiency of the employees in their daily tasks. I believe that self-checkouts will be tested in the stores that will be newly opened.*

- Do you observe a change in behavior among your shoppers with regard to **sustainability**?
  - ➢ *That depends very much on the different age groups. While the older generation may not ask so much about sustainable aspects, the younger audience is much more sensitive. That's why it's very important that our staff is trained accordingly and that we have tools in the store to communicate this kind of information.*

- Where do you see the priorities for your shoppers in the future?

- *Customers appreciate trying on the different products, seeing and feeling them.*
- *I also see personal advice in stores that really understand the needs of the buyer as a priority. Contrary to predictions, small specialty stores seem to be booming right now. So people really value qualified advice in the store.*

- What types of in-store communications are you currently using to enhance the shopping experience and differentiate yourself as a brand?
  - *Of course, this depends on the available budget. We have 2D printouts that show the product features, appearance in action and benefits of the product. In addition to 2D, we also offer 3D video content or interactive walls. One example is the Terrex store, where the shoe wall is interactive, so the moment someone takes a shoe off the shelf, the wall provides information about the product. We also still use a lot of mannequins. There is a clear development here, away from just presenting top models to mannequins that are comparable to the real customer.*

- How do you manage brand investments regarding your wholesale partners?
  - *We have two budgets. A marketing working budget, which is for internal use, and a sales working budget, which is also an internal budget, but aligned to the contract with a specific wholesaler.*
  - *With Intersport, for example, we have an annual contract in which both parties define the KPIs to be achieved and the definition of the budget. In terms of budget, the contract also defines how much budget the wholesaler brings in and how much budget the brand brings in. Usually, one follows a long-term strategy, and the annual activations are planned accordingly.*
  - *Zalando is a good example in this case. Zalando's strategy, coming from a more lifestyle-oriented background, was to focus more on sports. So, we discussed with them what they would need to achieve that.*
  - *The brand investments are not made by just one party but in an alignment process. Usually, we come up with the stories we want to play. Then the wholesaler gives feedback on what they accept and what they would like to do differently.*
  - *Often wholesalers also like to do multi-brand activations, such as a running story with multiple brands. In this case, we are shown between other brands, and the retailer usually invests more money. If we want to promote something specific, it's more about what base they can give us, and then we invest our money.*

- Can a significant increase in sales be observed with these promotions?
  - *Usually yes, because you get more visibility, but it always depends on the budget that determines the size of a campaign.*

b. <u>Questions about the importance of the features of ToBe's LiFi Geolocation service</u>

- On a scale from 1 – 10: How relevant do you expect an **indoor navigation** system to be in your stores in the future?
  - *8*
- Why?
  - *It could definitely help improve indoor navigation for our consumers.*

- On a scale from 1 – 10: How useful do you think it could be to extend the **in-store communication** for your brand in a digital way?
  - *9*
- Why?
  - *This could be relevant for wholesale, but also for our own stores. We have certain areas in the stores that are divided by category. If the app notices where you are and spend more time, it could give you more content or decision support. In wholesale, this might be more difficult to implement because the areas change more quickly compared to the areas in our own retail stores.*

- On a scale from 1 – 10: How relevant do you think it is to use **proximity marketing** in your stores?
  - *8-9*
- Why?
  - *Proximity marketing is something we work on a lot. Our focus is mainly outside the store. For example, if you're near a store, we might have a billboard placed that connects you to the store. In terms of data regulations, it gets a little more difficult, but technically it's feasible for consumers to get a push notification or an Instagram ad when they're near a store. I can definitely see that happening in a store as well to incentivize people to buy.*

- How are you currently collecting data from in-store customers?
  - *There is a difference between wholesale and own retail, because in wholesale we are not responsible for data collection. However, we attach QR codes that contain additional information about a product or where they can enter a raffle. That allows us to collect some data.*
  - *Of course, we also offer various apps and category-specific communities.*
  - *In our own retail stores, it's a bit easier, as many customers are willing to sign up if they are offered a certain discount at the checkout in return.*

- On a scale from 1 – 10: How relevant do you think it is to collect more **data** about your in-store customers?
  - *8*
- Why?
  - *It is very important to learn about consumer behavior to figure out how we can improve the in-store experience and also personalize the shopping journey.*

- On a scale from 1 – 10: To what degree would you be willing to pay fees to showcase your brand with this service?
  - *7*

- *I think we would be quite willing to pay for it if it works properly and the data collection works in the different stores. The rules for data collection vary from country to country, and Europe is generally a bit more sensitive on this issue. So, the question would be how easily we could get the data through a third party. As long as this is clarified, I am sure Adidas would be very interested in such a service.*

Interview – Store Creation Expert

umdasch

THE STORE MAKERS

MARKUS BETZ – KEY ACCOUNT MANAGER

1) Entry Questions

- How long have you been working in retail?
  - ➢ *24 years*
  - ➢ *At Umdasch since 7 years*

- What is your job title?
  - ➢ *Key account manager*

- What are your daily tasks?
  - ➢ *Customer acquisition*
  - ➢ *Research for expansion opportunities*
  - ➢ *Strategic planning*
  - ➢ *Customer support*

- Umdasch's Store Makers create stores for clients across lifestyle retail, food retail and premium retail. The offer includes the whole process from design to store fitting, including digital equipment.
  In which industries does Umdasch mainly operate?
  - ➢ *Sportler3 business units:*

- *Premium & Travel (airports & cruise ships) Retail*
- *Digital retail (responsible for all sectors)*
- *Lifestyle Retail (sport&fashion, brand flagship stores)*

- What kind of clients do you have from the sports industry?
  - *Sportler (more than 30 multi-brand retail stores in northern Italy)*
  - *Globetrotter*
  - *Sport Bründl (31 multi-brand retail stores in Austria)*
  - *FC Bayern (Including the recently built FC Bayern world in Munich)*
  - *Several football stadiums*

2) Main Part

a. <u>Questions on relevant trends</u>

- What would you consider your biggest challenges in retail over the next 5 to 10 years?
  - *The digitization of retail stores. Especially for younger generations, the topic is much more natural. This development cannot be stopped, and retail stores must therefore adapt to it. Those who don't will be left behind sooner or later.*
  - *Big Ecommerce companies like Amazon and Alibaba are challenging retail stores as they dominate the market. In addition, they are beginning to operate in and dominate the brick-and-mortar retail sector as well.*
  - *Small, local retail stores need to distinguish themselves by offering a true shopping experience (E.g. collaboration with different business sectors, offer the same convenience as ecom does)*
  - *Retail will remain in the future since personal contact is perceived as very important by shoppers, especially after covid.*

- How important do you think the **personalization** of in-store shopping will be in the future?
  - *Very important.*
    Nowadays, it's relatively easy to collect data. The problem is the evaluation since it's very time-consuming and requires the hiring of specialized employees.

- In what way do you think the **shopping experience** will play a role in your business?
  - *It's important and there are several ways to work on it.*
  - *The use of augmented reality is highly dependent on the type of industry*
  - *Warema (sunshade systems, e.g. awnings) is a company for which we successfully used augmented reality. AR made it possible to illustrate the awning based on the picture of a house (helps to plan color, size and sun exposition.*

- How important do you think it is to implement an **omnichannel** offering for your clients?

  - *I see this approach as particularly relevant for retail companies that operate multiple stores. In this environment, the value of an omnichannel is greater for customers and it is usually easier to implement.*
  - *For retailers with only a few stores, this approach is less common because it is more difficult for them to implement.*

- How do you see the trend toward new priorities for **in-store support**? (less for transactions, more for personal consulting)
  - *Self-checkouts are frequently used with our customers in the grocery retail sector. Especially a combination of conventional cash desks and self-checkouts is widespread.*
  - *I have mixed feelings about this trend, because on the one hand this is an extremely practical way to avoid the crowds at regular cash desks, but on the other hand you lose the last personal contact with customers in the store. A friendly employee at the checkout can contribute a lot to how the shopping experience is remembered and is therefore of great importance.*

- Do you observe a change in behavior among the shoppers of your clients regarding **sustainability**?
  - *A change in behavior can clearly be observed, especially since two or three years.*
  - *An example is the store of Sport Bründl in Kaprun (Austria), that we built last year. It's the first sustainability-certified store in Austria. Everything we delivered, needed to match sustainability criteria. This not only included the use of sustainable, locally produced materials, but also paying attention to supply chain management. We also aligned our work with the SDGs. Before we landed the contract for the partnership, we submitted a 130-page sustainability strategy for this project. This was a key factor in obtaining the partnership, which illustrates the importance of this topic. Making processes sustainable requires a lot of effort and is costly. However, it is in high demand from customers and thus serves as a marketing tool. For Sport Bründl, the additional costs have paid off.*
  - *Especially in the sports industry, sustainability-driven brands like Vaude or Patagonia seem to perform better even though they are more expensive.*

- Where do you see the priorities for your clients in the future?
  - *A major issue is the lack of staff. It's getting more and more difficult for our clients to find good employees. Thus, employee care, or internal marketing is of great importance. This will be one of the key priorities for retail in the next years.*
  - *Increasing Shopping experience*
  - *Digitization of retail*

- What types of technologies are you currently using to improve the in-store customer experience?
  - *We use screens with brand or customer-specific content.*

- *Specifically in the sports industry, we use a technology that allows you to get more information about a product on a screen as soon as you take it off the shelf.*
- *A good example is the FC Bayern Munich World which includes a lot of different technologies. Examples from this store are selfie points with the option to add players to the picture, storytelling videos on the glass of the vitrines with showcased trophies, an e-gaming lounge, or a soccer cage.*
- *We also build digital changing rooms, which allow you to request items in a different size via a button or QR code in the cabin. Employees then receive a vibration alert with the request and deliver the desired item directly to the cabin.*
- *For a bedding retail client in Austria (Betten Reiter), we installed iPads throughout the store that can be used to scan the QR codes attached to the products to get additional information. This technology is well used by customers, probably also because the store has been offering this for 4 or 5 years.*
- *In general, many of the digital tools offered in stores are not used very often by shoppers. Maybe because some tools don't offer a lot of added value, or maybe because society isn't ready for them yet and needs to get used to them first.*

- Are you planning to implement (further) technologies to improve the customer experience and if so, which ones?
  - *Screens will definitely be used even more because they are easy to install. There is a trend to show moving images via screens in storefronts. Since so many have implemented this at the moment, we've already had the discussion to go back to non-moving images to differentiate more from other stores.*
  - *People will get used to technologies that increase the convenience of shopping, such as digital fitting rooms. Once the majority gets used to them, these technologies will stay.*
  - *Self-checkouts will increase. In the long term, I think there will be no more cash desks like the ones we are used to today. Either you leave the store and pay with your smartphone at some kind of checkout, or an employee carries a mobile device that allows you to make the payment directly after you make your purchase decision.*
  - *Often, technologies that are considered very important are no longer used after a few years, so it is difficult to foresee future developments.*

- Do you know how your multi-brand retail partners manage their in-store brand investments?
  - *Strong development has been observed in the textile retail sector in the last few years. In larger multi-brand stores, the shop-in-shop system was prevalent. Due to the strict segmentation of the individual brands, the retailer has lost its identity. As a reaction to this, retailers are now trying to present themselves as their own brand again. The products sold in the store are no longer divided by brand but by category. There are still special areas for brand presentations, but these should be limited. As a rough guideline, I think one brand appearance per 300 or 400 square meters makes sense. This way, you*

can position yourself as a store through specific brands without losing your identity as a store. This is often a point of conflict with the brands, because of course everyone wants to position themselves as well as possible in the store, but mainly known brands have the chance to gain the limited special space.

- Can you share any figures on how much you charge for these promotions?
    - *Not possible*

- Can a significant increase in sales be observed with these promotions?
    - *Usually yes. E.g., Sport Bründl offers 71romm y. 30-40 square meters of special space for brands in the entrance area, whereby the exhibitors change. We can observe a significant increase in sales for the brands on display.*
    - *The specific increase depends, of course, on various factors, such as the type of product, promotion, and the general mood of shoppers.*

- How big is the share of brands that invest in special promotions or spaces?
    - *My personal estimate would be around 15%.*

b. Questions about the importance of the features of ToBe's LiFi Geolocation service

- On a scale from 1 – 10: How relevant do you expect an **indoor navigation** system to be in stores of your clients in the future?
    - *4-5 (looking at the retail industry as a whole)*
- Why?
    - *I certainly see the potential for larger retail stores, but I don't think there is a need for stores with less than 71romm y. 700 square feet. The time savings would be too small for people to just go in and look on their own.*
    - *It also depends a lot on the type of industry. For sports and grocery retail, it could make perfect sense, while in other industries, customers enter a store without a plan and like to walk around and explore. That's the case in the textile industry, for example. However, I could imagine that it could become useful again above a certain store size if customers would appreciate the support in finding the different categories in the store.*
    - *The additional benefit for the customer should always be the focus.*

- On a scale from 1 – 10: How relevant do you think it is to extend the **in-store communication** space for brands?
    - *9-10*
- Why?
    - *There are different types of buyers. On the one hand, there are brand buyers who search exclusively for the brands they want, and on the other hand, there are people who only look at the product itself and don't care about the brand. So, some buyers may be more attracted to additional communication space than others.*
    - *It could help to build brand awareness.*

  - *It could be a good tool for storytelling, which is very important for the brand image.*

- On a scale from 1 – 10: How relevant do you think it is to use **proximity marketing** in your client's stores?
  - *9-10*
- Why?
  - *It's a great tool to generate additional purchases. It would allow to implement a service comparable to the ecom suggestion: "Customers who bought this article also bought...".*
  - *The potential of additional purchases is still very much underestimated in retail stores. A good shoe seller will always be selling a pair of socks along with it.*

- How are your clients currently collecting data from in-store customers?
  - *It is very different how our clients collect data. Starting with handwritten notes to using scanners. The difficulty of data collection varies greatly by the type of retail store. The crucial part is the data evaluation, as this is where the biggest challenges still exist. The collection of data via apps is relatively simple, as the data usually is consciously passed on to the retailer and customers receive some form of added value in return.*

- On a scale from 1 – 10: How relevant do you think it is to collect more **data** about your in-store customers?
  - *10*
- Why?
  - *The collection of data has the highest priority. This is demonstrated by the success of e-commerce. People often complain about data privacy, but online we don't seem to care because we give away almost everything, sometimes unconsciously.*
  - *Data is the most valuable commodity in today's world.*

- What progress have you made in converting your stores to LED lights?
  - *100%. We no longer sell anything other than LEDs.*
  - *There has been a trend to use fluorescent tubes as they are even more energy efficient, however, the quality of light is not comparable.*

- On a scale from 1 – 10: How do you rate the **overall potential** of this technology to increase shopper experience and therefore brand investments?
  - *8 (for large retail)*
  - *It's hard to evaluate, since I'm not familiar with the technology and it's dependent on several factors. The rating is based on the assumption that everything works without technical issues. There are many clients that wouldn't even consider implementing technologies like that. In my opinion it is more relevant for bigger retail stores.*

Interview – Department Store Expert

UNIBAIL-RODAMCO-WESTFIELD

CHRISTIAN BETOV – DIGITAL & DATA SPECIALIST

1) Entry Questions

- How long have you been working in retail?
  - *Since 4 years*
  - *At URW since 2021*

- What is your job title?
  - *Digital & Data Analyst*

- What are your daily tasks?
  - *Bringing together all the data we have, to create new knowledge from it*
  - *Long-term projects*

- You are a very successful global developer and operator of flagship destinations. Your Purpose: “Reinvent Being together” by creating extraordinary & sustainable spaces in the most popular destinations that provide retail experience and innovative technology.
  What would you consider the key success factors for URW?
  - *The people we hire are highly committed and strive for excellence.*
  - *We place great value on responsibility and ownership*
  - *We have a strong focus on innovation and sustainability*

- How many square meters do your European stores have on average?

- *The stores within the shopping center have an area from 20 m2 to 14.000 m2.*
- *The shopping centers range from 20,000 m2 to 240,000 m2.*

- How many brands do you sell in your European stores?
  - *15 to more than 200, depending on the size of the mall*

- How many sports brands do you sell in your European stores?
  - *It depends on the country, in Germany important partners are for example Intersport, Sport Scheck and Decathlon*

- Which would you consider your main categories in Europe?
  - *It depends on what categories the municipalities want to have. This is not our decision.*
  - *It is a mixture of many categories, you need a well-distributed cluster.*

2) Main Part

a. <u>Questions on relevant trends</u>

- What would you consider your biggest challenges in retail over the next 5 to 10 years?
  - *We need to develop a holistic approach to retail. We believe that retailers who combine the online and physical experience will be successful. So, our challenge is how to integrate both experiences into a single customer journey.*
  - *The economic and energy crisis that all other industries are also facing.*

- How important do you think the **personalization** of in-store shopping will be in the future?
  - *That's important because in our industry, the customer experience is key. You can make a visit worthwhile by giving customers a very individualized experience. Some online retailers already do this very well (e.g., they show personal preferences or what you bought last), and we want to go in the same direction.*
  - *We have databases of people who are registered in our community. Using this data, we can offer more personalized experiences. For example, better online communication via newsletters tailored to members' interests. We also offer physical services, such as help for people who can't move very well, or lounges for loyalty club members.*

- In what way do you think the **shopping experience** will play a role in your business?
  - *This is definitely one of our key focuses. Our goal is to eradicate boredom. Visiting a store should not be just about shopping, but rather about meeting friends, experiencing different things, and creating memories.*
  - *To this end, we are working on many projects. For example, we have already used augmented reality sets that allow people to take selfies with fun backgrounds. Depending on the size of the mall, we host big campaigns every 2 to 3 months, including concerts, public viewing of soccer matches, and more.*

> ➢ *Retailers in our shopping centers can contribute to these events (e.g., with their own stand in the middle of the shopping center).*

- How important do you think it is for you to implement an **omnichannel** offering?
  - ➢ *That's very important, because that's the reason why people come to the stores. We offer spaces to meet and spend time together, which creates more emotion than meeting online.*
  - ➢ *We have Click & Collect and collaborate with Zalando, so that you can order products through their site, but they will be delivered by us. We invite people online to participate in our events and do digital activations at events. For example, we held an art contest in an empty space in a mall. We ran the contest through Instagram. This allowed our customers to vote on which artist should be displayed in that empty space. After the event, they could vote on their favorite art and buy pieces. This way we were able to encourage people to come to the store. We are working on other projects for this purpose, including the Metaverse.*

- How do you see the trend towards new priorities for **in-store support**? (less for transactions, more for personal consulting)
  - ➢ *This is an important trend because it is part of the overall customer experience. Even though we are not responsible for the consulting in stores in the mall, it has an impact on the perception of the mall. We educate our stores on how to improve the customer experience.*
  - ➢ *The perceived value of self-service checkouts depends on the type of customer. Some prefer the last face-to-face contact, others do not. Compared to retail sectors with high customer throughput, such as supermarkets, the issue is not as relevant for shopping centers. However, I think the trend will be to have both conventional and self-service checkouts.*

- Do you observe a change in behavior among your shoppers with regard to **sustainability**?
  - ➢ *Our general strategy is to become even more sustainable than we are now. Customers are asking for more sustainable products, or at least want to see that we are working to offer more sustainable products. If we don't, we immediately feel the backlash on our social media. We have contracts with retailers regarding sustainability standards.*
  - ➢ *In terms of shopping centers, we are seeing a trend where consumers expect us to operate more sustainably, for example through solar panels or efficient heating systems.*

- Where do you see the priorities for your shoppers in the future?
  - ➢ *I think customers want to have a smooth experience, not have to queue, have a positive emotional experience, feel secure and part of a community, and generally feel well.*

- What types of technologies are you currently using to improve the in-store customer experience?

  - *We use targeted marketing. Customers receive push notifications through the app when there is a special discount or event, or when they can earn some kind of benefit.*
  - *Retailers in the mall operate independently in terms of the type of technologies in their stores.*

- Are you planning to implement (further) technologies to improve the customer experience and if so, which ones?
  - *We are currently working on creating heat maps to see where larger concentrations of customers are located.*

- Do you provide possibilities for brand investments in your stores?
  - *Yes, we have an entire department for that purpose.*

- How do you manage brand investments in the store?
  - *Different sizes and types of screens*
  - *Several event spaces per shopping center depending on the size (enabling flagship brand experiences)*

- Can you share any figures on how much you charge for these promotions?
  - *Confidential*

- Can a significant increase in sales be observed with these promotions?
  - *We do not receive sales data from all retailers, but we can measure if we have an increased footfall. Depending on the size of the event, we may see a 5-10% increase in footfall.*

- How big is the share of brands that invest in special promotions or spaces?
  - *No answer possible*

b. <u>Questions about the importance of the features of ToBe's LiFi Geolocation service</u>

- On a scale from 1 – 10: How relevant do you expect an **indoor navigation** system to be in your stores in the future?
  - *7*
- Why?
  - *It can make life easier for employees and customers. However, there is one issue that could arise. To use indoor navigation, customers would need to know our website, have our app, or be a registered member. People who are already registered or regularly visit our website do not need indoor navigation because they know the place. For the other group of people, we would have to do a lot of advertising to get them to use the service. If we convince this group of people to use the service, it could create value, especially for our biggest shopping centers. For the smaller shopping centers with about 20,000 m2, indoor navigation doesn't make much sense.*

  - *We would use it primarily to make it easier to navigate within a mall, but another relevant point could be to help find a desired product category. If a customer doesn't know the store and is looking for something specific, it would be easier for him to search by category instead of checking which companies sell in the mall.*

- On a scale from 1 – 10: How relevant do you think it is to extend the **in-store communication** space for stores?
  - *7*
- Why?
  - *People would not have to prepare before going to a mall, but would receive location-based information in the store. However, it depends on how many people use the service. A retailer will only invest in content in the app if many customers use it, otherwise it does not add value. Therefore, it would depend a lot on how much we would promote such an indoor navigation system in advance.*
    It is also difficult to measure the impact of storytelling and similar types of Content.

- On a scale from 1 – 10: How relevant do you think it is to use **proximity marketing** in your stores?
  - *7*
- Why?
  - *Same reasons as for the previous topic*

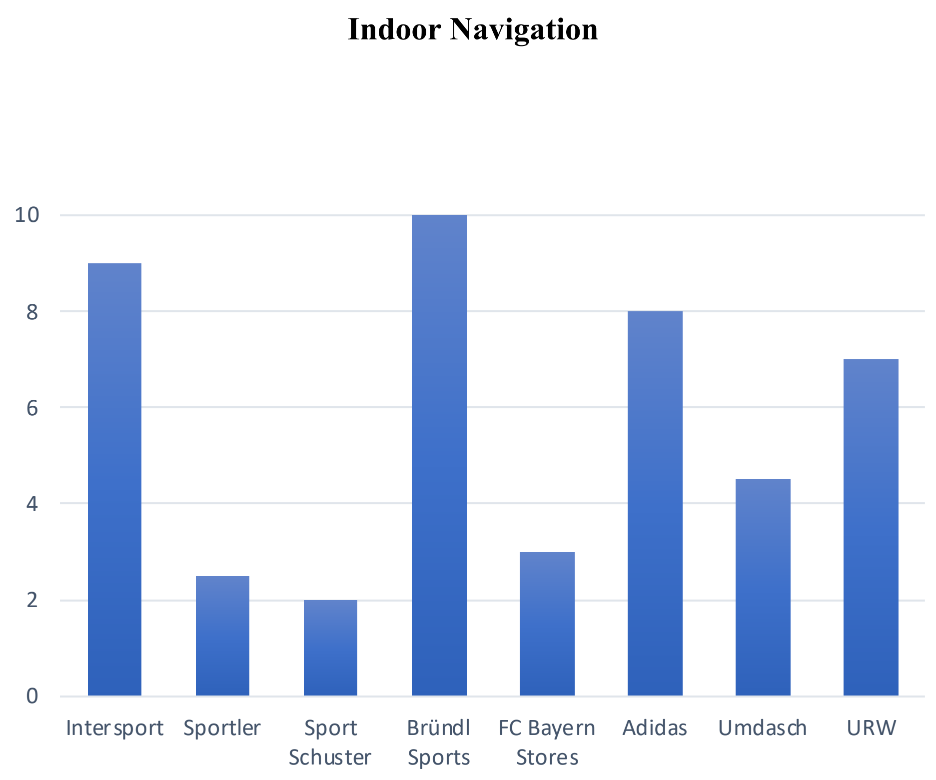
- How are you currently collecting data from in-store customers?
  - *We use anonymized mobile data tracking. We can measure the flow of visitors in the store from different zip codes. We don't know who the individuals are, but we can track where the crowds are coming from and how they change over time. We can see to some degree, according to the GDPR, how long customers stay. However, we can't see if customers come back because all the data we get from mobile data tracking is deleted after 24 hours.*
- On a scale from 1 – 10: How relevant do you think it is to collect more **data** about your in-store customers?
  - *7*
- Why?
  - *How much we benefit from data collection depends on what percentage of visitors use the service compared to the total number of visitors in our mall. If we had a lot of people using the service and we could segment them, that would have great value to us. Then it would be 12 out of 10. If we could get 30 or 40 percent of the customers to use the app, that would have a huge impact. But in your case, because we have to use a specific app that we have to advertise and create stimulus for customers to download and use, it becomes more difficult. As a result, the data we get from the app may not be statistically relevant.*

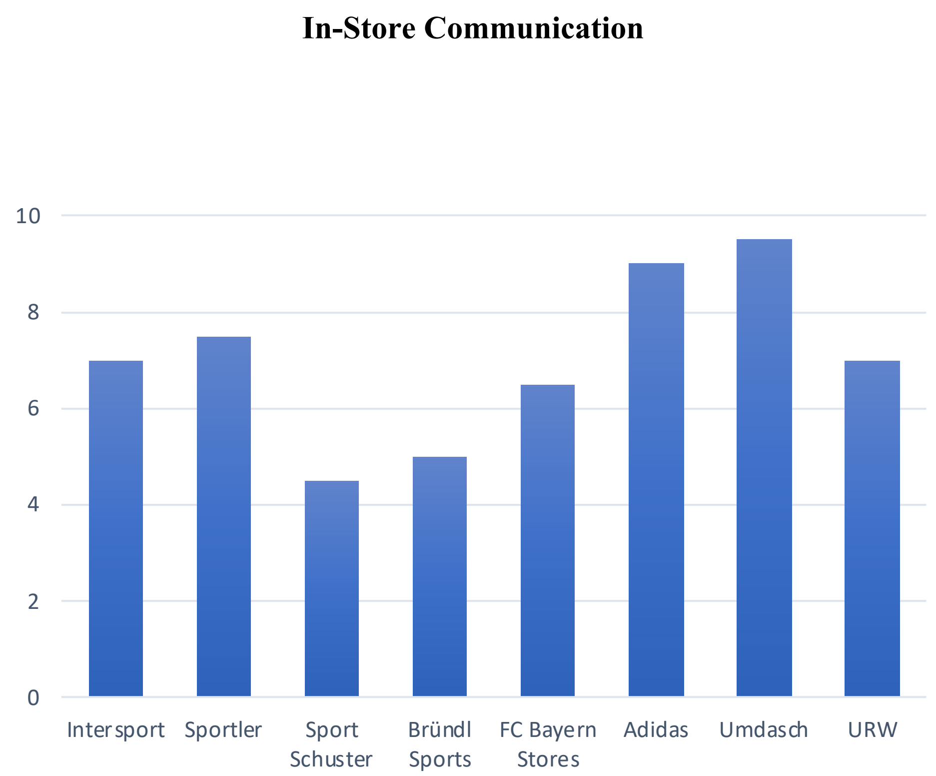
- *From an organizational point of view, it would be possible to encourage customers to download the app by making special offers in some stores. We are in regular exchange with all our retailers.*

- What progress have you made in converting your stores to LED lights?
  - *The areas of the malls where customers are staying, are 100% lit with LED lights.*
  - *We also have some areas in the malls that are only used by employees and do not need to be lit all the time, where we do not use LEDs exclusively.*
  - *In the retail stores, it depends on the contract, but we encourage them to use LEDs.*

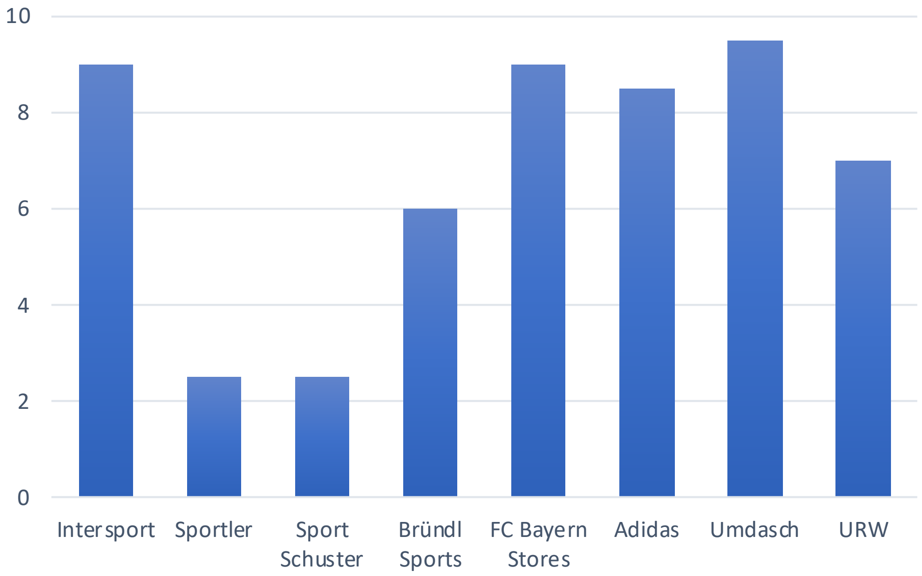
- On a scale from 1 – 10: How do you rate the **overall potential** of this technology to increase shopper experience and therefore brand investments?
  - *9*
  - *It has the potential to improve the brand experience and the customer experience. To what extent will be seen through further development. For now, it would primarily benefit us as a company by giving us more and more accurate data and allowing us to segment more. However, to increase the value for the customer, it would make sense to integrate additional features into the app that make it more interactive, such as AR or gamification.*

Appendix 3: Expert Ratings

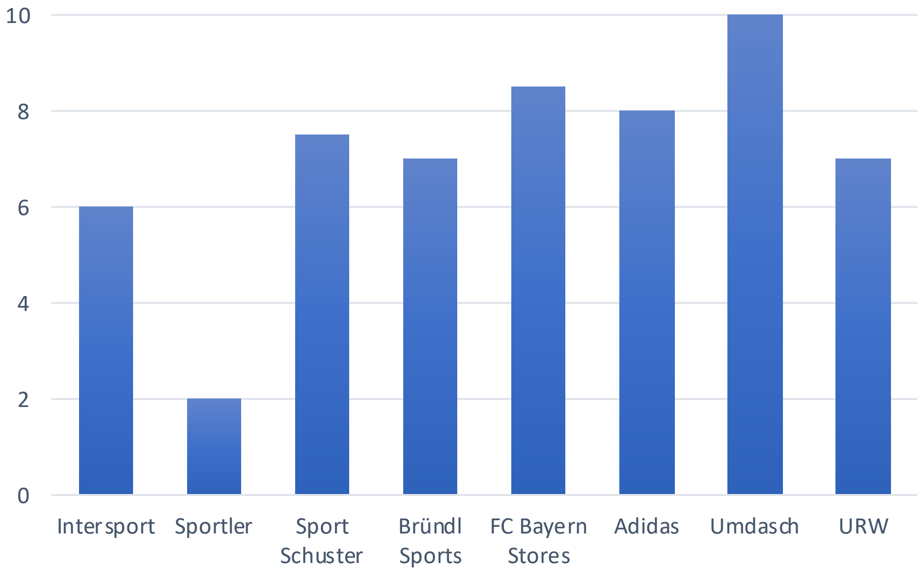




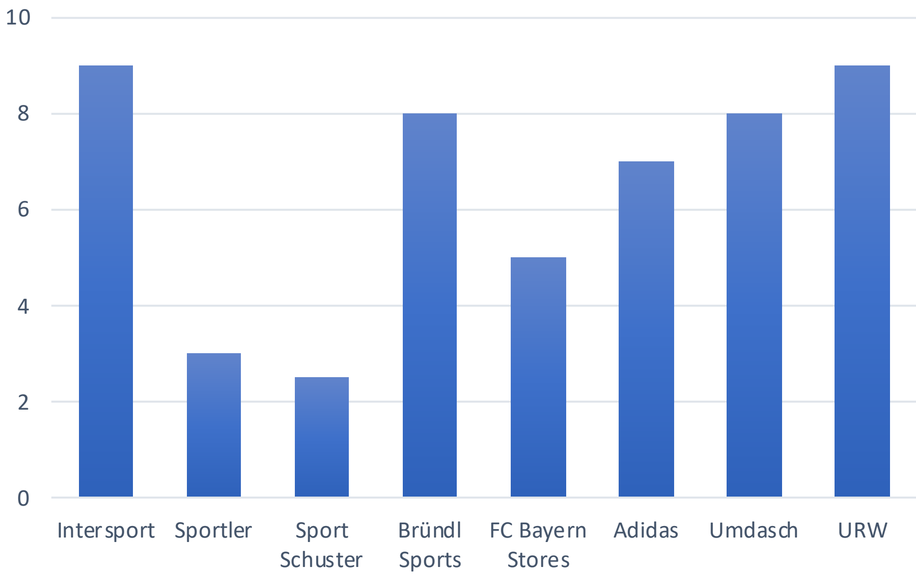
Proximity Marketing



Data Collection

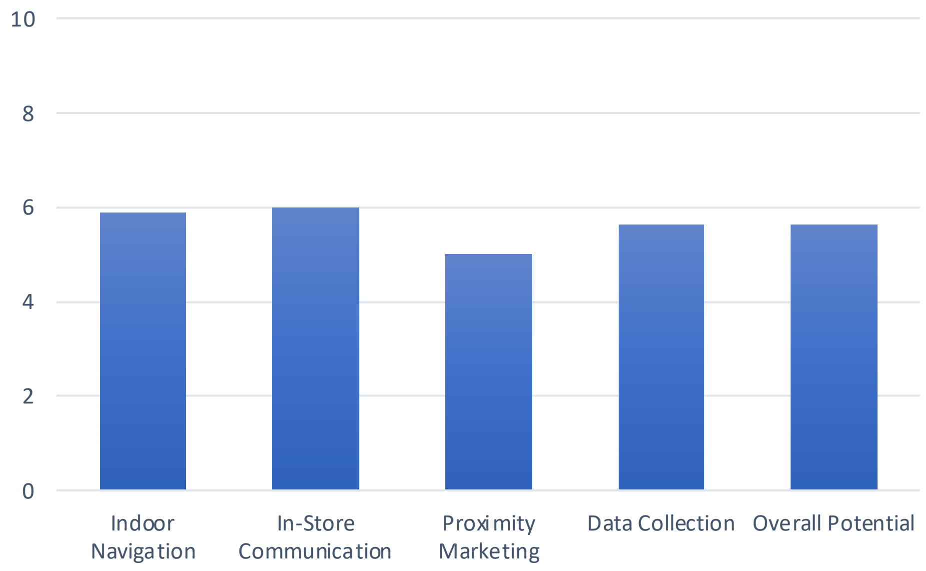


Overall Potential



Total Average Rating

Sporting Goods Retailer Average Rating (Intersport, Sport Schuster, Bründl Sports, Sportler)



Appendix 4: Shopper Interview Transcripts

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QUALITATIVE SHOPPER INSIGHTS

ELISABETH, 26, GERMAN, STUDENT

1) Entry Questions

- Which sports do you practice most often?
  - ➢ *During summer I prefer mountain sports like hiking, and mountain biking, but also swimming, windsurfing, and surfing. In the winter I like to go skiing and ski mountaineering.*

- How often do you practice sports?
  - ➢ *This depends on my capacities, but usually 3-4 times a week.*

- How often do you approximately buy apparel or equipment for your sport?
  - ➢ *I would say approximately every 6 months, but sometimes more often.*

- Where do you usually buy it?
  - ➢ *If I need something special, I prefer to go to a specialized sports store because of the good consulting. Apparel I often buy online, because I can take my time and do it whenever I want. However, sometimes I get annoyed when clothes don't fit, and I have to send them back. This is not very good for the environment and takes time.*
  - ➢ *When I order it online, I usually buy from the websites of Intersport or Decathlon.*

- How do you primarily inform yourself about sports products you want to buy?
  - ➢ *If I need something special, I do some online research in advance to check reviews and rankings of the specific product and also ask friends and family for their opinion.*

- *If I don't need something special, I just go to a store and ask employees in case I need more information.*

- Which aspects are most important to you when it comes to the environmental and social responsibility of sports stores?
  - *I usually take a look at which brands they sell in the store. I like local brands and when brands focus on operating environmentally friendly.*

2) Main Part

- What are things that annoy you when you shop at a big sports store?
  - *When I'm short on time and I need something special, it can take a while until I find it, especially in cheaper stores. These kinds of stores usually don't have so many employees around that can support me. When I have enough time to go shopping, however, it does not bother me that much.*

- Do you have difficulty finding a desired product in a large sports store on the first try?
  - *(See previous answer)*
  - *(YES)*

- Do you have the impression that it is difficult to visit a sports store with a stroller/wheelchair/crutch or similar because accessibility is not guaranteed?
  - *I'm not affected by this problem, but I have the feeling that not all sports stores I visited had accessible routes. When I think of Decathlon, I also remembered that the changing rooms were quite small and that could be a problem for people in a wheelchair.*
  - *(NEUTRAL)*

- Would you like to receive more information about products that interest you in a sports store than is currently the case?
  - *Sometimes I would like to get some more information on the specific features of a product to see if it's the right one for me. More information could help to find the best suiting product for my level.*
  - *I would also appreciate reviews or rankings in a sports store because that's what I usually do online to get a good overview.*
  - *(YES)*

- When buying sporting goods, do you find better deals online compared to in-store?
  - *Yes, I would say 90% of the products you can get cheaper online. I sometimes need some time to think after visiting a store to decide if I want to buy a product or not. In that case, I oftentimes go online and check if I can get it cheaper*

and order it there. I feel a bit bad afterward because it feels wrong and it's not environmentally friendly but it's cheaper. If I would get it at the same price in store, I would buy it there.
- *(YES)*

- Would you like to be informed more about product releases or special offers of your favorite brands or categories in a sports store?
  - *If I would be more aware of special offers in a store, I might buy less online.*
  - *(YES)*

BASTIAN, 26, GERMAN, ASSISTANT CONSULTANT

1) Entry Questions

- Which sports do you practice most often?
  - *Running, going to the gym, tennis, mountain biking, and skiing.*

- How often do you practice sports?
  - *Usually, I try to do sports 3-5 times a week.*

- How often do you approximately buy apparel or equipment for your sport?
  - *I would say about four times a year.*

- Where do you usually buy it?
  - *It depends. I love to do online shopping because it's very convenient. But I also go to stores sometimes because I'm very tall and I don't always know if the products fit me when ordering online. If I already know the sizes of a brand, I tend to buy online. If I look for something new, I rather go to a store.*
  - *When I buy online, I usually directly buy from the brand's website.*

- How do you primarily inform yourself about sports products you want to buy?
  - *If I'm going to the store, I like to talk to the employees and see what they can recommend since they have a good knowledge about the products most of the time. I also do a little bit of research in advance to compare prices and probably get influenced by advertisements or influencers in some way.*

- Which aspects are most important to you when it comes to the environmental and social responsibility of sports stores?

- *I like it when a store offers locally produced products. Another factor would be the materials that products are being made of. A good example of that would be the parley ocean project of Adidas which I really like.*
- *Sustainability is not my main focus when shopping, but when I see products that are very innovative in terms of sustainability and look good, it catches my attention.*

2) Main Part

- What are things that annoy you when you shop at a big sports store?
  - *One of the things that annoy me in a big store is that I sometimes don't know where the specific brands are and then just walk around and may miss good opportunities. If I go to a store with the plan to buy Nike only, that's not a problem, because that's easy to find. When I don't have a specific plan, however, I might end up walking around without being aware of which kind of brands are there and which product suits me best.*
  - *Another thing that comes to my mind is that in very big stores, employees sometimes don't have the best knowledge about the products since they sell so many different brands. So, they probably have expertise about the best-selling brands only.*
  - *One thing I recently experienced in a big store in Boston was that there was almost no phone connection, so I couldn't get messages or look up information about products.*

- Do you have difficulty finding a desired product in a large sports store on the first try?
  - *(See previous answer)*
  - *(YES)*

- Do you have the impression that it is difficult to visit a sports store with a stroller/wheelchair/crutch or similar because accessibility is not guaranteed?
  - *I'm not affected by this problem, so that's hard to say. I can imagine that there are still some accessibility problems.*
  - *(NEUTRAL)*

- Would you like to receive more information about products that interest you in a sports store than is currently the case?
  - *I think I wouldn't like to receive so much information about a brand in general because I probably know the brand already. When I look at a particular product in a store, I simply want to get the information I need to decide whether I want it or not. That could for example be information about the product features, how it's made, and why it's superior to other products.*

- *(YES)*

- When buying sporting goods, do you find better deals online compared to in-store?
  - *If you shop on brand-owned websites, I don't think so. If you google the product and browse through different pages, you will for sure find a better price compared to retail.*
  - *(YES)*

- Would you like to be informed more about product releases or special offers of your favorite brands or categories in a sports store?
  - *It could maybe help to differentiate old models from new ones. If I look at Adidas for example, old models are oftentimes presented next to new ones without a big change in design. So, for this case, it could be helpful to get information about which model is the new one.*
  - *But I definitely don't want to receive all updates about every brand when I enter a store. I only want to get some updates from selected brands.*
  - *(YES)*

RENATE, 55, GERMAN, SELF-EMPLOYED

1) Entry Questions

- Which sports do you practice most often?
  - *During summer cycling and windsurfing. During winter I go skiing. All year round I do Yoga.*

- How often do you practice sports?
  - *I would say around 3-5 times.*

- How often do you approximately buy apparel or equipment for your sport?
  - *About every 3 to 6 months.*

- Where do you usually buy it?
  - *I go to a close sports store or buy it online.*
  - *When I go to a sports store, it's usually a smaller multi-brand store.*
  - *When I shop online and need something for Yoga, I buy it from the brand's own websites. When I need something specific, I sometimes start searching on Amazon and see where I will end up.*

- Which aspects are most important to you when it comes to the environmental and social responsibility of sports stores?
  - *For me, it is important that I can trust a store to offer brands that are committed to sustainability, including environmental and social aspects.*

2) Main Part

- What are things that annoy you when you shop at a big sports store?
  - *When I go to a large sports store, it takes forever to find an employee who can advise me, and I feel somewhat overwhelmed by the mass of products on offer.*

- Do you have difficulty finding a desired product in a large sports store on the first try?
  - *I don't have trouble finding products, it's more difficult for me to figure out which products suit me best.*
  - *(NO)*

- Do you have the impression that it is difficult to visit a sports store with a stroller/wheelchair/crutch or similar because accessibility is not guaranteed?
  - *In the stores that I visit, it is average. At one there is only a staircase to the 2nd floor. I think it is especially difficult in the smaller stores, in the big ones there is more space.*
  - *(NEUTRAL)*

- Would you like to receive more information about products that interest you in a sports store than is currently the case?
  - *Yes, I would be interested in getting additional information on product features. Especially in bigger stores, I would appreciate that since the employees tend to be less specialized there. However, when there is a qualified employee available, I would still prefer to get personal consulting.*
  - *(YES)*

- When buying sporting goods, do you find better deals online compared to in-store?
  - *I usually find most of the things I need in the store and I have the feeling that I get good quality there. When I buy online, there is of course a much larger selection and there I have the chance to get certain things cheaper. I prefer to buy in the store because I want to support it and I feel well-advised most of the time, but if I can't get a product there, I look on the Internet.*
  - *(NEUTRAL)*

- Would you like to be informed more about product releases or special offers of your favorite brands or categories in a sports store?
    - *If I only get information about novelties in the store itself, then it might be interesting but outside the store definitely not.*
    - *(YES)*

JOCHEN, 55, GERMAN, SELF-EMPLOYED

1) Entry Questions

- Which sports do you practice most often?
    - *Road cycling, mountain biking, running, tennis, windsurfing & skiing.*

- How often do you practice sports?
    - *3-4 times a week.*

- How often do you approximately buy apparel or equipment for your sport?
    - *I usually buy sports gear once a year. When I think of apparel for sports, it's about every 4 years.*

- Where do you usually buy it?
    - *Clothing I usually buy online on the websites of multi-brand retailers.*
    - *Clothing I usually buy in multi-brand retail stores, where everything is available.*

- How do you primarily inform yourself about sports products you want to buy?
    - *I usually do research on the internet beforehand and get advice from the staff in the stores. Often I have to check online even after visiting the stores because the employees were not well trained.*

- Which aspects are most important to you when it comes to the environmental and social responsibility of sports stores?
    - *I don't care at all.*

2) Main Part

- What are things that annoy you when you shop at a big sports store?
    - *What annoys me is that you get advice late and when you do, it's often bad.*

  - *I also don't like it when there is no treadmill available when I want to try out running shoes.*

- Do you have difficulty finding a desired product in a large sports store on the first try?
  - *I usually ask staff to get an orientation in the store and it gets worse when you get older.*
  - *(YES)*

- Do you have the impression that it is difficult to visit a sports store with a stroller/wheelchair/crutch or similar because accessibility is not guaranteed?
  - *I am not affected, but often hear from people in wheelchairs that accessibility is improving. Usually larger sporting goods stores are barrier-free. However, I think it is not so easy to find the accessible route.*
  - *(NEUTRAL)*

- Would you like to receive more information about products that interest you in a sports store than is currently the case?
  - *I would really appreciate it as the employee's expertise is getting worse.*
  - *(YES)*

- When buying sporting goods, do you find better deals online compared to in-store?
  - *I prefer to buy in the store. I don't mind spending a little more money as long as the advice is good.*
  - *(NO)*

- Would you like to be informed more about product releases or special offers of your favorite brands or categories in a sports store?
  - *If it's not too much information, but just a few updates on stuff I'm interested in, I wouldn't be offended.*
  - *(YES)*

FRANZISKA, 28, GERMAN, PHYSICIAN

1) Entry Questions

- Which sports do you practice most often?
  - *Bouldering, running, mountain biking, road biking, and skiing.*
- How often do you practice sports?
  - *2-3 times a week.*

- Where do you usually buy it?
  - *I usually go to a multi-brand store because I can get everything there.*
  - *If I know exactly what I want and know the brand, I buy online. In this case, I usually buy from the same retailer I buy from in the store because I get special offers through the loyalty program.*
  - *When it comes to gear, I usually buy it on secondhand platforms.*

- How do you primarily inform yourself about sports products you want to buy?
  - *I usually look at some tests and reviews on the Internet in advance. The advice from the staff in the sports store I usually go to is not very good, so I barely ask for support.*

- Which aspects are most important to you when it comes to the environmental and social responsibility of sports stores?
  - *Since I have been earning money, I find it important and spend more money on it. It's important to me that the products last a long time and I think it's good when stores have a repair offer for worn items. When it comes to how products are made and what the carbon footprint of a store looks like, I don't really pay attention to that yet when I'm shopping.*

2) Main Part

- What are things that annoy you when you shop at a big sports store?
  - *What bothers me is that you can have a different outfit for every sport. You don't really need that many things, you could also offer an outfit that works for everything.*

- Do you have difficulty finding a desired product in a large sports store on the first try?
  - *I usually don't have problems with that.*
  - *(NO)*

- Do you have the impression that it is difficult to visit a sports store with a stroller/wheelchair/crutch or similar because accessibility is not guaranteed?
  - *I'm not affected myself, but I have the feeling that most sports stores are barrier-free.*
  - *(NEUTRAL)*

- Would you like to receive more information about products that interest you in a sports store than is currently the case?
  - *I wouldn't be interested in that. What I find more important are areas in the store where you can test out certain sports equipment.*

  - *(NO)*

- When buying sporting goods, do you find better deals online compared to in-store?
  - *I'm honestly too lazy to spend a lot of time researching online to see if I can get a product cheaper somewhere.*
    (NO)

- Would you like to be informed more about product releases or special offers of your favorite brands or categories in a sports store?
  - *I wouldn't like that.*
  - *(NO)*

LUCAS, 26, GERMAN, STUDENT

1) Entry Questions

- Which sports do you practice most often?
  - *Skiing, skating, mountain biking.*

- How often do you practice sports?
  - *5-6 times a week.*

- How often do you approximately buy apparel or equipment for your sport?
  - *Every 3-4 months.*

- Where do you usually buy it?
  - *Usually, I go to a local sports store.*
  - *I normally check the internet beforehand to see where I can get the product I'm looking for and compare prices. But if it is available in my local store, I usu-ally go there.*
  - *When I buy online, I tend to buy from multi-brand retailers' websites.*

- How do you primarily inform yourself about sports products you want to buy?
  - *I usually inform myself in advance on the websites of the individual brands.*

- Which aspects are most important to you when it comes to the environmental and social responsibility of sports stores?
  - *Yes, stores should definitely embody the topic. What matters to me is that the store operates in an energy-efficient manner, that employees are treated fairly, and that the right brands are selected.*

2) Main Part

- What are things that annoy you when you shop at a big sports store?
  - *When I go to a large sports store like Decathlon, I'm a bit overwhelmed by the large range of products. Basically, I want to get to the desired product quickly and not get distracted.*

- Do you have difficulty finding a desired product in a large sports store on the first try?
  - *I don't have problems with that. If I cannot find something, I usually ask employees and they should know where to find it.*
  - *(NO)*

- Do you have the impression that it is difficult to visit a sports store with a stroller/wheelchair/crutch or similar because accessibility is not guaranteed?
  - *I don't have any experience with this, but I think that accessibility must be a given for large stores. However, I can imagine that things like finding the toilet could be difficult for people in a wheelchair.*
  - *(NEUTRAL)*

- Would you like to receive more information about products that interest you in a sports store than is currently the case?
  - *When it comes to technical aspects, I think I inform myself enough in advance. As for the manufacturing process and sustainability, I would like to see more information, but there needs to be a consistent, direct comparison between the brands.*
  - *(YES)*

- When buying sporting goods, do you find better deals online compared to in-store?
  - *I think so. I usually start my buying process with an online search, where I then ideally find a deal at a local sports store. I don't look in the store itself for any special deals on stuff I don't need anyway.*
  - *(NEUTRAL)*

- Would you like to be informed more about product releases or special offers of your favorite brands or categories in a sports store?
  - *This is rather less interesting for me because I try to keep my time in the store to a minimum. On the other hand, I actually have one or two brands that I'm interested in, and when I go to the store, I would be interested to hear what's new from them. Therefore, I would say yes in total.*
  - *(YES)*

CHRIS, 28, GERMAN, PROJECT & SERVICE MANAGER

1) Entry Questions

- Which sports do you practice most often?
  - *Surfing.*

- How often do you practice sports?
  - *5-6 times a week.*

- How often do you approximately buy apparel or equipment for your sport?
  - *Every 2 months.*

- Where do you usually buy it?
  - *I buy a lot of things from second-hand platforms and social media groups.*
  - *Second most often I buy from online retailers, especially from pages of whole-sale multi-brand retailers.*
  - *I only go to stores when I need something immediately.*

- How do you primarily inform yourself about sports products you want to buy?
  - *I inform myself in advance online on the brands' websites. Then I check what the market price is for the item I'm looking for and buy it from the cheapest supplier.*

- Which aspects are most important to you when it comes to the environmental and social responsibility of sports stores?
  - *Sustainability is important to me but it depends on what I buy. I don't pay attention to it for quick purchases, but I do for more long-term investments.*

2) Main Part

- What are things that annoy you when you shop at a big sports store?
  - *What bothers me a bit is that I don't know what the online prices are for the products. Sometimes I check my phone in the store to see what the online price is before I buy.*

- Do you have difficulty finding a desired product in a large sports store on the first try?
  - *Sometimes you have to search a bit, but sports stores are organized very well. I have a harder time with other stores, like supermarkets.*
  - *(NO)*

- Do you have the impression that it is difficult to visit a sports store with a stroller/wheelchair/crutch or similar because accessibility is not guaranteed?
  - *I cannot make a statement about this.*
  - *(NEUTRAL)*

- Would you like to receive more information about products that interest you in a sports store than is currently the case?
  - *I would be interested in that. I'd like to know more about the manufacturing process, materials and technical aspects.*
  - *(YES)*

- When buying sporting goods, do you find better deals online compared to in-store?
  - *Most of the time, but not always. Sometimes you can get better deals in stores.*
  - *(NEUTRAL)*

- Would you like to be informed more about product releases or special offers of your favorite brands or categories in a sports store?
  - *That would rather annoy me.*
  - *(NO)*

WOODY, 28, BRITISH, DIGITAL NOMAD

3) Entry Questions

- Which sports do you practice most often?
  - *Cycling*

- How often do you practice sports?
  - *4 times a week*

- How often do you approximately buy apparel or equipment for your sport?
  - *Every 3 months*

- Where do you usually buy it?
  - *If there is a good local bike shop, I would go there. Otherwise, I buy things from Amazon.*

- How do you primarily inform yourself about sports products you want to buy?
  - *I usually know what I need. In case I have to do research, I do it online in ad-vance and also ask employees in the store.*

- Which aspects are most important to you when it comes to the environmental and social responsibility of sports stores?
  - *For me, it is important that the products in the store are not over-packaged in plastic. For example, a bicycle inner tube does not have to be packed in several layers of foam.*

4) Main Part

- What are things that annoy you when you shop at a big sports store?
  - *What really annoys me is when the staff hasn't got a clue about anything. That's why I like smaller local shops because that's where employees usually are well trained.*

- Do you have difficulty finding a desired product in a large sports store on the first try?
  - *That's not a problem for me.*
  - *(NO)*

- Do you have the impression that it is difficult to visit a sports store with a stroller/wheelchair/crutch or similar because accessibility is not guaranteed?
  - *I don't know since I'm not affected. I think the big sports stores in the UK are set up like supermarkets and usually have lifts, so they should be accessible.*
  - *(NEUTRAL)*

- Would you like to receive more information about products that interest you in a sports store than is currently the case?
  - *I would appreciate that. I would like to know more about technical aspects or get some top-level information like reviews. I feel like I get more value for a purchase when I know more about the product.*
  - *(YES)*

- When buying sporting goods, do you find better deals online compared to in-store?
  - *Yes, I think there is just more variety online and competitors need to match prices.*
  - *(YES)*

- Would you like to be informed more about product releases or special offers of your favorite brands or categories in a sports store?

- *This would bother me because I am already bombarded with this type of messages. I appreciate some of the messages when they at least offer discounts, but when you only get information about updates, that's not something I want.*
- *(NO)*

RYAN, 27, IRISH, ACCOUNT MANAGER

1) Entry Questions

- Which sports do you practice most often?
  - *Surfing, mountain biking and going to the gym*

- How often do you practice sports?
  - *5 times a week*

- How often do you approximately buy apparel or equipment for your sport?
  - *3 – 4 times a month*

- Where do you usually buy it?
  - *When I buy something for mountain biking or the gym, I buy it online. When I buy online, I usually buy from multi-brand sports companies. I try to avoid Amazon.*
  - *When I buy things for surfing, I usually buy it in a store.*

- How do you primarily inform yourself about sports products you want to buy?
  - *It depends on what I buy. If it´s just clothes for the gym, I don´t inform myself before I go shopping. If I buy something more technical, I use to do some online research in advance.*
  - *When I´m in a shop, I look at the information that is provided but also sometimes ask employees for their advice.*

- Which aspects are most important to you when it comes to the environmental and social responsibility of sports stores?
  - *I would like to say that this topic is important to me when I buy something, but I´m not sure if it actually influences me in my buying habits. If I see sustainability callouts on products, however, I would be more willing to buy something. In general I don´t like to buy big brands like Adidas or Nike, because they are*

definitely not sustainable. If It would be easier to buy sustainable products, I would be more aware of this topic while shopping.

2) Main Part

- What are things that annoy you when you shop at a big sports store?
  - *In general, I enjoy going to sports stores and just walk around, especially in very big stores.*

- Do you have difficulty finding a desired product in a large sports store on the first try?
  - *That's not really a problem for me. If I cannot find something right away, I would just ask employees where to go.*
  - *(NO)*

- Do you have the impression that it is difficult to visit a sports store with a stroller/wheelchair/crutch or similar because accessibility is not guaranteed?
  - *I cannot answer that question.*
  - *(NEUTRAL)*

- Would you like to receive more information about products that interest you in a sports store than is currently the case?
  - *Yes, I would be interested to know more about the sustainability of a product and some facts about the manufacturer and retailer.*
  - *(YES)*

- When buying sporting goods, do you find better deals online compared to in-store?
  - *I´m a bit skeptical about online offers, because they oftentimes make it look like it´s a special deal but in the end it´s not. I don´t buy online because it may be cheaper, but because of the convenience. I also don´t think that the prod-ucts are more expensive in-store.*
  - *(NO)*

- Would you like to be informed more about product releases or special offers of your favorite brands or categories in a sports store?

  - *If I only get messages when I enter a store, I would be interested in seeing what's new 98romm y favorite brands and what special offers are available. If I also got messages outside the store, that would bother me*.

  - *(YES)*

MATHIEU, 30, FRENCH, TEAM MANAGER

3) Entry Questions

- Which sports do you practice most often?
  - *Surfing, skateboarding and longboarding*

- How often do you practice sports?
  - *3 times a week*

- How often do you approximately buy apparel or equipment for your sport?
  - *2 times a year*

- Where do you usually buy it?
  - *I mainly buy online from multi-brand sports companies.*
  - *I hardly ever go to a retail store, mostly just for repairs.*
    If I do buy something in a store, I know exactly what I want and buy it directly.

- How do you primarily inform yourself about sports products you want to buy?
  - *I usually do online research on the brand's websites and ask friends for their opinion.*

- Which aspects are most important to you when it comes to the environmental and social responsibility of sports stores?
  - *First of all, it's important to me to support local sports stores. Also, it is interesting for me to buy sustainable products in a store. However, it is not always easy to choose the sustainable option because it is more expensive.*

4) Main Part

- What are things that annoy you when you shop at a big sports store?
  - *The number of products is overwhelming. I also feel that big sports stores try to get you to buy more rather than advise you on what to buy.*
  - *I have problems finding the right size of a product.*

- Do you have difficulty finding a desired product in a large sports store on the first try?
  - *Yes, I would say I have problems finding things right away.*
  - *(YES)*

- Do you have the impression that it is difficult to visit a sports store with a stroller/wheelchair/crutch or similar because accessibility is not guaranteed?

- *I had crutches for a while and had to walk with them in a sports store in France. There I had no problems finding the accessible way.*
- *(NO)*

- Would you like to receive more information about products that interest you in a sports store than is currently the case?
  - *In general, I would be interested in getting more information about a product, but I wouldn't be willing to have a different app for every store I go to.*
  - *(YES)*

- When buying sporting goods, do you find better deals online compared to in-store?
  - *Yes, definitely.*
  - *(YES)*

- Would you like to be informed more about product releases or special offers of your favorite brands or categories in a sports store?
  - *No, I prefer to look around myself. I don't want to be pushed into consuming.*
  - *(NO)*

Appendix 5: Formulation of Questions and Hypotheses

Questions

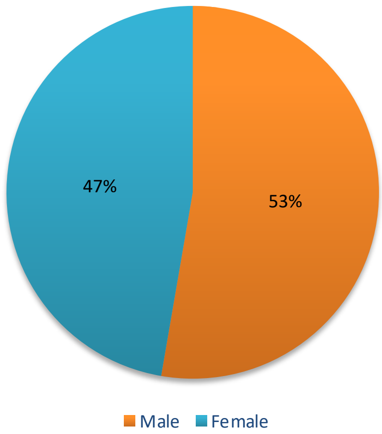
1	**Is the 'Indoor Navigation' feature only considered beneficial by a minority of shoppers?**
2	**Do people who rely on an accessible route have problems finding it in multi-brand sports stores?**
3	**Do shoppers have a strong desire for additional information about products and brands in multi-brand sports stores?** **Is the desire for product information greater than that for brand information in this context?**
4	**To what extent can the sustainability aspects of the Li-Fi Geolocation service contribute to satisfying shoppers' sustainability needs?**
5	**To what extent are shoppers willing to download the app, register, and agree to the disclosure of demographic and location data?**

Hypotheses

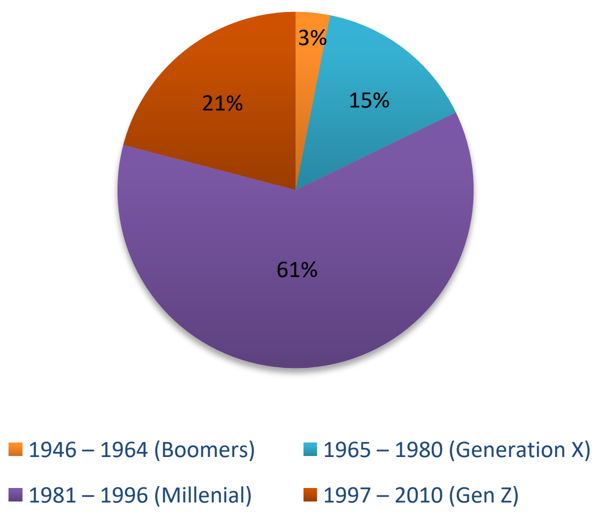
H1	**Shoppers who agree with the sentiment of finding better deals online than in-store rate the 'Personalized Live Deals' feature higher.**
H2	**Younger generations of shoppers rate the 'Personalized Live Deals' feature higher than older generations.**
H3	**The willingness to allow the app to track the in-store location and send notifications is lower among shoppers from younger generations.**

Appendix 6: Quantitative Shopper Survey – Overall Results

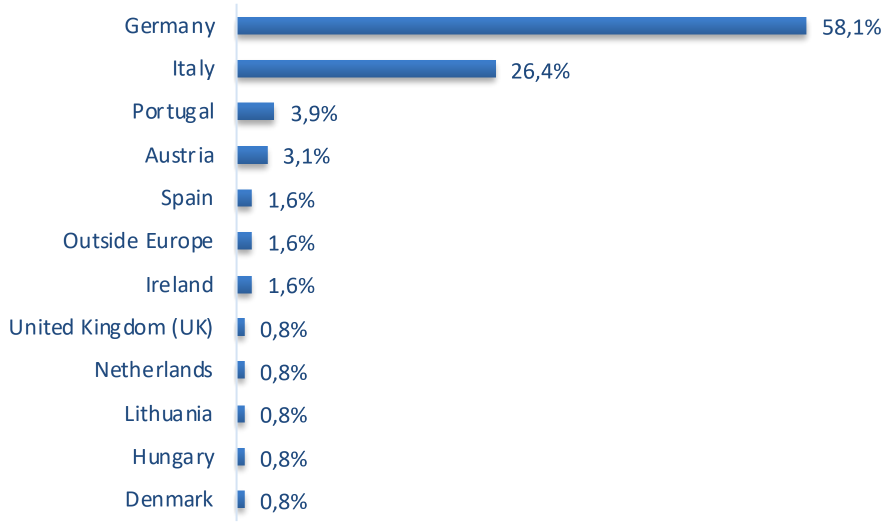
With which gender do you identify?



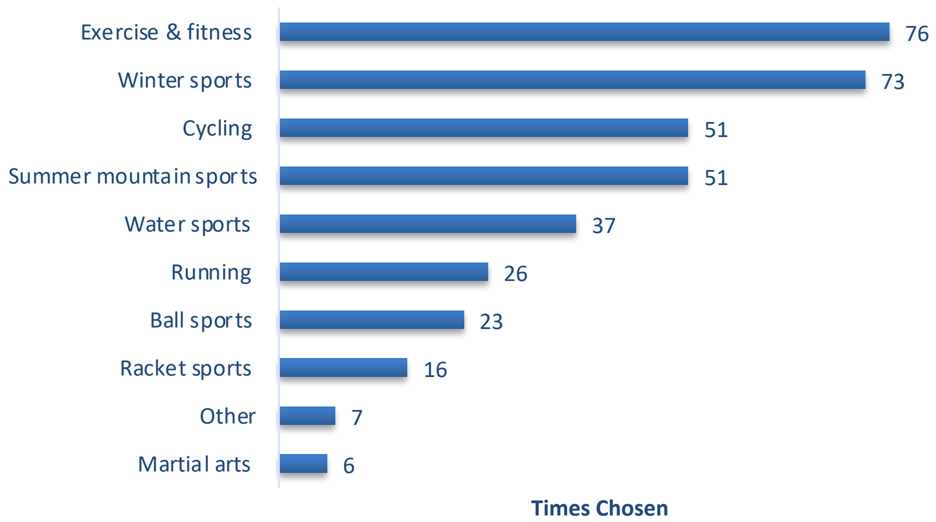
To which age group do you belong?



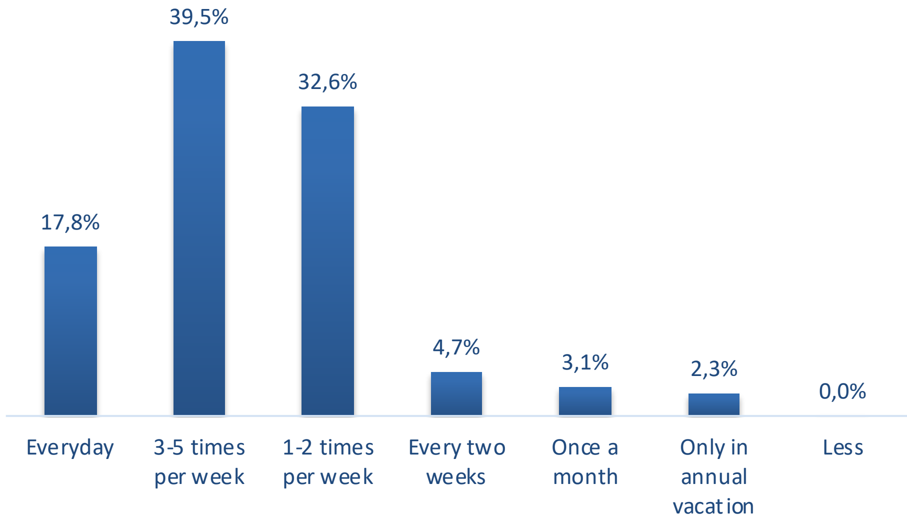
In which country do you live?



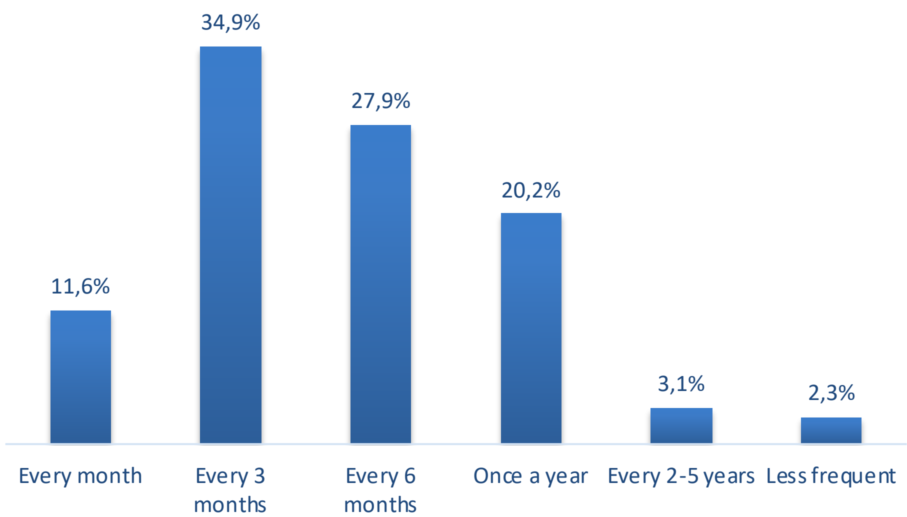
Which sports do you practice most often? (Multiple answers possible)



How often do you practice sports?



How often do you approximately buy apparel or equipment for your sport?

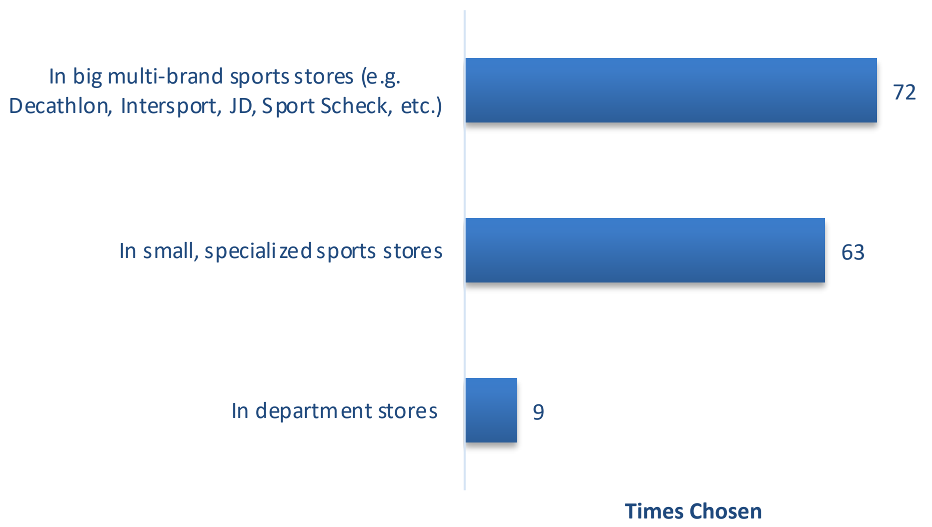


Where do you usually buy the apparel & equipment for your sport?

(Multiple answers possible for both areas. An exclusive choice of online or retail stores is also possible.)

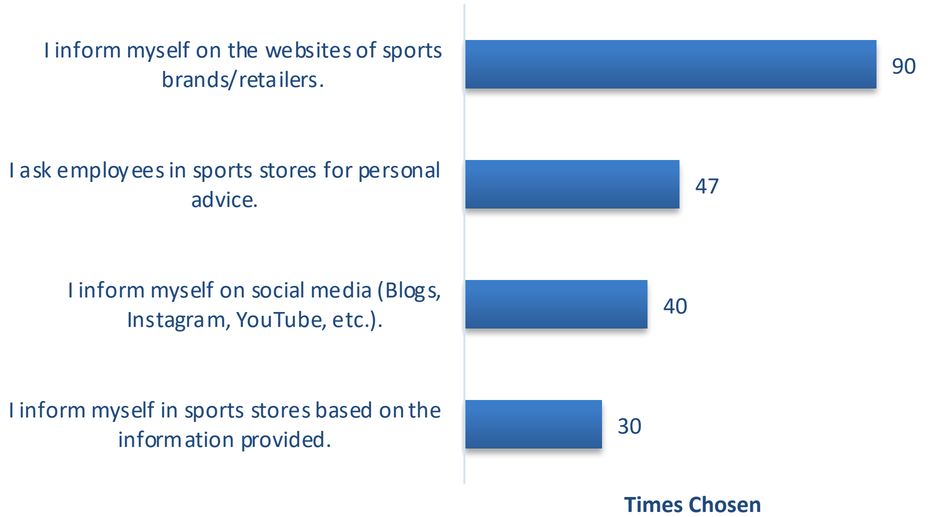
Online

Retail Stores



How do you primarily inform yourself about sports products you want to buy?

(2 answers possible)

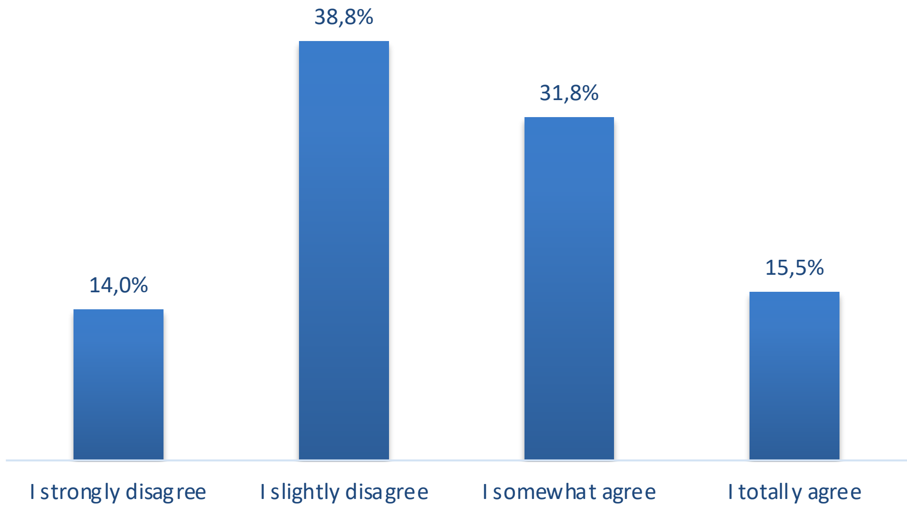


Which aspects are most important to you when it comes to the environmental and social responsibility of sports stores?

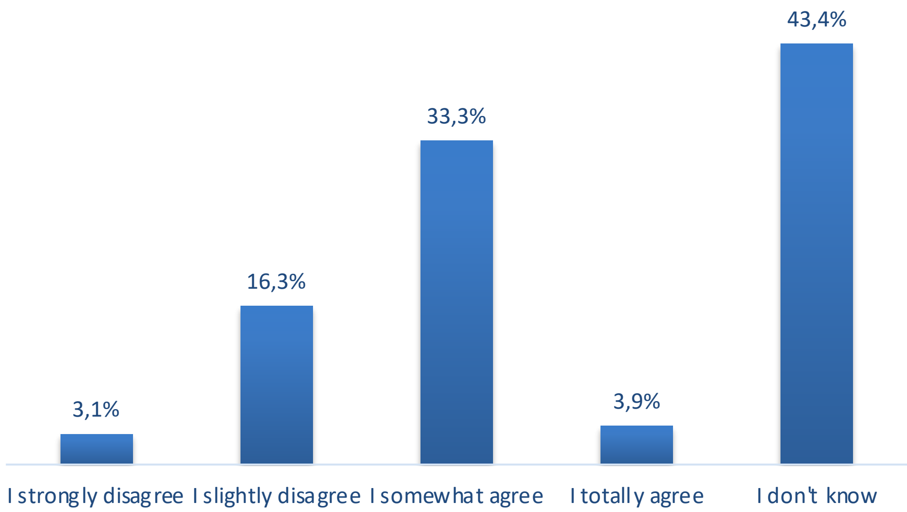
(Rank the factors in order of importance, starting with the most important one.)

In what way do you agree with the following statements?

When I am in a large sports store (e.g. Decathlon, Intersport, JD Sports), I have difficulty finding a desired product right away.

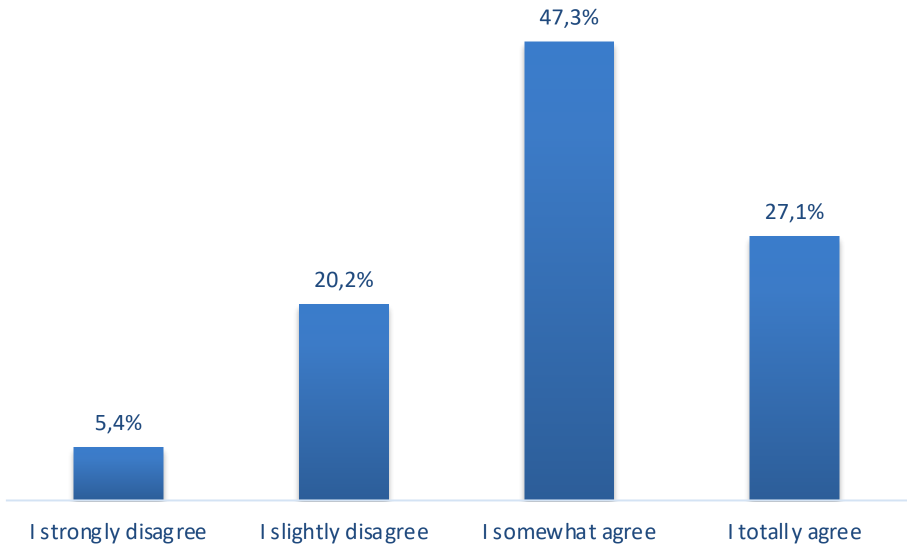


I find it difficult to visit a sports store with a stroller/wheelchair/crutches or similar due to accessibility issues.

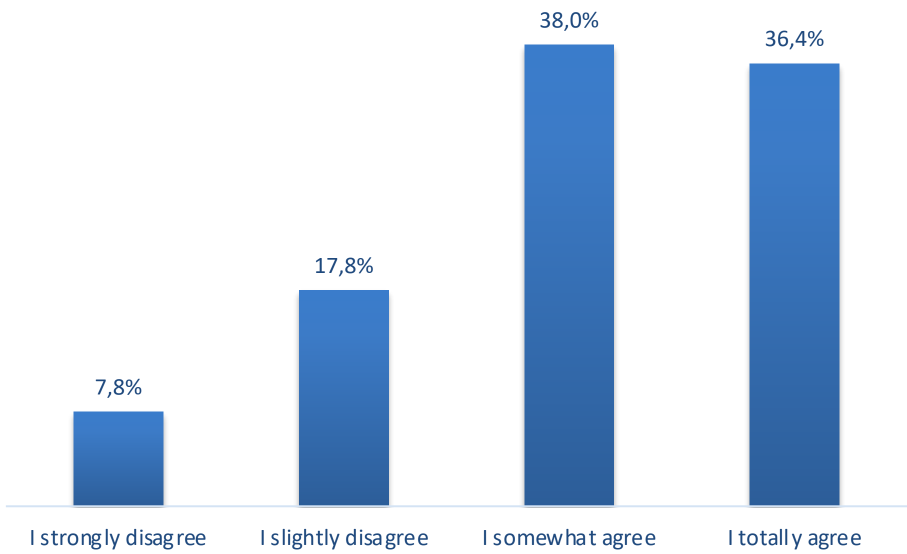


When I am in a large sports retail store and I am interested in a product, I would like to get additional information about it that goes beyond the previous standard.

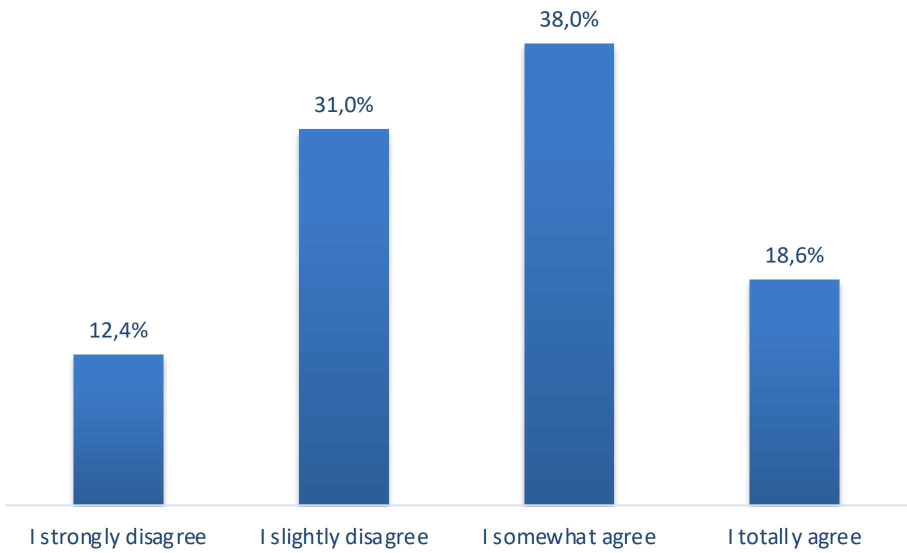
(Additional information could consist of explanations about the product features as a decision-making guide, background information about the brand, or information about the sustainability of the product.)



I would like to buy sporting goods from a store more often, but I usually find a better deal online.



I would like to be informed more about product releases or special offers of my favorite brands or categories in a sports store.



These questions were related to possible benefits of the investigated technology in retail stores.

The startup ToBe has developed a Li-Fi solution that enables an indoor navigation system. You can think of the service as an indoor version of Google Maps.

You would benefit from the following features:

- **Indoor Navigation** (Find desired products at first try)

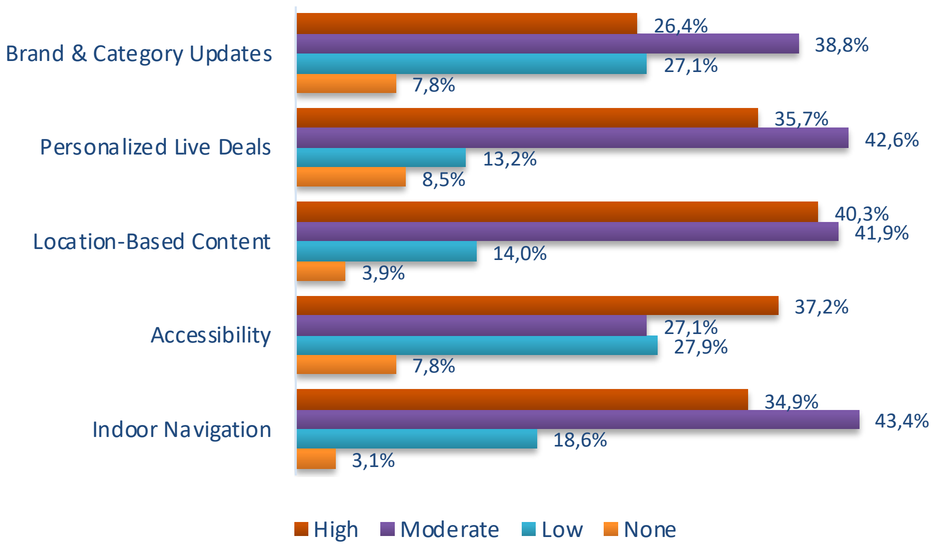
- **Accessibility** (Navigate through a store without barriers)

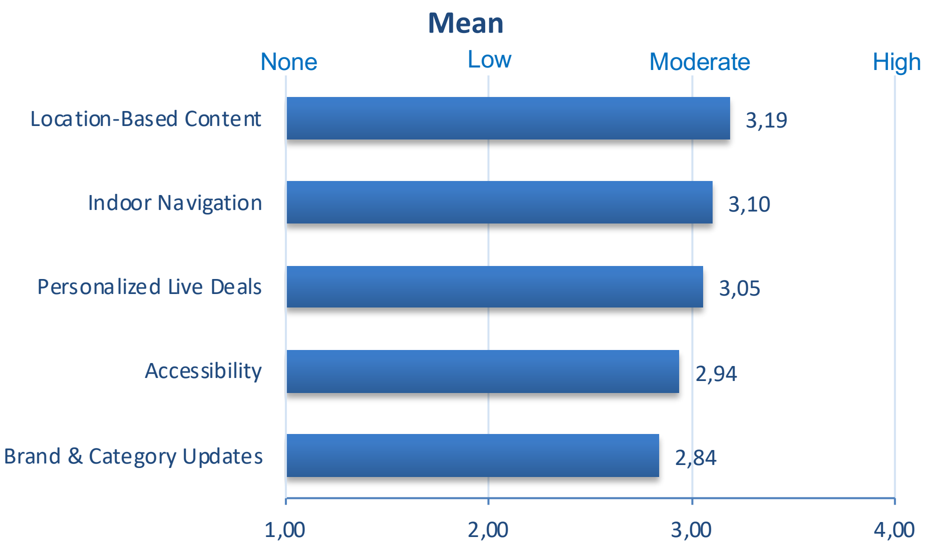
- **Location-based content** (Additional information about a product or brand based on your location in the store)

- **Personalized live deals** (Special offers based on your interests while you are shopping in the store)

- **Brand & Category updates** (Up-to-date information about your favorite brands or categories in a store)

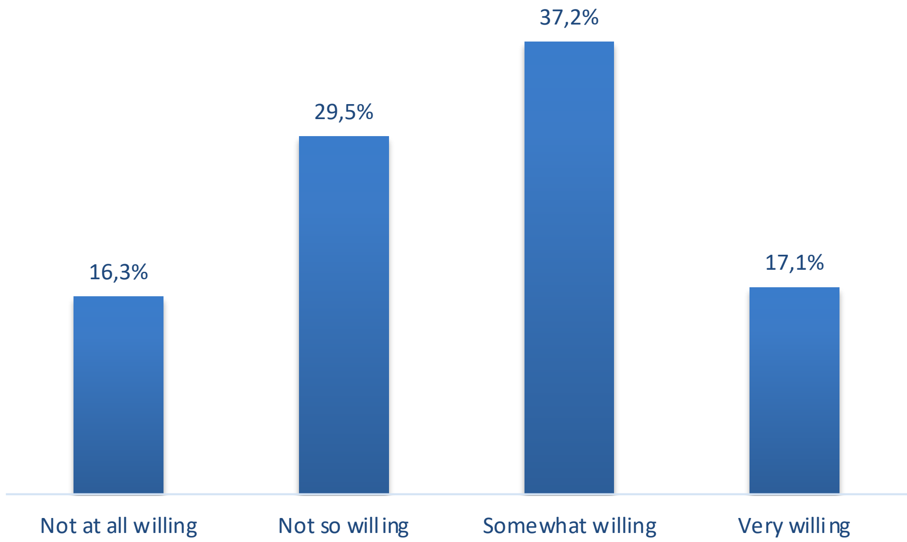
How would you rate the value of these features for you?



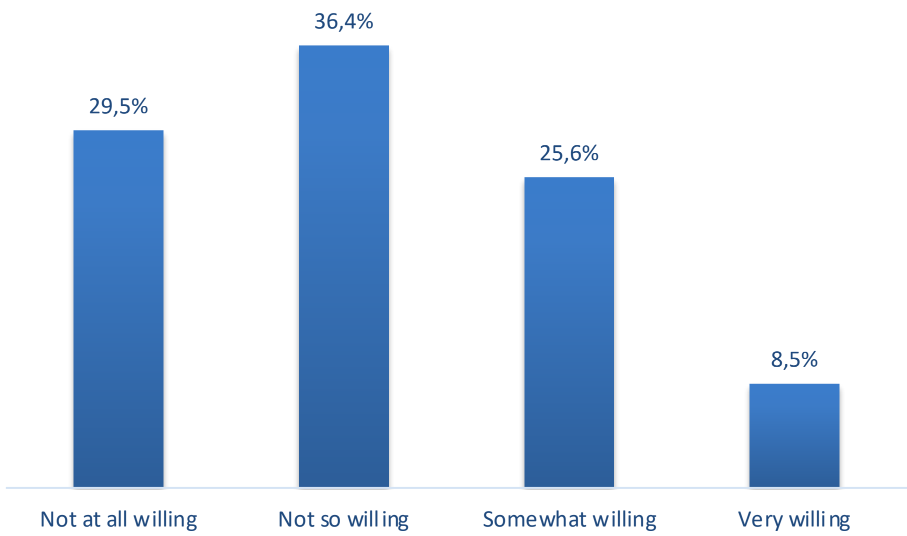


**Now imagine yourself the next time you go to a large sports store.
How willing would you be to do the following things to make use of the features listed above?**

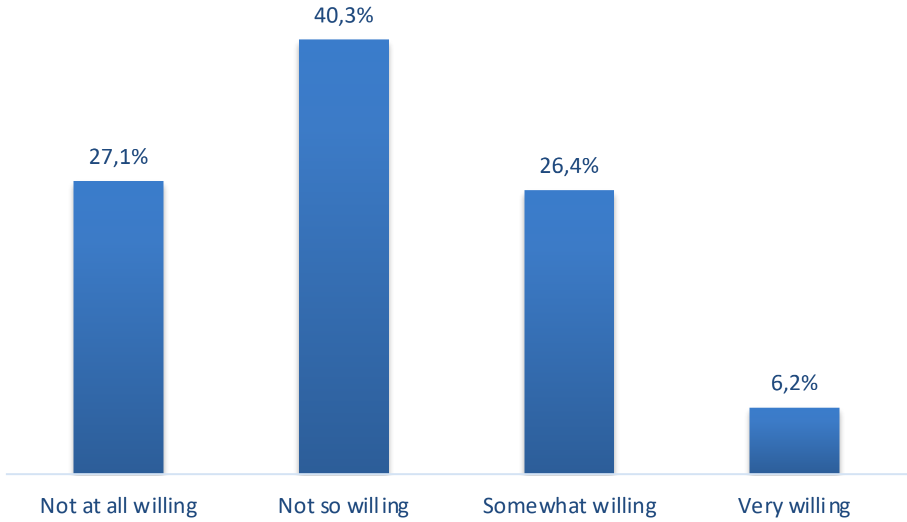
Download a free app to your smartphone



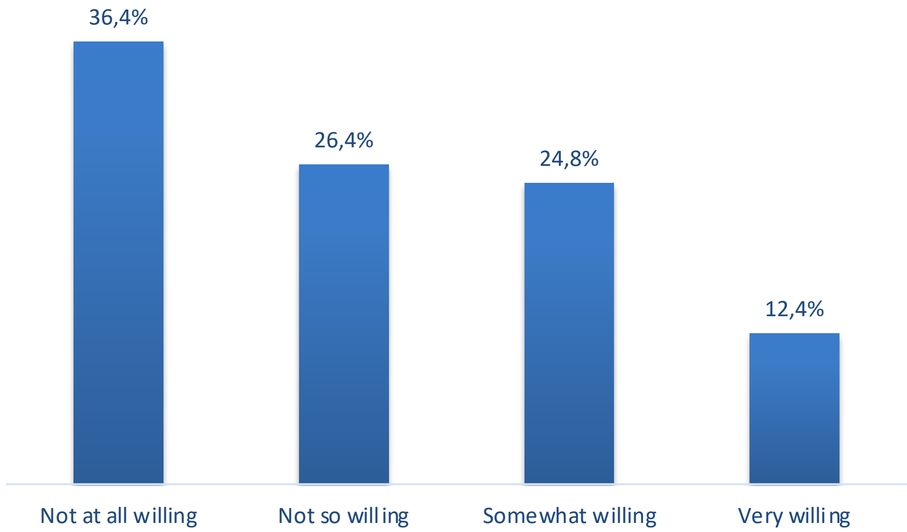
Create an account in the app



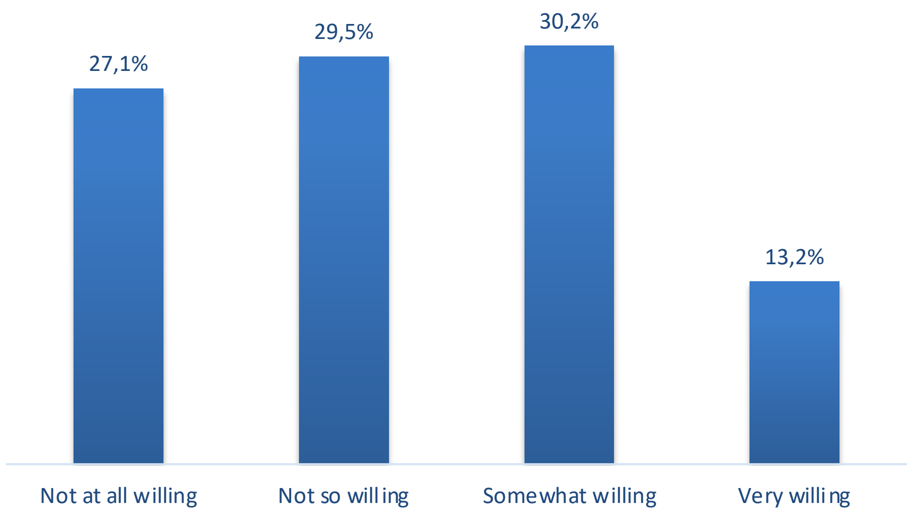
Share personal information for the registration (including name, age, gender, and email)



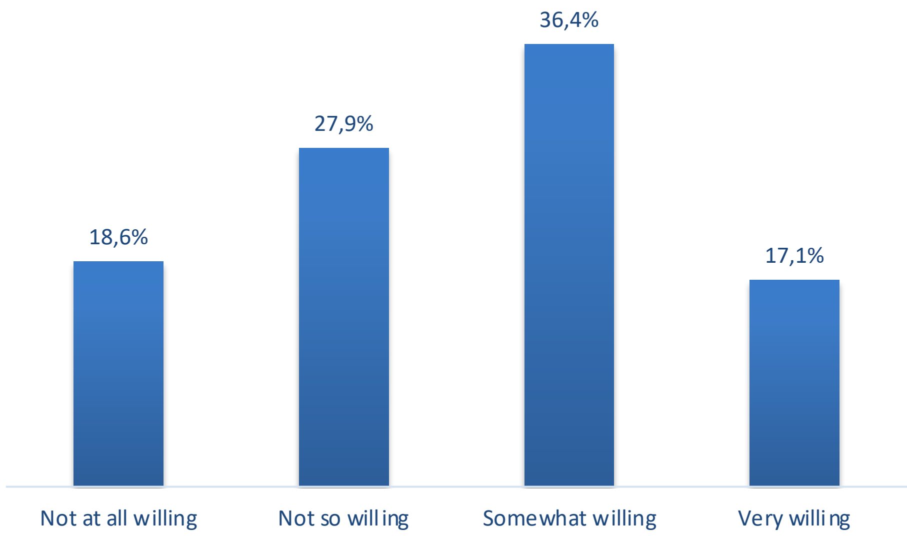
Allow the app to track your location in the store and send notifications (while using the app)



Open your phone´s settings and connect to a wireless connection



Keep your smartphone in your hand while navigating through the store



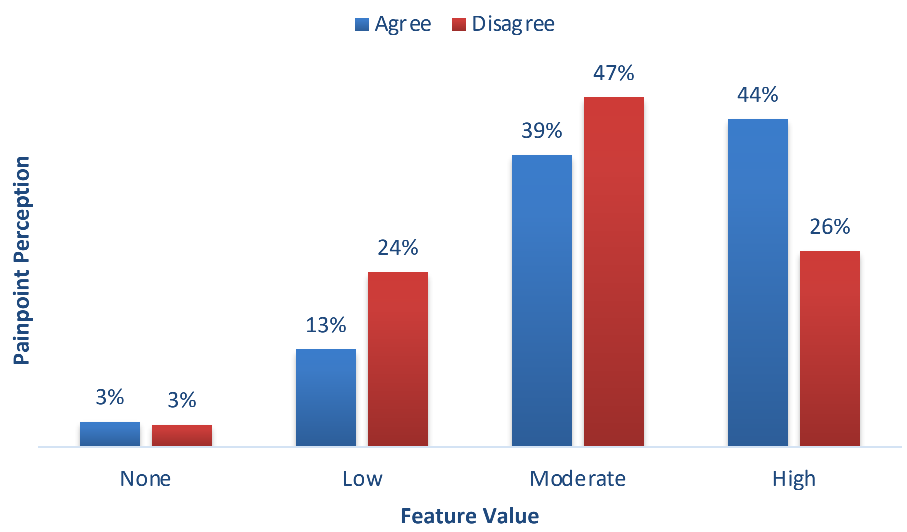
Appendix 7: Statistical Analyses

Appendix 7.1: Indoor Navigation – Contingency Analysis

Hypotheses:

H0: The feature value rating for 'Indoor Navigation' is independent from the agreement with the statement 'When I am in a large sports store, I have difficulty finding a desired product right away'.

H1: The feature value rating for 'Indoor Navigation' is not independent from the agreement with the statement 'When I am in a large sports store, I have difficulty finding a desired product right away'.



Observed frequencies

	None	Low	Moderate	High	Total
Agree	2	8	24	27	61
Disagree	2	16	32	18	68
Total	4	24	56	45	129

Expected frequencies

	None	Low	Moderate	High	Total
Agree	1,89	11,35	26,48	21,28	61
Disagree	2,11	12,65	29,52	23,72	68
	4	24	56	45	129

Difference between observed and expected frequencies

	None	Low	Moderate	High
Agree	0,0062	0,9882	0,2324	1,5381
Disagree	0,0056	0,8865	0,2085	1,3798

Test statistic computation

$$Q = \sum_{j=1}^{r} \sum_{j=1}^{c} \frac{(Oij - Eij)^2}{Eij}$$

Q=	**5,25**

Test decision

Chi squared

α =	0,05
df =	3
CV =	**7,81**

Q<CV ➡ do not reject H0

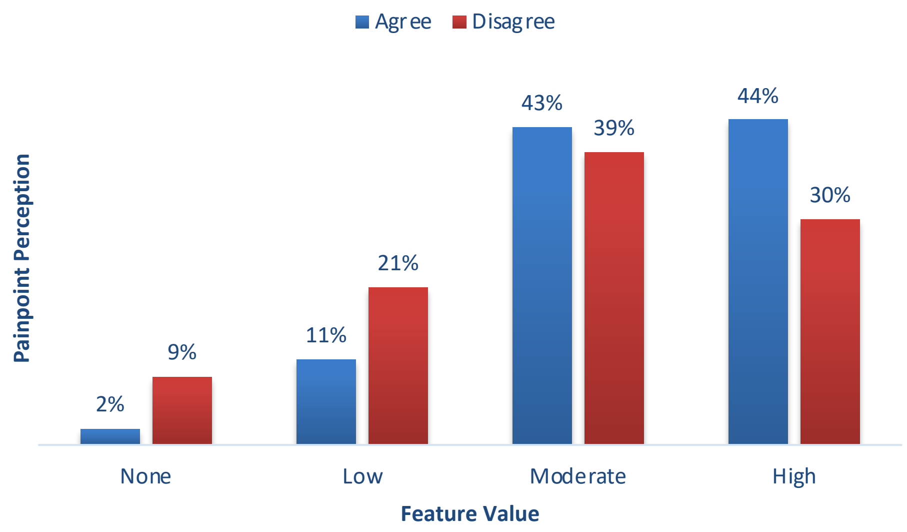
With alfa = 0,05 we do not reject H0 and conclude that that the feature value rating seems to be independent from the agreement with the statement.

Appendix 7.2: Location-Based Content – Contingency Analysis

Hypotheses:

H0: The feature value rating for 'Location-Based Content' is independent from the agreement with the statement 'When I am in a large sports retail store and I am interested in a product, I would like to get additional information about it that goes beyond the previous standard'.

H1: The feature value rating for 'Location-Based Content' is not independent from the agreement with the statement 'When I am in a large sports retail store and I am interested in a product, I would like to get additional information about it that goes beyond the previous standard'.



Observed frequencies

	None	Low	Moderate	High	Total
Agree	2	11	41	42	96
Disagree	3	7	13	10	33
Total	5	18	54	52	129

Expected frequencies

	None	Low	Moderate	High	Total
Agree	3,72	13,40	40,19	38,70	96
Disagree	1,28	4,60	13,81	13,30	33
	5	18	54	52	129

Difference between observed and expected frequencies

	None	Low	Moderate	High
Agree	0,7959	0,4283	0,0165	0,2818
Disagree	2,3154	1,2461	0,0480	0,8198

Test statistic computation

$$Q = \sum_{j=1}^{r} \sum_{j=1}^{c} \frac{(Oij-Eij)^2}{Eij}$$

Q= 5,95

Test decision

Chi squared

α =	0,05
df =	3
CV =	**7,81**

Q<CV ➡ do not reject H0

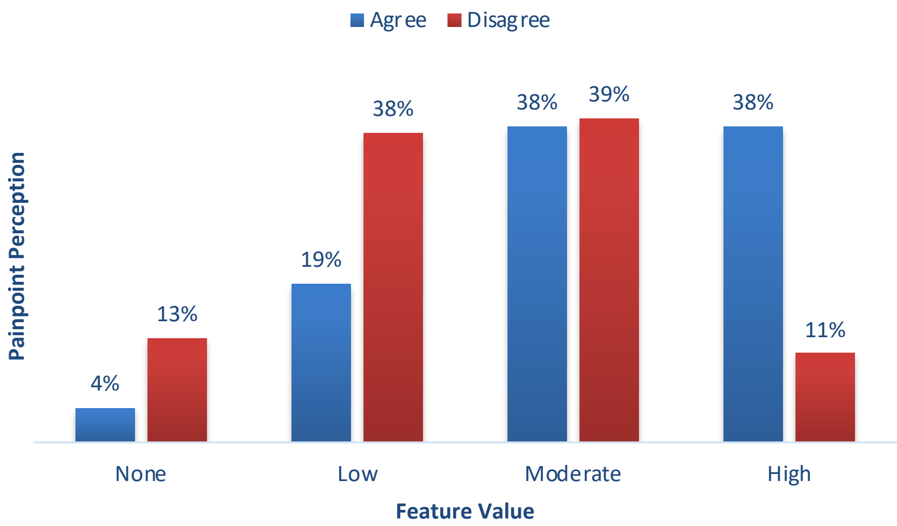
With alfa = 0,05 we do not reject H0 and conclude that that the feature value rating seems to be independent from the agreement with the statement.

Appendix 7.3: Brand & Category Updates – Contingency Analysis

Hypotheses:

H0: The feature value rating for 'Brand & Category Updates' is independent from the agreement with the statement 'I would like to be informed more about product releases or special offers of my favorite brands or categories in a sports store'.

H1: The feature value rating for 'Brand & Category Updates' is not independent from the agreement with the statement 'I would like to be informed more about product releases or special offers of my favorite brands or categories in a sports store'.



Observed frequencies

	None	Low	Moderate	High	Total
Agree	3	14	28	28	73
Disagree	7	21	22	6	56
Total	10	35	50	34	129

Expected frequencies

	None	Low	Moderate	High	Total
Agree	5,66	19,81	28,29	19,24	73
Disagree	4,34	15,19	21,71	14,76	56
Total	10	35	50	34	129

Difference between observed and expected frequencies

	None	Low	Moderate	High
Agree	1,2493	1,7021	0,0031	3,9881
Disagree	1,6286	2,2188	0,0040	5,1988

Test statistic computation

$$Q = \sum_{j=1}^{r} \sum_{j=1}^{c} \frac{(Oij - Eij)^2}{Eij}$$

Q= **15,99**

Test decision

Chi squared

α =	0,05
df =	3
CV =	**7,81**

Q>CV ➡ reject H0

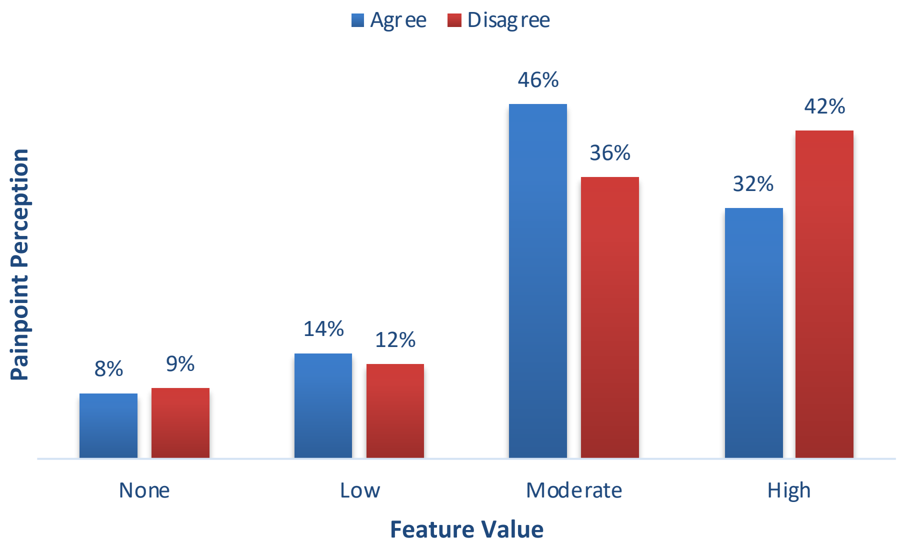
With alfa = 0,05 we do reject H0 and conclude that that the feature value rating seems to be dependent on the agreement with the statement.

Appendix 7.4: Personalized Live Deals vs. Pain Point – Contingency Analysis

Hypotheses:

H0: The feature value rating for ‘Personalized Live Deals’ is independent from the agreement with the statement ‘I would like to buy sporting goods from a store more often, but I usually find a better deal online’.

H1: The feature value rating for ‘Personalized Live Deals’ is not independent from the agreement with the statement ‘I would like to buy sporting goods from a store more often, but I usually find a better deal online’.



Observed frequencies

	None	Low	Moderate	High	Total
Agree	8	13	44	31	96
Disagree	3	4	12	14	33
Total	11	17	56	45	129

Expected frequencies

	None	Low	Moderate	High	Total
Agree	8,19	12,65	41,67	33,49	96
Disagree	2,81	4,35	14,33	11,51	33
Total	11	17	56	45	129

Difference between observed and expected frequencies

	None	Low	Moderate	High
Agree	0,0042	0,0096	0,1298	0,1849
Disagree	0,0123	0,0280	0,3775	0,5379

Test statistic computation

$$Q = \sum_{j=1}^{r} \sum_{j=1}^{c} \frac{(Oij - Eij)^2}{Eij}$$

Q=	**1,28**

Test decision

Chi squared

α =	0,05
df =	3
CV =	**7,81**

Q<CV ➡ do not reject H0

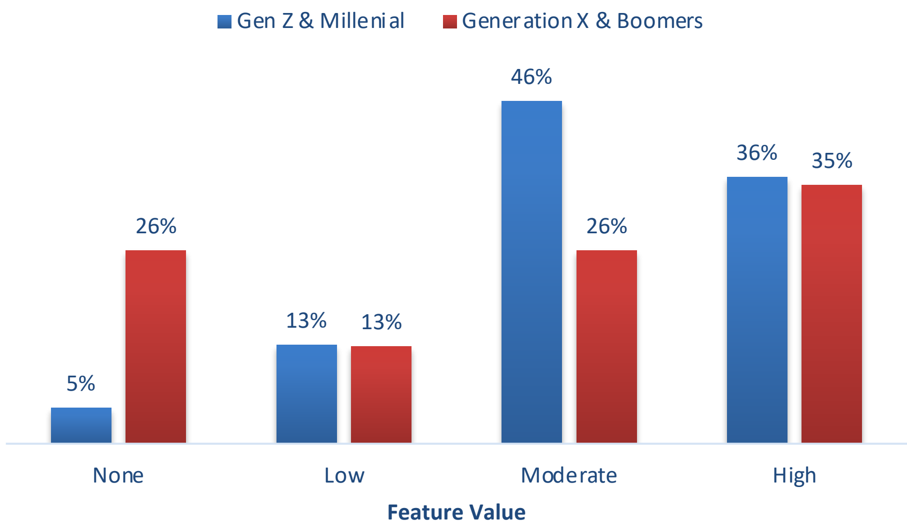
With alfa = 0,05 we do not reject H0 and conclude that that the feature value rating seems to be independent from the agreement with the statement.

Appendix 7.5: Personalized Live Deals vs. Generation – Contingency Analysis

Hypotheses:

H0: The feature value rating for ‘Personalized Live Deals’ is independent from the generation of shoppers.

H1: The feature value rating for ‘Personalized Live Deals’ is not independent from the generation of shoppers.



Observed frequencies

	None	Low	Moderate	High	Total
Gen Z & Millenials	5	14	49	38	106
Generation X & Boomers	6	3	6	8	23
Total	11	17	55	46	129

Expected frequencies

	None	Low	Moderate	High	Total
Gen Z & Millenials	9,04	13,97	45,19	37,80	106
Generation X & Boomers	1,96	3,03	9,81	8,20	23
Total	11	17	55	46	129

Difference between observed and expected frequencies

	None	Low	Moderate	High
Gen Z & Millenials	1,8046	0,0001	0,3206	0,0011
Generation X & Boomers	8,3170	0,0003	1,4773	0,0050

Test statistic computation

$$Q = \sum_{j=1}^{r} \sum_{j=1}^{c} \frac{(Oij - Eij)^2}{Eij}$$

Q=	**11,93**

Test decision

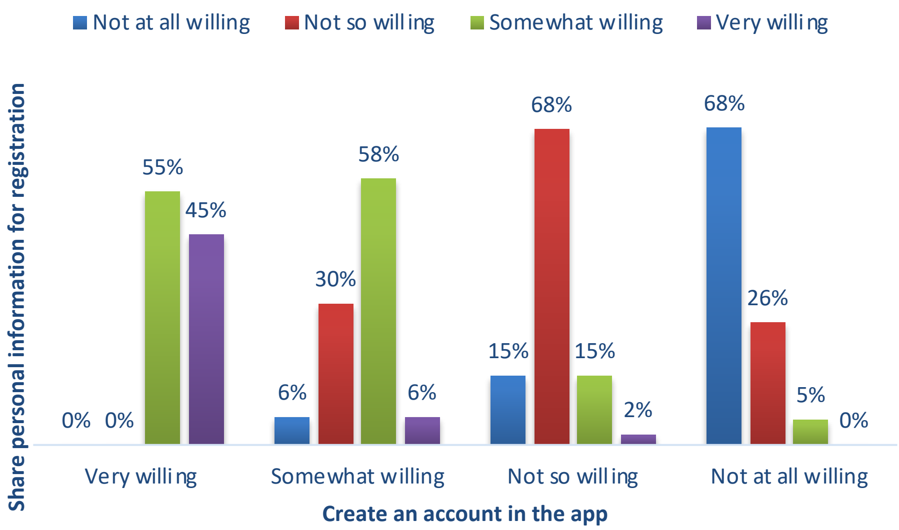
Chi squared

α =	0,05
df =	3
CV =	**7,81**

Q>CV ➡ reject H0

With alfa = 0,05 we reject H0 and conclude that that the feature value rating seems to be dependent on the generation of shoppers.

<u>Appendix 7.6: Proportion of shoppers willing/unwilling to create an account vs. proportion of shoppers willing/unwilling to share personal information to register</u>



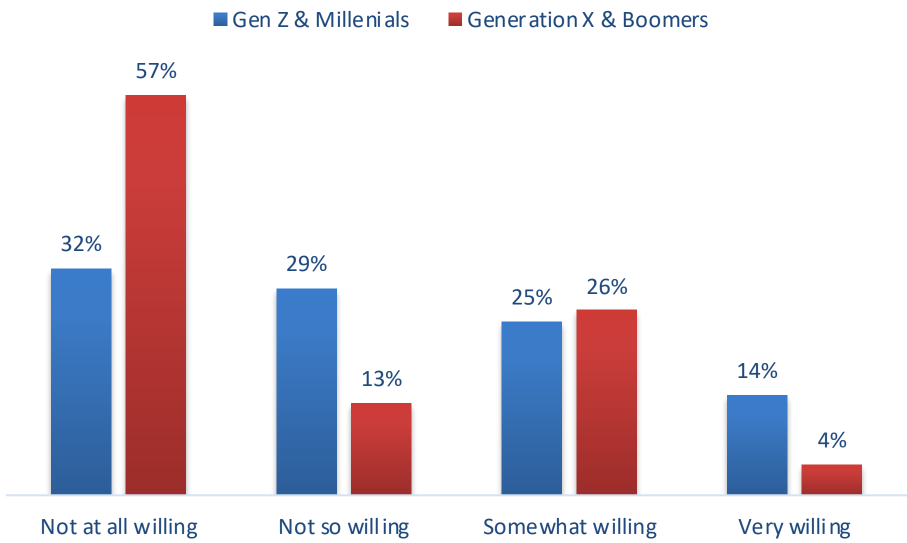
E.g.: 68% of the shoppers that are not at all willing to create an account, are not at all willing to share personal information for registration.

Appendix 7.7: Location Tracking vs. Generation – Contingency Analysis

Hypotheses:

H0: The willingness to allow the app to track your location in the store and send notifications is independent from the generation of shoppers.

H1: The willingness to allow the app to track your location in the store and send notifications is not independent from the generation of shoppers.



Observed frequencies

	Not at all willing	Not so willing	Somewhat willing	Very willing	Total
Gen Z & Millenials	34	31	26	15	106
Generation X & Boomers	13	3	6	1	23
Total	47	34	32	16	129

Expected frequencies

	Not at all willing	Not so willing	Somewhat willing	Very willing	Total
Gen Z & Millenials	38,62	27,94	26,29	13,15	106
Generation X & Boomers	8,38	6,06	5,71	2,85	23
Total	47	34	32	16	129

Difference between observed and expected frequencies

	Not at all willing	Not so willing	Somewhat willing	Very willing
Gen Z & Millenials	0,5527	0,3356	0,0033	0,2611
Generation X & Boomers	2,5473	1,5467	0,0152	1,2033

Test statistic computation

$$Q = \sum_{j=1}^{r} \sum_{j=1}^{c} \frac{(Oij - Eij)^2}{Eij}$$

Q=	**6,47**

Test decision

Chi squared

α =	0,05
df =	3
CV =	**7,81**

Q<CV ➡ Do not reject H0

With alfa = 0,05 we do not reject H0 and conclude that that the willingness to allow the app to track the location seems to be independent from the generation of shoppers.

Declaration of Honor

"I affirm that I have prepared this paper independently, have not submitted it elsewhere for examination purposes, have acknowledged all sources and aids used, and have marked quotations."

F. Norys

Carcavelos, 15.12.2022

City, Date　　　　　　　　　　Signature