Driving the Digital Shift

Exploring Consumer Readiness for Digital D2C Automotive Sales in Austria and Germany

Daniel Jagob

Dissertation written under the supervision of Professor Miguel Fontes Rita

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Abstract

This thesis examines whether consumers in Austria and Germany are ready to embrace digital direct-to-consumer (D2C) sales models in the automotive industry, a shift driven by new competitors like Tesla. The study explores the factors influencing purchase intentions, preferred sales channels, and the demographic profiles of consumers likely to adopt digital D2C models. A mixed-method research approach was used, combining qualitative interviews and a quantitative survey, to evaluate the findings from the performed literature review.

Findings reveal a significant preference among younger consumers for purchasing cars through digital D2C models. Additionally, consumers generally show a lower willingness to pay when purchasing via digital D2C models compared to traditional retail, emphasizing the need for competitive pricing. Showrooming, or the ability to physically inspect a car before buying online, positively impacts purchase intentions, highlighting the importance of integrating physical and digital experiences.

These insights suggest that automotive manufacturers should adopt an omnichannel approach, combining the convenience of digital channels with the reassurance provided by physical showrooms, to transition from traditional retail to digital sales effectively. This research contributes to the limited academic literature on digital D2C models in the automotive sector, offering empirical data on consumer behavior in these emerging sales channels.

Keywords: Digital Direct-to-Consumer (D2C), Automotive Industry, Consumer Behavior, Purchase Intention, E-commerce, Austria, Germany, Omnichannel Retail

Title: Driving the Digital Shift - Consumer Readiness and Strategic Insights for Digital D2C Automotive Sales in Austria and Germany

Author: Daniel Jagob

Resumo

Esta tese analisa se os consumidores na Áustria e na Alemanha estão prontos para adotar modelos de vendas digitais diretas ao consumidor (D2C) na indústria automóvel, uma mudança impulsionada por novos concorrentes como a Tesla. O estudo explora os factores que influenciam as intenções de compra, os canais de venda preferidos e os perfis demográficos dos consumidores susceptíveis de adotar modelos digitais D2C. Foi utilizada uma abordagem de investigação de método misto, combinando entrevistas qualitativas e um inquérito quantitativo, para avaliar as conclusões da revisão da literatura efectuada.

Os resultados revelam uma preferência significativa dos consumidores mais jovens pela compra de automóveis através de modelos D2C digitais. Além disso, os consumidores mostram geralmente uma menor disponibilidade para pagar quando compram através de modelos D2C digitais em comparação com o retalho tradicional, o que realça a necessidade de preços competitivos. O showrooming, ou a capacidade de inspecionar fisicamente um automóvel antes de comprar online, tem um impacto positivo nas intenções de compra, realçando a importância da integração de experiências físicas e digitais.

Estas conclusões sugerem que os fabricantes de automóveis devem adotar uma abordagem omnicanal, combinando a conveniência dos canais digitais com a segurança proporcionada pelas salas de exposição físicas, para fazer uma transição eficaz do retalho tradicional para as vendas digitais. Esta investigação contribui para a limitada literatura académica sobre modelos digitais D2C no sector automóvel, oferecendo dados empíricos sobre o comportamento dos consumidores nestes canais de vendas emergentes.

Palavras-chave: Digital Diret-to-Consumer (D2C), Indústria automóvel, Comportamento do consumidor, Intenção de compra, Comércio eletrónico, Áustria, Alemanha, Retalho omnicanal

Título: A preparação do consumidor e perspectivas estratégicas para as vendas digitais D2C no sector automóvel na Áustria e na Alemanha

Autor: Daniel Jagob

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1 Introduction

For over 50 years, the slogan "Vorsprung durch Technik," which translates to "advantage through technology," has defined the ethos of the German car manufacturer Audi (Audi MediaCenter, 2021). This guiding principle is being challenged today as the automotive industry faces unprecedented competition from companies in China and the United States. The question now arises: does Audi, along with other established European manufacturers, still maintain this technological lead, or are new competitors set to take the forefront?

New entrants such as Tesla (Pathak et al., 2023) and emerging Chinese automotive manufacturers (He et al., 2022) are compelling traditional carmakers to adapt rapidly to market shifts rather than relying on the strategies of the past. Consumer expectations and preferences, particularly regarding individual mobility, are evolving. In urban areas, mobility-on-demand solutions like car-sharing are increasingly seen as viable alternatives to car ownership (Turoń et al., 2022). Concurrently, advancements in alternative powertrain systems, connected-car technologies, and autonomous driving fundamentally reshape the automotive landscape. Among these transformative forces, digitalization stands out as the most significant phenomenon in the industry's 140-year history, driving changes in vehicles and how they are sold (Llopis-Albert et al., 2021).

Tesla has been at the vanguard of this shift, pioneering the online sale of vehicles through its own digital direct sales model (Pathak et al., 2023). In response, established car manufacturers increasingly turn to e-commerce, moving away from traditional automotive retail models. Volvo, for instance, aims to sell 50% of its global car volume online by 2025, reflecting its commitment to modernizing the consumer buying and leasing experience by shifting it to the digital space (Volvo Cars, 2020). Similarly, the BMW Group has launched a Digital Direct Sales Model through its brand MINI in three European markets (Italy, Poland, and Sweden) as of January 1, 2024 (BMW Group, 2023). Moreover, Mercedes Benz's current strategy to sell its group-owned branches in Germany underscores the industry's move from stationary dealerships to digital retailing (Autohaus.de, 2024).

These developments signal a strategic shift toward digitalization among automotive OEMs (original equipment manufacturers). This thesis seeks to address whether consumers in Austria and Germany are ready to fully embrace digital car purchases or whether they continue to prefer the traditional dealership experience.

1.1 Problem Statement

Despite the growing significance of digital direct-to-consumer (D2C) models in the automotive industry, research in this area remains limited, particularly for the specific markets of Austria and Germany. Current academic literature predominantly focuses on omnichannel sales strategies, with little exploration into the particular factors influencing purchase intentions via digital D2C models. Additionally, there is a gap in understanding the preferred sales channels, whether traditional retail or online, among consumers in these markets. Furthermore, while younger consumers are often assumed to be the primary target for digital sales models (Budde et al., 2020), research indicates that consumers across various age groups still value the physical aspects of the automotive buying process (Bacher, 2020). This thesis aims to address these gaps by investigating what influences the purchase intention via digital D2C models, determining which channels consumers prefer for buying automobiles, and analyzing the demographic profiles of consumers who are inclined to use digital D2C models in Austria and Germany. It will also explore how research shopping, particularly "showrooming," affects the success of digital D2C models in the automotive sector.

1.2 Research Questions

RQ1: What influences the purchase intention via the digital direct-to-consumer model in the automotive industry in Austria and Germany?

RQ1.1: Which channels (traditional retail or online) do consumers in Austria and Germany prefer when buying automotives?

RQ1.2: What is the demographic profile of consumers using a digital direct sales model in the automotive industry in Austria and Germany?

1.3 Relevance of this Research

This research holds both academic and managerial significance, as it aims to bridge existing gaps in the understanding of consumer behavior in the context of digital D2C models in the automotive industry.

1.4 Academic Relevance of this Research Question

The digital direct-to-consumer model in the automotive retail sector is a relatively unexplored area in academic research, particularly concerning the Austrian and German markets. While recent studies have provided valuable insights into omnichannel retailing, the literature remains inconsistent and inconclusive regarding which parts of the customer journey should be

digitalized versus those that should remain in traditional, physical settings (Bacher, 2020)(Budde et al., 2020). Moreover, the existing research predominantly relies on qualitative methodologies, such as semi-structured interviews with industry experts, rather than leveraging quantitative data from consumer surveys. This thesis aims to fill these gaps by providing empirical data on consumer preferences and behaviors in digital car purchasing, offering a more robust understanding of the potential and limitations of digital D2C models in the automotive industry.

1.5 Managerial Relevance of this Research Question

The automotive industry is a cornerstone of the economy in Germany and Austria, with significant contributions to revenue, employment, and technological innovation. For instance, the German automotive industry generated total sales of around 564.2 billion euros in 2023, marking a substantial increase from the previous year. Domestic sales accounted for approximately 171.2 billion euros, while foreign sales reached 393.1 billion euros (Statista, 2024). As automotive manufacturers increasingly consider digital D2C models as part of their strategic direction, understanding consumer preferences and behaviors becomes crucial. This research provides valuable insights for managers in the automotive industry, helping them navigate the shift from traditional retail to digital sales channels while maintaining customer satisfaction and loyalty.

2 Theoretical Discussion

The following chapter of this thesis will briefly overview traditional automotive retail and provide the theoretical concepts of retailing as well as an overview of consumer behavior concepts.

2.1 Traditional Automotive Retail

The business model of automotive retail has mostly stayed the same since the first dealerships opened in the 20th century. In the United States of America, OEMs of the automotive sector had, due to franchise laws in most states, the legal obligation to sell their new cars through licensed dealerships to their final customers (Kim et al., 2022). Also, in Europe, automotive distribution is dominated by contract sales as part of long-term relationships between manufacturers and authorized dealers (Fritz & Graf, 2006).

2.1.1 Indirect Sales

As of right now, the most significant and leading sales channel in automotive retailing is indirect sales through authorized car dealerships, which are independent traders (Bacher, 2020). At a retail level, specifically authorized car dealerships purchase and sell automobiles independently in their own name and for their own account. Furthermore, each authorized dealership is allocated to a geographical area for the exclusive sale of automobiles (Fritz & Graf, 2006). With regards to the whole sales level, for international business, OEMs of the automotive industry frequently use independent importers or their own national sales companies. As part of a trade agreement, each is given a specific geographical sales territory, where they can use authorized dealers and handle all essential sales procedures. The only distinction between the independent importers and their own national sales companies is the different control options available to the car manufacturer (Fritz & Graf, 2006).

2.1.2 Direct Sales

In the recent history of automotive retailing, only fleet customers, special customers, and a few premium manufacturers served their customers by direct sales. Using a direct sales model gives car producers major influence and control of the entire sales channel. This distribution system empowers them to define standards and guidelines to control and regulate important retail and wholesale elements (Fritz & Graf, 2006). In the last century European car manufacturers were always tested by the best practices of the competition from overseas. Henry Ford from the United States of America, for example, invented “mass production” for cars, and later on, the company Toyota from Japan developed the “lean production technique” (Stone et al., 2008), and the car manufacturer Tesla is now innovating the direct sales model using digital technologies (see. 2.3.3) (Pathak et al., 2023).

2.1.3 Channel

A well-established definition of the term “channel” in academic literature is “[…] a customer contact point, or a medium through which the firm and the customer interact.” (Neslin et al., 2006, p. 96). Therefore, examples of channels are brick-and-mortar retail stores where people can physically buy products or online stores where customers can shop using digital technologies to purchase goods and services. A fundamental trait of this channel definition is the customer’s possibility to interact with a company, implying that one-way communication, such as television advertising, does not count as a channel. Nonetheless, home shopping television and direct response advertising are part of the channel since they provide the possibility of interaction (Neslin et al., 2006).

This definition is not universal for all channels since, for example, omnichannel strategies (see 2.3.) use one-way communication channels in their concept. For this master thesis, a channel's scope should be broadened, involving all customer touchpoints as suggested by Esch et al. (2013). A customer touchpoint is created every time a consumer comes in contact with a business, its goods, services, or brand, including all direct and indirect interactions (Esch et al., 2013). This approach is also researched and backed up by the authors Baxendale et al. (2015) who include customer-to-customer interactions as touchpoints. These touchpoints are less influential than, for example, communication at a physical store but still significant. Nonetheless, digital channels such as social media have fundamentally changed the preexisting retail businesses and shoppers' behavior (Verhoef et al., 2015).

2.2 From Mono-Channel to Multi-Channel Strategy

A mono-channel strategy can be defined as " […] customer interactions through one main channel" (Payne & Frow, 2004, p. 531). Selling goods or services via a physical store is an example of mono-channel retailing. Companies use mass media, such as newspapers and television, to advertise and communicate with customers when applying a mono-channel strategy. This mass media is a one-way communication and is separated from the retailing channel. Therefore, it is considered an information-only channel. These channels do not give companies the possibility to interact or sell products to their customers.

Over the last decade, the multichannel strategy has been an omnipresent topic in retailing (Verhoef et al., 2015). Opposed to the mono-channel, multi-channel retailers sell their goods or services to consumers through more than one channel, but they keep their online and offline channels in separate silos (Trenz et al., 2020). Research on multichannel retailing has dramatically increased since the appearance of e-commerce (Trenz et al., 2020). Researchers found that multichannel buyers are more lucrative than mono-channel customers, which can be seen as one of the most significant conclusions in multichannel literature. Therefore, the profitability of multichannel customers may advance because of self-selection, marketing, and increased consumer pleasure and loyalty (Neslin, 2022). Kushwaha and Shankar (2013) figured out that the product type moderates the profitability of multi-channel customers. They found that clients who purchase hedonic products that are joyful and exciting increase the profitability of multichannel customers. On the other hand, this effect is moderated for utilitarian products that serve a more practical and functional purpose. When multichannel customers shop for utilitarian products, they can even lower their profits (Neslin, 2022).

2.3 Omni-Channel Strategy

More lately, academics have combined offline with online channels into one model and, therefore, create a seamless buying experience, also defined as omnichannel retailing. For a general understanding, compared to the multi-channel strategy, omnichannel retailers use synergies between online and offline channels to extend their services above what would be possible with two separate single channels. For example, online transactions are supplemented with offline service offerings such as in-store pickup or the return of a product after an online transaction. These types of services are also known as omnichannel integration services (Trenz et al., 2020). Due to Neslin (2022, p. 111), 74% of managers are convinced that "[…] omnichannel is important, fairly important or very important.". Nonetheless, (Trenz et al., 2020) counter that with the implantation of an omnichannel strategy into an existing brick-and-mortar retail business, retailers run in danger of additional costs and risks since they must carry "historical baggage" of their former investments and technological infrastructure.

Academic research on multichannel and omnichannel retail can be divided into two main streams: diagnostic and prescriptive (Chen et al., 2018). The diagnostic research stream aims to gain a deeper understanding of the online and offline channel preferences of consumers. Due to the complexity of consumers' channel choices, diagnostic research predominantly focuses on contingency factors that influence the customer's channel preferences (Chen et al., 2018). On the other hand, the prescriptive research stream aims to identify synergies and dis-synergies using multiple channels in different phases of a single purchase (Trenz et al., 2020).

2.3.1 Omnichannel Strategy in New Car Sales

Academic literature states that implementing an omnichannel strategy has become crucial for automotive manufacturers to stay competitive and serve their customers at the highest level. In addition, an omnichannel strategy can be beneficial for cost reduction, especially in marketing (Firmansyah & Purnamasari, 2023). Firmansyah and Purnamasari (2023) researched the impact of an omnichannel strategy on customer satisfaction in the automotive industry after COVID-19. They conducted their study for Daihatsu cars in East Java and discovered a positive influence of an omnichannel strategy on consumers' level of customer satisfaction (Firmansyah & Purnamasari, 2023). This also aligns with Bacher (2020), who further describes that an omnichannel approach, which integrates the online and offline worlds, would be ideal for providing the best possible experiences for customers in the automotive industry, which are engaging, convenient, and seamless. Figure 1. outlines the current omnichannel automotive distribution system in Germany (Bacher, 2020).

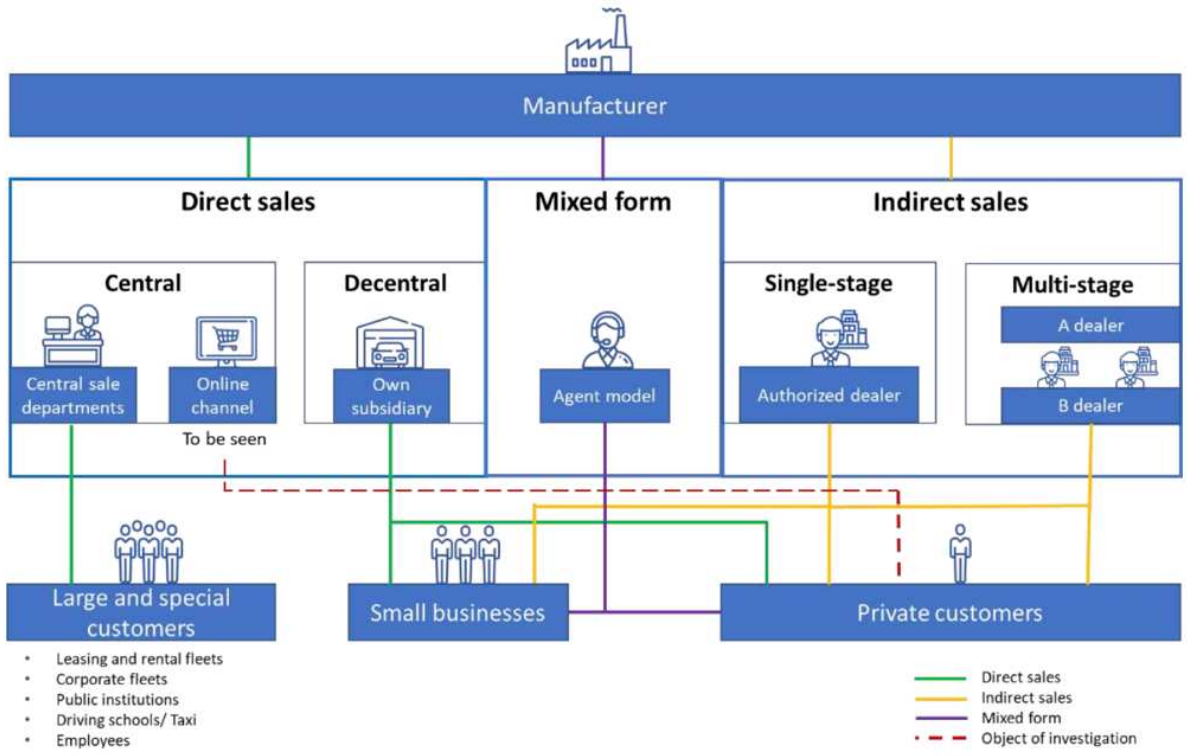

Figure 1: Distribution system in the German automotive industry (Bacher, 2020, p. 19)

2.3.2 Digital Direct-to-Consumer Model

To provide a consistent omnichannel strategy, brands are encouraged to implement digital direct-to-consumer (D2C) operations. Therefore, brands can use social, mobile, and online channels to engage directly with their customers. A beneficial trait of a solid digital D2C model is the reduction of price pressure on the enterprise and less interference with brands' offline promotions. Furthermore, using a D2C web shop, companies have the possibility to get direct access to customers' transaction and preference data, which supports them in building long-term customer relationships (Kalayci et al., 2024).

Through direct interaction with their customers, brands can greatly benefit from a D2C model, using the collected data from the transactions to gain insights into the interaction preferences, purchase drivers, customer satisfaction, or triggers for customer churn (Kalayci et al., 2024). Subsequently, companies can use the collected data acquired via their own digital D2C shops to elaborate a product portfolio aligned to the needs of their customers, which sets the brand apart from the competition. Furthermore, this harmonized portfolio created using customer data can reduce the churn and likelihood of customers switching to competition (Gielens & Steenkamp, 2019).

A digital D2C model can also be seen as a company's lab for testing product innovations, assortments, variants, and prices to generate valuable marketing insights. Brands can use their own D2C web stores as a controlled environment where they can test, develop, and promote product innovations and variations (Gielens & Steenkamp, 2019). Furthermore, companies can offer exclusive products or product innovations only in their digital D2C channel, giving the direct sales channel a strategic competitive advantage (Kalayci et al., 2024)

The potential for brands using their own D2C online store also lies in full control over non-contractible decisions (Gielens & Steenkamp, 2019), which improve the company's overall profitability by, for example, reducing transaction costs. In the same way, channel power is influenced in favor of the brand and against the retailer, which takes power away from the latter (Kalayci et al., 2024).

When it comes to product categories with high degrees of assortment, personalization, exclusiveness, or need for information, brands providing D2C online stores can compete with multi-brand retailers (Kalayci et al., 2024). Kalayci et al. (2024) stated that in specific settings, D2C online stores are the preferred model for consumers, compared to multi-brand retail stores, when the brands can provide a superior product experience. Especially in the search and purchase phase (see 2.5.), brands can surpass multi-brand retailers by offering exclusive or personalized products, providing extensive product information, or offering a deep assortment. Therefore, the automotive industry is a suitable example of traits like exclusiveness, personalization, and extensive product information. The car manufacturer Bentley, for example, produces exclusive luxury vehicles, which provide their customers with the possibility of up to 10 billion different product configurations and illustrate that with more than 1.7 million images available in their D2C website setup (Kalayci et al., 2024).

2.3.3 Digital D2C Model in the Automotive Industry

As already mentioned, in the recent history of automotive retailing, only fleet customers, special customers, and a few premium manufacturers have served their customers by direct sales (Fritz & Graf, 2006). Currently, more OEMs in the automotive industry are shifting towards a DTC (direct-to-customer) sales model. This trend uses digital technologies that enable car manufacturers to sell directly to their customers, excluding the retailers and reducing costs (Kim et al., 2022). The Digital Divide study identified in 2017 that the automotive is after electronics and home furnishing, the third most digitally influenced purchase for consumers (Firmansyah & Purnamasari, 2023). When it comes to digital direct sales in the automotive industry, Tesla

is at the forefront. The American company sells over 70% of its vehicles online (Pathak et al., 2023). Nonetheless, the online sales target audience differs strongly from regular brick-and-mortar retail customers who buy at stationary car dealerships. Research states that the online sales model is more appealing to a younger audience, which currently marks only a small proportion of the total sales. This group will keep growing and become increasingly important in the total new car sales figures (Budde et al., 2020).

Hypothesis: With increasing age, the purchase intention for a car via digital direct sales model decreases.

Opposing the increasing trend, Bacher (2020) states that the current online purchase options within the automotive industry remain limited and are often regarded as pilot initiatives. Dealerships are expected to continue as the primary channel for vehicle sales over the next five years. However, a noticeable shift towards a digital D2C model is emerging, particularly for pre-configured, simple, electric, and inexpensive vehicles (Bacher, 2020)

Hypothesis: The car categories of simpler and less expensive cars are more likely to be purchased via digital D2C model compared to more expensive and more equipped cars.

2.4 Channel Choice

Unquestionably, consumers aim for the most fluid retail experience as current technologies combine the best of both worlds, online and offline (Arora et al., 2022). There is a common consensus in the academic literature that the customer evaluation process of channel choice consists of a three-stage process. First, customers asses if there are differentiators among the different channels, for example, the availability of a post-transaction service. Second, the customers evaluate the benefits and opportunity costs of the transaction via the channels until they finally culminate in a preference for the channel (Trenz et al., 2020). Several studies indicate that channel choice is not static in a multichannel environment but changes over time as customers migrate from one channel to another. A survey from 2004 of 337 multichannel shoppers discovered that in four product categories (books, wine, stereo-systems, and airline tickets), 52% migrated from offline to online channels. Therefore, the question is whether it is just a matter of time before this happens to the automotive industry (Dholakia et al., 2010). Additionally, this channel migration behavior from offline- to online channels was foreseen by channel risk perceptions, price search intentions, evaluation effort, and waiting time but was unrelated to the customers' demographics (Dholakia et al., 2010).

2.4.1 Customer Segmentation

Based on two different samples with a great number of data (2,443 in 2013 and 2,649 in 2016), Herhausen et al. (2019, p. 13) could categorize five different customer segments: "Store-focused shoppers (22%, 24%), Pragmatic online shoppers (23%, 22%), Extensive online shoppers (21%, 13%), Multiple touchpoint shoppers (13%, 14%), Online-to-offline shoppers (20%, 26%)". These customer segments vary in search and purchase behavior, use of mobile devices, touchpoints, and segment-related covariates. This customer segmentation is not time-critical, as these five segments could be detected in both the data from 2013 and the data from 2016.

Neslin (2022) researched the field of customer segmentation in a multi-channel environment, and despite the internet's growing importance on customers' shopping behavior, 16 out of 20 studies reveal an offline-focused customer group. For example, a segment that regularly buys a premium retail brand from physical shops is identified by (Mark et al., 2019). Furthermore, a physical store segment was also found by Herhausen et al. (2019) for the purchase of electronics, entertainment, clothing, and cosmetics. The reasons for this offline-focused purchasing behavior and the appearance of offline segments are often related to insufficient experiences with online channels. The COVID-19 pandemic was a driver for many consumers to try and use online channels more frequently and, therefore, might cause a reduction in the presence of the offline segment. How long the offline segment will play a critical role in customer segmentation is questionable (Neslin, 2022).

Hypothesis: Consumers with a positive attitude toward online shopping are more likely to have a positive attitude toward online car purchases via a "direct-to-consumer" model

2.4.2 Research Shopping

When customers use one channel to gather information and another to purchase products or services, this is defined as "research shopping" (Neslin, 2022). Research shopping is divided into two different types, "showrooming" and "webrooming". Showrooming implies that customers use offline channels such as brick-and-mortar retail stores during the search phase but buy via online channels. On the other hand, we have webrooming, where customers use online channels for information gathering but make purchases at a physical store (Neslin, 2022). Verhoef et al. (2007, p. 129) identified in their research three different reasons for the occurrence of the research shopping phenomenon: "[…] (1) Attribute-based decision-making, (2) Lack of channel lock-in and (3) Cross-channel synergy.". The first reason is attribute-based decision-making implies that channel-A might be more suitable for the search process and

channel-B is for purchasing. Second, lack of channel lock-in means that channel-A cannot retain the customer until the purchase in the channel. Lastly, cross-channel synergies customers can use the information provided by channel-A to make a more informed and conscious decision in channel-B (Neslin, 2022).

2.4.3 Showrooming

Academic research indicates that the reasons for showrooming are versatile (Neslin, 2022). According to Gensler et al. (2017), customers are showrooming to receive a lower price. Kang (2018) indicates that customers are showrooming to collect more product information and to get the possibility to choose from a deeper assortment. In addition, showrooming gives consumers the feeling of making a more confident purchasing decision (Flavián et al., 2019). Furthermore, it inspires potential shoppers what they want to search for (Verhoef et al., 2007) and supports them by giving them the power to decide how they want to shop (Rejón-Guardia & Luna-Nevarez, 2017). Also, the sales representatives can cause showrooming by allowing consumers to avoid sales personnel and, on the other hand, supporting them when they cannot find sales staff. Consumers sense showrooming as a "smart way to shop" and complement that by the fact that it prevents them from getting "ripped off" by retailers (Fiestas & Tuzovic, 2021).

Hypothesis: The phenomenon of "showrooming" positively impacts the purchase intention of consumers using a digital D2C model.

2.4.4 Webrooming

Researchers found several reasons for the webrooming phenomenon (Neslin, 2022). In accordance with Neslin (2022), the first reason for research shopping is "(1) Attribute-based decision-making." Verhoef et al. (2007) identified that online channels surpass offline channels in the search phase, and on the other hand, offline channels exceed online channels in the purchase phase. Webrooming allows customers to collect more information about a product or service (Santos & Gonçalves, 2019) and reduces the chances of buying an incorrect item (Flavián et al., 2019). Furthermore, webrooming enables customers to receive their items in stores immediately and increases the convenience of shopping through online channels. Webrooming supports consumers by educating them, especially those inexperienced in that field. Another trait of webrooming is that physical stores "lock-in" consumers but, on the other hand, enable them to take charge of their own shopping experience (Neslin, 2022).

2.5 Customer Journey in New Car Sales

As mentioned, online channels are superior in the search phase, and offline channels exceed online channels in the purchase phase of the customer journey (Verhoef et al., 2007). But how does this apply to in an automotive context? These findings align with the opinion of Bacher (2020), who analyzes the automotive customer journey in Germany in a multichannel environment. A customer journey can be defined as "[…] customers' usage of one or more channels to search for and purchase products." (Kalayci et al., 2024, p. 5). Bacher (2020) also identified a strong online-focused development in the search phase of the customer journey but is convinced that in the next five years, the purchase will stay offline at dealerships, as illustrated in Figure 2.

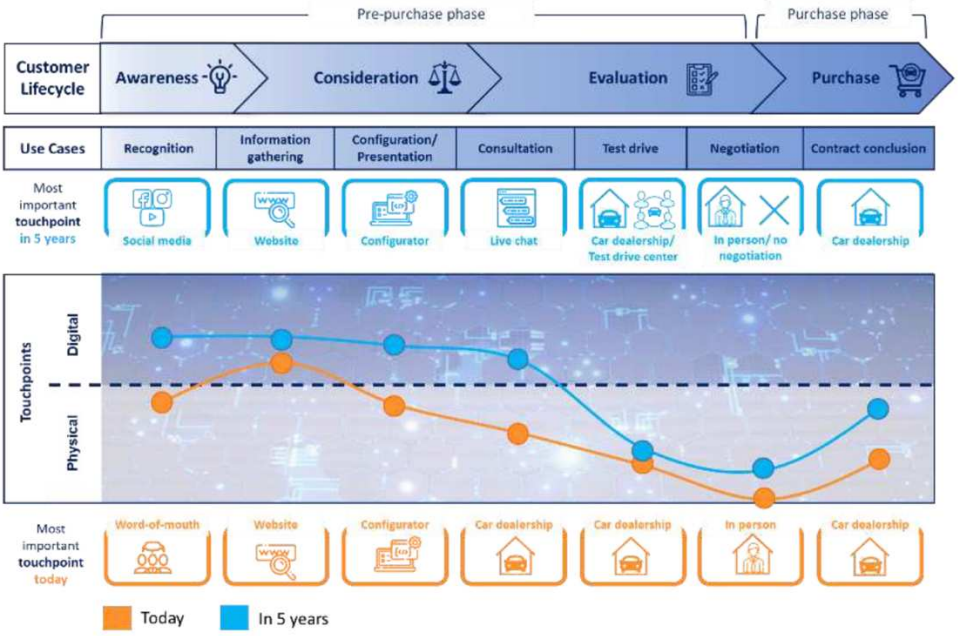

Figure 2: Comparison of today's and the future customer journey (Bacher, 2020, p. 22)

Furthermore, Budde et al. (2020) analyzed stationary and online automotive retail for premium car manufacturers, focusing on the Mercedes-Benz brand. In contrast to Bacher (2020), they found that not only is the search phase becoming increasingly digital, but online vehicle purchases will also significantly increase over the next few years. Digitalization and changing customer needs, attitudes, and characteristics drive shifts in information and purchasing behavior, especially among younger consumers (Budde et al., 2020).

Hypothesis: Younger consumers prefer online channels over offline channels for the search and purchase phase when buying a car.

2.5.1 Purchase Intention in New Car Sales

In this thesis, purchase intention is used to validate further how the choice between online and offline channels influences consumers' purchasing behavior. (Wang & Tsai, 2014, p. 29) defines purchase intention as "[…] the likelihood that a customer will buy a particular product." This definition is widely used in academic literature (Dodds et al., 1991). Nonetheless, a larger tendency to acquire a product does not guarantee that consumers will purchase it. Opposed that a smaller willingness to buy does not imply the complete impossibility of a purchase (Wang & Tsai, 2014). Intentions can be seen as one of the main forecasters of actual behavior. Furthermore, purchase intentions are useful for testing novel distribution channel implementations, assisting managers in deciding which geographic areas and target groups to address (Peña-García et al., 2020). Therefore, purchase intentions are used in this study to test customer intentions on the digital direct sales model in the automotive industry.

Hypothesis: Consumers with a positive attitude toward buying a car online via the "direct-to-consumer" model show significantly higher purchase intentions than those without.

3 Methodology

The primary goal of this study is to investigate the factors influencing consumer behavior towards the digital direct-to-consumer (D2C) model in the automotive industry, with a specific focus on the Austrian and German markets. This master's thesis employs a mixed-method research approach, integrating qualitative and quantitative methodologies to thoroughly investigate the research questions and hypotheses. Combining these methods stems from the complex nature of consumer behavior in the automotive industry, particularly in the context of emerging digital direct-to-consumer (D2C) sales models.

3.1 Hypothesis

H1: Consumers with a positive attitude toward online shopping are more likely to have a positive attitude toward online car purchases via a "direct-to-consumer" model

H2: Consumers with a positive attitude toward buying a car online via the "direct-to-consumer" model show significantly higher purchase intentions than those without.

H3: With increasing age, the purchase intention for a car via digital direct sales model decreases.

H4: Younger consumers prefer online channels over offline channels for the search and purchase phase when buying a car.

H5: The car categories of simpler and less expensive cars are more likely to be purchased via digital D2C model compared to more expensive and more equipped cars.

H6: The phenomenon of "showrooming" positively impacts the purchase intention of consumers using a digital D2C model.

H7: Customers' willingness to pay is lower via the digital D2C model compared to traditional retail stores.

3.2 Secondary Data Collection

The literature review focused on academic journals, industry reports, and relevant publications that cover various aspects of automotive retailing, digital sales channels, and consumer behavior in the automotive industry. Moreover, the literature review helped identify the main concepts and variables central to understanding consumer behavior in the digital D2C model. These concepts include customer journey, channel preference, and purchase intention. Furthermore, the secondary data also provided the theoretical underpinnings for the research, helping to shape the hypotheses and guide the design of the primary data collection instruments. This comprehensive approach ensured that the study was grounded in existing knowledge while also identifying gaps that the primary research aimed to fill.

3.3 Primary Data Collection

Both semi-structured interviews and an online survey were used to provide evidence-based answers to the research questions. Each included primary data collection and analysis.

Semi-structured interviews were conducted to gain deeper insights into consumer attitudes toward the digital D2C model, identify potential challenges, and refine and test the research hypotheses derived from the literature review. The qualitative phase also aimed to explore the nuanced experiences and perceptions of consumers that quantitative methods might not fully capture. The interviews were conducted with a diverse sample of participants from Austria and Germany, ensuring a comprehensive understanding of the target markets.

3.3.1 SSI sample and results

To get a deeper understanding of consumers' familiarity and attitude toward the digital direct-to-consumer model and further evaluate the factors influencing purchase intention, interviews

with eight participants were conducted. These interviews were between 20 and 35 minutes and were performed via Microsoft Teams. As guidance, a questionnaire (see Appendix A) was used to ensure that all required information was collected during the interviews. In order to allow participants to explore the topic in a natural way, the majority of questions are open-ended questions, divided into the following seven categories:

1. Introduction & demographics/geographics
2. Online shopping behavior
3. Digital direct sales model (direct-to-consumer model - D2C)
4. Automotive behavior
5. Willingness to adopt
6. Research shopping
7. Willingness to pay

The semi-structured interviews conducted with eight participants, aged between 25 and 56, provide valuable insights into their online shopping habits, perceptions of the digital D2C, automotive behaviors, and general attitudes towards adopting the D2C model. The participants originate from Austria (62.5%) and Germany (37.5%). Two participants are master's students, and one also works part-time in business development. The other six participants are non-students. Specifically, three participants have a bachelor's degree, two have completed a master's degree, and one has less than a high school degree. Professionally, the participants work in diverse fields: one is a civil servant, two are in marketing and sales, one is an office administrator, one works in consulting, one is an entrepreneur, and another is a kindergarten teacher.

Participants reported varying frequencies of online shopping. A majority, 37.5%, shop online once a week, while 25% shop once a month. Smaller segments, one person each (12.5%), shop either once every two months, one to two times per month, or once a year. The most commonly purchased product categories include consumer electronics (62.5%), clothing (62.5%), sports equipment (25%), groceries (25%), household items (12.5%), furniture (12.5%), and personal care articles (12.5%). Convenience, time-saving, and the ability to access products not available locally were frequently mentioned as the main benefits of online shopping. However, three participants (37.5%) expressed concerns about the lack of physical interaction with products, and one participant (12.5%) raised concerns about the risk of scams and the complications related to delivery and returns.

Participants displayed varying degrees of familiarity with the D2C model, ranging from not familiar to very familiar. Tesla was commonly referenced as a prime example of a successful D2C approach. All participants' impressions of the model were positive, with one person (12.5%) describing it as the future of retail. The model's advantages, such as lower prices (50%), a wide product assortment (50%), and transparency in pricing (12.5%), were appreciated. However, disadvantages were also noted, including the inability to feel and test products before purchasing (37.5%), the lack of professional advice for complex products (25%), and potential delivery issues (12.5%). Participants identified typical D2C model users as younger, tech-savvy individuals with higher income and education who value convenience and brand loyalty.

Most participants (87.5%) own a car, with annual mileage ranging from 15,000 to 25,000 kilometers. Their preferred car categories include mid-size cars (50%), full-size cars and SUVs (25%), and compact cars (25%). Price, brand, design, space, eco-friendliness, and performance were mentioned as key factors influencing their car purchase decisions. All eight participants were generally willing to adopt the D2C model, particularly if it offered lower prices than traditional retail channels. They expressed interest in purchasing products such as electronics (50%), clothing (35.5%), sports equipment (25%), and even cars (12.5%) through the D2C model. Trust in the brand emerged as a crucial factor influencing their decision to engage with the D2C model, especially for high involvement purchases like cars.

Five out of eight participants (62,5%) typically use different channels during various stages of their customer journey. They often conduct extensive product research online but may choose to finalize purchases either online or in-store, depending on the product's price and nature. For high-involvement products, such as cars, all eight participants (100%) prefer to combine online research with physical inspections at showrooms before making a purchase decision. This hybrid approach reflects their need for assurance and physical interaction with products before committing to a significant purchase.

In terms of willingness to pay, participants generally expect to pay less when purchasing online compared to offline. All eight (100%) participants' willingness to pay online is contingent on the online price being lower than or, at most, equal to the prices offered in physical stores. This highlights their price sensitivity and the importance of perceived value when choosing between online and offline purchasing channels.

Hypothesis: Customers' willingness to pay is lower via the digital D2C model compared to traditional retail stores.

3.3.2 Quantitative Research

This section outlines the quantitative research approach of this master's thesis. Data was gathered through an online survey conducted on Qualtrics between May 5th and May 31st. The survey, available in both English and German, was distributed via LinkedIn and Instagram to the author's personal and professional networks. The survey instrument provided in Appendix B was designed to capture key insights into consumer behavior. Following the data collection, an analysis was performed using RStudio (Version 2024.04.1+748).

The collected data were subjected to rigorous statistical analysis using various quantitative methods. Regression analysis was employed to test the relationships between consumer attitudes, demographic variables, and purchase intentions. This analysis helped to determine the predictive power of variables such as the perceived usefulness of the D2C model, frequency of online shopping, and age on purchase intentions. Spearman's rank correlation was used to explore the relationship between age and channel preferences (e.g., online vs. offline). This non-parametric method was chosen due to the ordinal nature of some of the survey data and provided insights into the strength and direction of these relationships. A K-means clustering algorithm was applied to group respondents into distinct segments based on their demographic characteristics and purchase intentions. This analysis aimed to identify patterns and similarities among consumer groups, thereby revealing demographic profiles most likely to adopt the D2C model. The number of clusters was determined by evaluating the within-cluster sum of squares (WSS) plot, ensuring that the clusters were well-separated and internally cohesive. The price sensitivity analysis (Van Westendorp Price Sensitivity Meter) was conducted to assess respondents' willingness to pay for cars purchased via the D2C model versus traditional retail channels. By determining the acceptable price range, indifference price point, and optimal price point for each purchasing context, the analysis provided a nuanced understanding of price expectations in digital and physical sales environments.

Table 1: Survey Construction (Author, 2024)

Question / Scale Examples	Construct	Literature
I can shop in privacy of my home	Perceived Benefits of Shopping Online - Shopping Convenience	(Forsythe et al., 2006)
I can shop whenever I want	Perceived Benefits of Shopping Online - Shopping Convenience	(Forsythe et al., 2006)

Items from everywhere are available	Perceived Benefits of Shopping Online - Product Selection	(Forsythe et al., 2006)
Broader selection of products	Perceived Benefits of Shopping Online - Product Selection	(Forsythe et al., 2006)
I don't have to wait to be served	Perceived Benefits of Shopping Online - Ease/Comfort of Shopping	(Forsythe et al., 2006)
To try a new shopping experience	Perceived Benefits of Shopping Online - Hedonic/Enjoyment	(Forsythe et al., 2006)
The excitement to receive a package	Perceived Benefits of Shopping Online - Hedonic/Enjoyment	(Forsythe et al., 2006)
I can custom-design products	Perceived Benefits of Shopping Online - Hedonic/Enjoyment	(Forsythe et al., 2006)
Using the internet/digital D2C model for shopping is attractive	Perceived usefulness of online shopping	(Khare et al., 2012)
Using the internet/digital D2C model for shopping is worth it	Perceived usefulness of online shopping	(Khare et al., 2012)
Using the internet/digital D2C model for shopping is pleasant	Perceived usefulness of online shopping	(Khare et al., 2012)
Using the internet/digital D2C model for shopping is a good idea	Perceived usefulness of online shopping	(Khare et al., 2012)
At what price would you consider the car too expensive to consider purchasing?	Van Westendorp Price sensitivity analysis	(Lipovetsky, 2006)
At what price would you consider the car to be so inexpensive that you would question its quality?	Van Westendorp Price sensitivity analysis	(Lipovetsky, 2006)
At what price would you consider the car starting to become a good value for the money?	Van Westendorp Price sensitivity analysis	(Lipovetsky, 2006)
At what price would you consider the car expensive, but you would still buy it because it meets your values?	Van Westendorp Price sensitivity analysis	(Lipovetsky, 2006)
I am interested in buying my car online via D2C model	Purchase Intention	(Barber et al., 2012)
I would consider purchasing a car online via D2C model	Purchase Intention	(Barber et al., 2012)
I intend to purchase a car online via D2C model	Purchase Intention	(Barber et al., 2012)

In the course of this work, a conceptual model based on the hypotheses was developed. This is intended to graphically illustrate the relationship between the hypotheses.

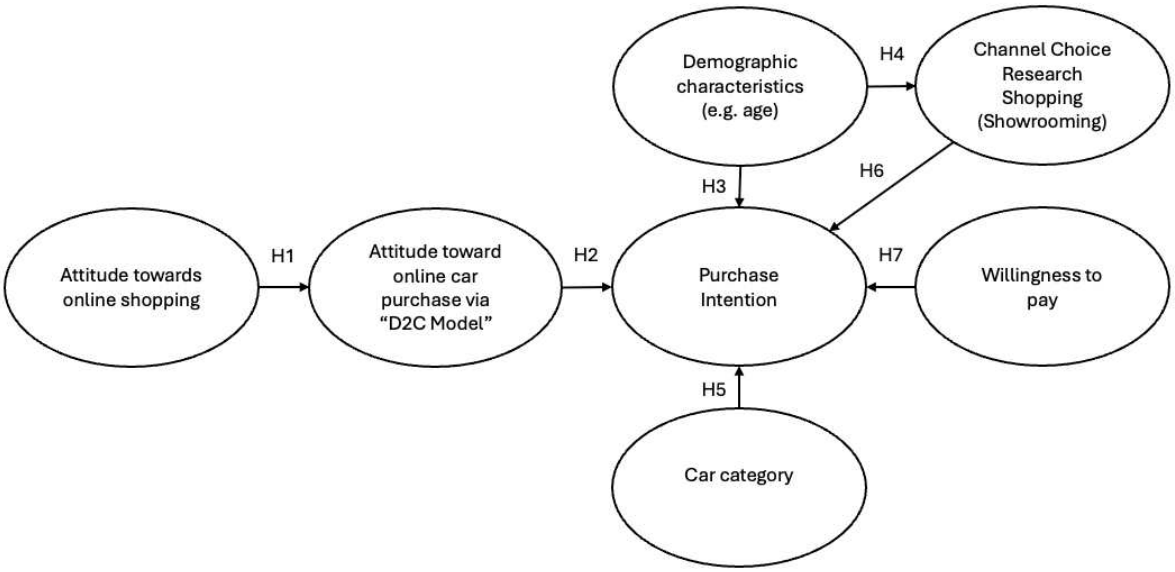

Figure 3: Conceptual Model (The Author, 2024)

4 Results of the Data Analysis

This chapter presents the results of the data analysis and provides insights into the investigation of the research questions and hypotheses.

4.1 Dataset Preparation and Sample Characterization

The initial dataset comprises 187 participants. To ensure data quality and relevance, several filtering steps are performed. First, participants who did not complete the survey were excluded, reducing the sample to 154 respondents (82.35% of the initial participants). Only participants who also passed the control question were retained to further refine the dataset, resulting in 141 participants (75.40% of the initial participants). Finally, the sample is restricted to respondents currently residing in Germany or Austria, as these are the target markets for the study. This final filtering step leaves a total of 130 valid responses (69.52% of the initial participants), which form the basis for subsequent analyses.

To ensure that the sample size is sufficient for the analyses conducted, a G-Power Test is performed using "G*Power 3.1.9.7". This test calculates the required sample size for a linear multiple regression model with a fixed number of predictors. The G-Power Test results indicate that the total sample size needed is 129 participants. The actual power achieved with the final

sample size of 130 is 0.9505, confirming that the sample is adequately powered for the regression analyses conducted in this study.

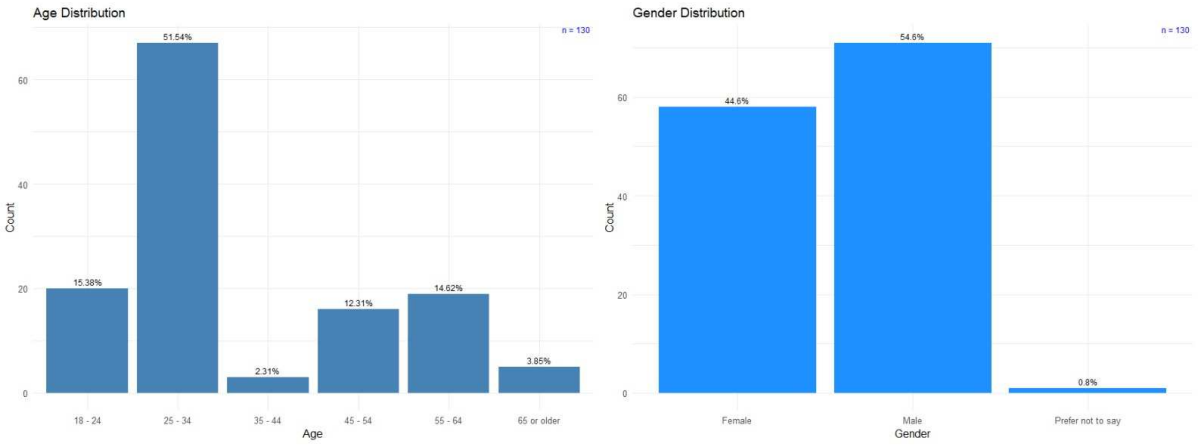

Figure 4: Age & Gender Distribution (Survey Data, 2024)

The age distribution shows that the largest group of respondents (51.54%) are between 25 and 34 years old. This is followed by 18-24-year-olds, who account for 15.38% of the sample. Participants aged 45-54 years make up 12.31%, while 14.62% are between 55 and 64 years old. A smaller proportion of respondents (3.85%) are aged 65 and above, and only 2.31% are in the 35-44 age range. Notably, there are no respondents under the age of 18. Gender distribution is fairly balanced within the sample, with 54.62% of participants identifying as male and 44.62% as female. Only one person (0.77%) chose not to specify their gender.

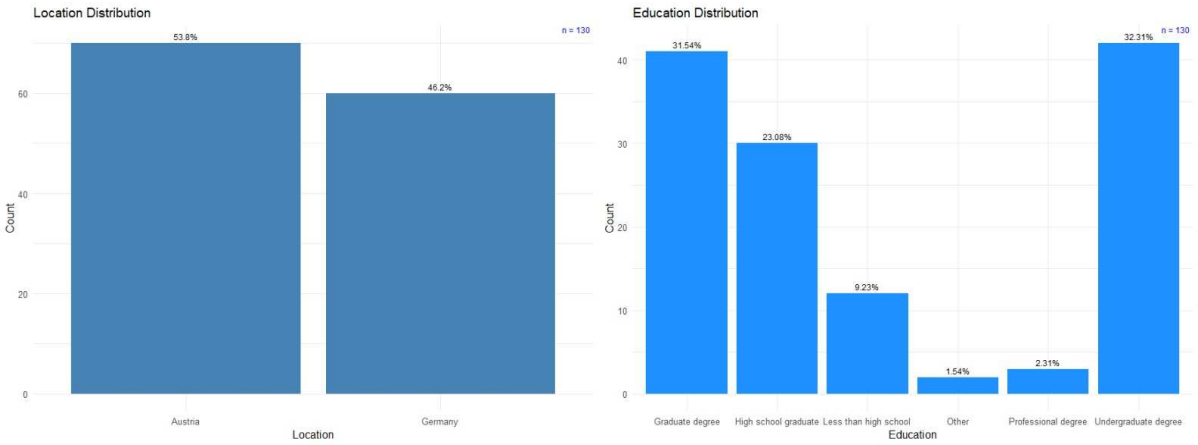

Figure 5: Location & Education Distribution (Survey Data, 2024)

Regarding country of residence, the majority of respondents (53.8%) are from Austria, with the remaining 46.2% residing in Germany.

The educational background of the respondents is diverse. The largest group holds an undergraduate degree (32.31%), closely followed by those with a graduate degree (31.54%). High school graduates represent 23.08% of the sample, while 9.23% have less than a high school education. A small percentage of respondents (2.31%) have completed a professional degree, and an even smaller fraction (1.54%) falls into the "other" category.

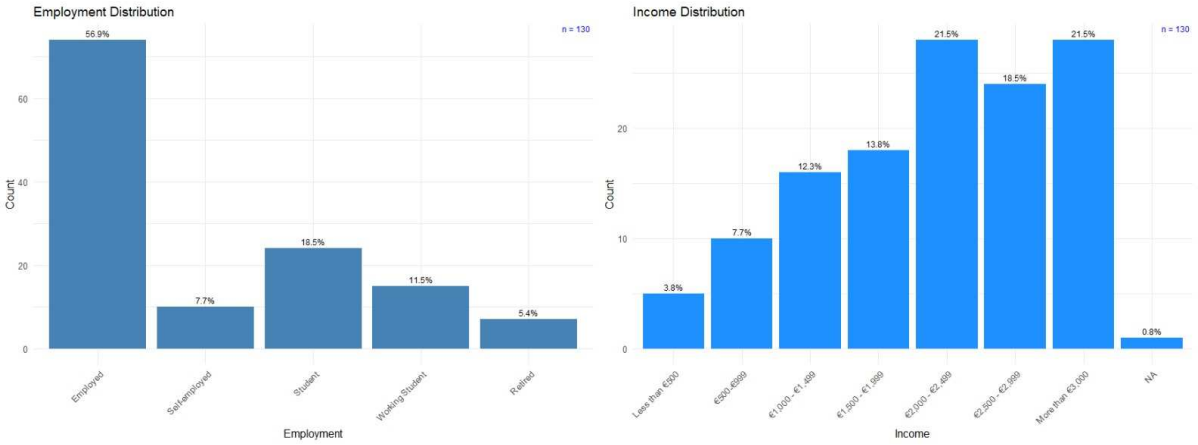

Figure 6: Employment & Income Distribution (Survey Data, 2024)

Regarding employment status, the majority of respondents (56.92%) are employed by a third party. Students comprise 18.46% of the sample, while self-employed individuals account for 7.69%. Additionally, 11.54% are working students, and a smaller percentage (5.38%) are retired.

The income distribution reveals that 21.5% of respondents earn more than €3,000 per month, with an equal percentage (21.5%) earning between €2,500 and €2,999. A further 18.5% reported a monthly income between €2,000 and €2,499, and 13.8% earned between €1,500 and €1,999. Smaller groups earn between €1,000 and €1,499 (12.3%), €500 and €999 (7.7%), less than €500 (3.8%), and one person (0.77%) chose not to specify their income.

4.2 Hypothesis Validation

In this section, the hypotheses are tested using the collected data from the online survey to evaluate the significance and strength of the identified relationships.

4.2.1 Attitude towards Digital D2C Model

The first hypothesis (H1) posits that consumers with a positive attitude toward online shopping are more likely to have a positive attitude toward online car purchases via the "direct-to-consumer" (D2C) model. To test this hypothesis, a multiple linear regression analysis examines the relationship between the attitude toward online car purchases, measured by the perceived

usefulness of the D2C model (PUD2C), and several factors related to online shopping as independent variables. The independent variables included in the model are the frequency of online shopping (Q1), the types of products typically purchased online (Q2_1), the perceived benefits of online shopping (Q3_1), and the perceived usefulness of online shopping (PUOS). Additionally, the respondent's age (Q18) is included as a control variable. The following linear model summarizes the regression analysis conducted to test this hypothesis:

$$\mathbf{PUD2C=\beta0+\beta1\cdot Q1+\beta2\cdot Q2\_1+\beta3\cdot Q3\_1+\beta4\cdot PUOS+\beta5\cdot Q18+\epsilon}$$

The reliability of the variables is first assessed using Cronbach's alpha. Therefore, the perceived usefulness of online shopping (PUOS) demonstrates excellent internal consistency, with a Cronbach's alpha of 0.91. The item statistics indicate that each question within the PUOS scale positively contributes to the overall reliability, confirming the consistency of this measure. Similarly, the perceived usefulness of the D2C model (PUD2C) exhibits high reliability, with a Cronbach's alpha of 0.93, indicating that the items within this scale reliably measure the attitude toward the D2C model. The reliability analysis of the perceived usefulness of the D2C model after showrooming (PUD2CSR) also shows strong internal consistency, with a Cronbach's alpha of 0.9, suggesting that the items consistently measure the perceived usefulness of the D2C model following a showroom visit.

Table 2: Regression H1 (Survey Data, 2024)

	H1
	Dependent variable:
Q1	.020
	(.046)
Q2_1	.062
	(.052)
Q3_1	.039
	(.057)
PUOS	.545***
	(.084)
Q18	-.125**
	(.054)
Constant	1.679***
	(.413)
Note	Significance levels: *p<0.1; **p<0.05; ***p<0.01
Observations	130
R2	.521
Adjusted R2	.502
Residual Std. Error	.643 (df = 124)
F Statistic	26.977*** (df = 5; 124)

The regression analysis results show that the model's intercept is statistically significant ($\beta 0=1.679$, $p<0.001$), indicating a positive baseline perception of the D2C model when all other factors are held constant. Among the independent variables, the perceived usefulness of online shopping (PUOS) emerges as a significant predictor of a positive attitude toward the D2C model ($\beta 4=0.545$, $p<0.001$). This finding **supports Hypothesis H1**, suggesting that consumers who perceive online shopping as useful are more likely to have a favorable attitude toward purchasing a car online through the D2C model. Conversely, the coefficient for the frequency of online shopping (Q1) is positive ($\beta 1=0.020$) but not statistically significant ($p=0.668$). This result suggests that how often a consumer shop online does not significantly impact their attitude toward purchasing cars through the D2C model. Also, the types of products typically purchased online (Q2_1) do not significantly affect attitudes toward the D2C model ($\beta 2=0.062$, $p=0.236$). Similarly, the perceived benefits of online shopping (Q3_1) do not significantly influence the attitude toward online car purchases ($\beta 3=0.039$, $p=0.498$).

The respondent's age (Q18) is found to have a significant negative effect on the attitude toward the D2C model ($\beta 5=-0.125$, $p=0.0227$), indicating that older consumers are less likely to have

a positive attitude toward purchasing cars online via the D2C model. This finding highlights a potential age-related difference in attitudes toward online car purchases.

Furthermore, the Shapiro-Wilk normality test conducted on the residuals indicates slight non-normality ($W=0.970$, $p=0.005$), suggesting some deviation from normality in the residuals. To address this, the analysis is repeated after removing outliers, resulting in a model with an intercept that remains significant ($\beta0=1.455$, $p<0.001$). In this model, the perceived usefulness of online shopping (PUOS) continues to be a significant predictor ($\beta4=0.682$, $p<0.001$), reinforcing the initial findings. The age effect also strengthens ($\beta5=-0.135$, $p=0.006$), while the other independent variables (Q1, Q2_1, Q3_1) remain non-significant. The Shapiro-Wilk test on this model's residuals approaches normality ($W=0.989$, $p=0.396$), suggesting that the removal of outliers improves the model's fit.

To further explore the influence of showrooming on consumer attitudes, a second regression analysis is conducted using the perceived usefulness of the D2C model after showrooming (PUD2CSR) as the dependent variable:

$$\mathbf{PUD2CSR=\beta0+\beta1\cdot Q1+\beta2\cdot Q2\_1+\beta3\cdot Q3\_1+\beta4\cdot PUOS+\beta5\cdot Q18+\epsilon}$$

In this showrooming scenario, the model's intercept is higher ($\beta0=2.055$, $p<0.001$) compared to the non-showrooming model, indicating a more favorable baseline perception when showrooming is available. The perceived usefulness of online shopping (PUOS) remains a significant predictor in this model, though its effect is slightly lower ($\beta=0.450$, $p<0.001$) compared to the non-showrooming context. Notably, age (Q18) loses its significant negative effect in the showrooming model ($\beta=0.064$, $p=0.235$), suggesting that the option to visit a showroom may mitigate age-related concerns. Additionally, the types of products typically purchased online (Q2_1) become significant in the showrooming model ($\beta=0.094$, $p=0.033$). However, the residuals in this model remain non-normal, as indicated by the Shapiro-Wilk test ($W=0.970$, $p=0.006$). The showrooming model explains less variance (R-squared = 0.415) compared to the non-showrooming model, indicating that additional factors introduced by showrooming might affect consumer attitudes.

4.2.2 Impact of Attitude on Purchase Intention

Hypothesis two (H2) posits that consumers with a positive attitude toward buying a car online via the “direct-to-consumer” (D2C) model exhibit significantly higher purchase intentions than those without. A linear regression analysis is conducted to test this hypothesis, examining the

relationship between attitudes toward the D2C model (PUD2C and PUD2CSR) as independent variables (IVs) and purchase intention (PID2C) as the dependent variable (DV). The analysis also includes age (Q18) as a control variable.

The survey questions assess respondents' attitudes and purchase intentions through a series of statements rated on a five-point Likert scale. PUD2C measures attitudes toward purchasing a car entirely online via the D2C model, while PUD2CSR assesses attitudes toward purchasing online after visiting a showroom. PID2C captures the respondents' overall purchase intention using the D2C model.

Table 3: Regression H2 (Survey Data, 2024)

	H2
	Dependent variable:
PUD2C	.660***
	(.091)
PUD2CSR	.379***
	(.099)
Q18	-.129***
	(.041)
Constant	-.385
	(.355)
Note	Significance levels: *p<0.1; **p<0.05; ***p<0.01
Observations	130
R2	.727
Adjusted R2	.721
Residual Std. Error	.569 (df = 126)
F Statistic	111.978*** (df = 3; 126)
Note:	*p<0.1; **p<0.05; ***p<0.01]

The regression analysis reveals that a positive attitude toward the D2C model (PUD2C) is a strong and significant predictor of higher purchase intention ($\beta=0.660$, $p<0.001$). This finding supports the hypothesis, indicating that consumers who view the D2C model favorably are more likely to intend to purchase a car through this method. Additionally, the analysis shows that the experience of showrooming (PUD2CSR) also significantly boosts purchase intention ($\beta=0.379$, $p<0.001$). This suggests that the opportunity to physically inspect the car in a showroom enhances the consumer's confidence and intention to proceed with a digital purchase. The control variable, age (Q18), has a significant negative effect on purchase intention ($\beta=-0.129$, $p=0.002$), indicating that younger consumers are more likely to intend to purchase a car via the

D2C model than older consumers. The overall model explains a substantial portion of the variance in purchase intention, with an R-squared value of 0.727, indicating that 72.7% of the variability in purchase intention is accounted for by the independent variables. The Shapiro-Wilk test for normality suggests that the residuals are approximately normally distributed ($W=0.982$, $p=0.091$).

In addition, the analysis is repeated after removing outliers to ensure the robustness of the results. The findings remain consistent, with PUD2C ($\beta=0.654$, $p<0.001$) and PUD2CSR ($\beta=0.376$, $p<0.001$) continuing to significantly predict higher purchase intentions. Age (Q18) remains a significant negative predictor ($\beta=-0.136$, $p<0.001$). The adjusted model demonstrates an improved fit, with an R-squared value of 0.741, explaining 74.1% of the variability in purchase intention. The Shapiro-Wilk test for this model shows no significant deviation from normality ($W=0.987$, $p=0.235$).

In conclusion, the results **strongly support Hypothesis H2**. Consumers with a positive attitude toward the D2C model are significantly more likely to have higher purchase intentions. The positive impact of showrooming further enhances this intention, while age negatively influences the likelihood of adopting the D2C model. These findings suggest that positive consumer attitudes and the experience of showrooming are critical drivers of purchase intention in the context of digital car sales.

4.2.3 Influence of Age on Purchase Intention

H3 is the hypothesis that states younger people are more likely to purchase a car via a digital-direct sales model than older people. To test this hypothesis, a linear regression analysis examines the relationship between age (Q18) as the independent variable and purchase intention (PID2C) as the dependent variable. Purchase intention is measured by respondents' agreement with statements regarding their willingness to purchase a car entirely online through the D2C model (PID2C) and after showrooming (PID2CSR).

First, Cronbach's alpha is used to assess the reliability of the purchase intention variables (PID2C and PID2CSR). The reliability analysis for PID2C shows a Cronbach's alpha of 0.93, indicating excellent internal consistency among the items. Therefore, the item statistics confirm that each question within the PID2C scale contributes positively to the overall reliability. Similarly, the reliability of PID2CSR, which measures purchase intention after showrooming, also shows strong internal consistency with a Cronbach's alpha of 0.9. These results suggest that the scales used to measure purchase intention in both contexts are reliable.

The first regression model tests the relationship between age (Q18) and purchase intention through the digital-direct sales model (PID2C).

$$\mathbf{PID2C = \beta 0 + \beta 1 \cdot Q18 + \epsilon}$$

Table 4: Regression H3 (Survey Data, 2024)

	H3
	Dependent variable:
	PID2C
Q18	-.358***
	(.057)
Constant	4.494***
	(.228)
Note	Significance levels: *p<0.1; **p<0.05; ***p<0.01
Observations	130
R2	.234
Adjusted R2	.228
Residual Std. Error	.946 (df = 128)
F Statistic	39.098*** (df = 1; 128)

The results show that age has a significant negative effect on purchase intention ($\beta = -0.358$, $p < 0.001$), with the model's intercept being highly significant as well ($\beta 0 = 4.494$, $p < 0.001$). This indicates that younger respondents are more likely to have a higher purchase intention for cars through the D2C model compared to older respondents. The model explains a moderate portion of the variance in purchase intention, as reflected by an R-squared value of 0.234, suggesting that age accounts for 23.4% of the variability in attitudes toward the D2C model. The residuals of this model, however, deviate slightly from normality, as indicated by the Shapiro-Wilk test ($W = 0.960$, $p = 0.001$).

To further explore the influence of showrooming on purchase intention, a second regression model examines the relationship between age (Q18) and purchase intention after showrooming (PID2CSR). In this scenario, age does not significantly affect purchase intention ($\beta = -0.082$, $p = 0.124$), indicating that the option to visit a showroom may mitigate the age-related differences observed in the non-showrooming scenario. The intercept remains highly significant ($\beta 0 = 4.215$, $p < 0.001$), but the model explains a much smaller portion of the variance, with an R-squared value of 0.018, suggesting that age alone does not account for much of the variability in purchase intention when showrooming is considered. The residuals of this model also show some deviation from normality, as indicated by the Shapiro-Wilk test ($W = 0.937$, $p = 2.095e{-}05$).

Given the potential influence of outliers, an additional analysis is conducted after removing outliers. The results of this adjusted model show that age has a significant negative effect on purchase intention after showrooming (β=−0.137, p=0.001). This suggests that even when accounting for outliers, younger respondents are more likely to prefer purchasing a car through the D2C model, even after visiting a showroom. The adjusted R-squared value of 0.076 indicates that this model explains a modest portion of the variance in purchase intention, and the Shapiro-Wilk test still indicates some deviation from normality in the residuals (W=0.937, p=2.095).

In summary, the **results support Hypothesis H3**, showing that younger people are indeed more likely to purchase a car via the digital-direct sales model than older people.

4.2.4 Channel Choice

The fourth hypothesis (H4) suggests that younger consumers are more inclined to use online channels over offline options during both the research and purchase stages when buying a car. Spearman's rank correlation was utilized to evaluate this hypothesis and explore the relationship between the respondents' age (Q18) and their chosen car purchasing method (Q10). The independent variable is age (Q18), while the dependent variable is the preference for different purchasing methods, represented by four channel choice options in Q10: researching online and buying in-store (Q10_1), researching in-store and buying online (Q10_2), researching and buying online (Q10_3), and researching and buying in-store (Q10_4). The analysis produced the following findings:

Table 5: Correlation H4 (Survey Data, 2024)

Variable	Spearman's r	p-value
Q10_1	-0.246	0.006
Q10_2	-0.058	0.520
Q10_3	-0.398	0.000
Q10_4	0.416	0.000

- **Researching online and purchasing in-store (Q10_1):** The Spearman's rho value of -0.246 (p = 0.006) indicates a weak inverse relationship, which suggests that younger individuals tend to favor researching online before making an in-store purchase slightly more than their older counterparts. The correlation is statistically significant, indicating a non-random association between age and this channel preference.

- **Researching in-store and purchasing online (Q10_2):** The Spearman's rho of -0.058 (p = 0.520) points to a very weak negative association that lacks statistical significance.

This result implies that age does not meaningfully impact the preference for this hybrid purchasing method.

- **Researching and purchasing online (Q10_3):** A Spearman's rho of -0.398 ($p < 0.001$) reveals a moderate negative correlation, indicating that younger consumers are more likely to opt for a fully online shopping experience compared to older individuals. The significant correlation **strongly supports the hypothesis (H4)** that younger consumers are more inclined to prefer online channels.
- **Researching and purchasing in-store (Q10_4):** Finally, the positive correlation (Spearman's rho = 0.416, $p < 0.001$) indicates that older consumers are more inclined to prefer traditional, in-store methods for both research and purchase. This statistically significant finding highlights an age-related preference for offline channels.

In summary, the results provide **partial support for Hypothesis H4**. The data suggests that younger consumers generally favor online channels, especially for both researching and purchasing cars online. In contrast, older consumers exhibit a stronger preference for offline methods, particularly for completing both research and purchases in physical stores.

4.2.5 Car Categories

The fifth hypothesis (H5) posits that simpler and less expensive cars are more likely to be purchased via the digital D2C model compared to more expensive and equipped cars. A Spearman's rank correlation analysis is conducted to evaluate this hypothesis and examine the relationship between car category (Q7) and purchase intention via the digital D2C model (PID2C). Additionally, purchase intention after showrooming (PID2CSR) is analyzed to see if showroom visits influence this relationship.

Car categories range from micro cars, which are very small and cost-effective, to luxury cars, which offer premium features. The purchase intention variables (PID2C and PID2CSR) measure respondents' willingness to purchase a car via the D2C model, both entirely online and after visiting a showroom.

Table 6: Correlation H5 (Survey Data, 2024)

Variable	Spearman's r	p-value
Q7 & PID2C	-0.120	0.175
Q7 & PID2CSR	-0.075	0.398

The analysis shows that the correlation between car category and purchase intention via the digital D2C model (PID2C) is not statistically significant (rho=-0.120, p=0.175). This suggests no meaningful relationship between the type of car category and the likelihood of purchasing through the D2C model. Similarly, the correlation between car category and purchase intention after showrooming (PID2CSR) is also not significant (rho=-0.075, p=0.398), indicating that the opportunity to visit a showroom does not affect this relationship.

In conclusion, the results **do not support Hypothesis H5**. The type of car category does not significantly influence consumers' willingness to purchase via the digital D2C model, either with or without showroom visits.

4.2.6 Influence of Showrooming on Purchase Intention

Hypothesis six (H6) claims that the phenomenon of showrooming positively impacts the purchase intention of consumers using a digital D2C model. To test this hypothesis, a linear regression analysis examines the relationship between purchase intention after showrooming (PID2CSR) as the independent variable and purchase intention via the digital D2C model (PID2C) as the dependent variable. The analysis also includes age (Q18) as a control variable.

Table 7: Regression H6 (Survey Data, 2024)

	H6
	Dependent variable:
PID2CSR	.741***
	(.070)
Q18	-.297***
	(.042)
Constant	1.368***
	(.338)
Note	Significance levels: *p<0.1; **p<0.05; ***p<0.01
Observations	130
R2	.594
Adjusted R2	.588
Residual Std. Error	.691 (df = 127)
F Statistic	92.971*** (df = 2; 127)

The regression analysis reveals that showrooming has a significant positive impact on purchase intention for the digital D2C model, as indicated by the coefficient for PID2CSR (β=0.741, p<0.001). This suggests that consumers who have the opportunity to visit a showroom are more likely to have a higher purchase intention when considering buying a car online through the D2C model. The model also shows a significant negative effect of age on purchase intention

($\beta=-0.297$, $p<0.001$), indicating that older consumers are less likely to intend to purchase a car through the D2C model compared to younger consumers. The model explains a substantial portion of the variance in purchase intention, with an R-squared value of 0.594, indicating that 59.4% of the variability in purchase intention is accounted for by the combination of showrooming and age. The Shapiro-Wilk test for normality indicates some deviation from normality in the residuals ($W=0.970$, $p=0.006$).

To ensure robustness, the analysis is repeated after removing outliers. In this adjusted model, showrooming remains a significant positive predictor of purchase intention ($\beta=0.795$, $p<0.001$), and age continues to have a significant negative effect ($\beta=-0.304$, $p<0.001$). The adjusted model explains even more variance in purchase intention, with an R-squared value of 0.664, suggesting that 66.42% of the variability in purchase intention is explained by the independent variables. The Shapiro-Wilk test in the adjusted model shows no significant deviation from normality ($W=0.986$, $p=0.231$).

Overall, the results **strongly support Hypothesis H6**, indicating that showrooming has a positive impact on consumers' purchase intention when using the digital D2C model.

4.2.7 Willingsness to pay

The seventh hypothesis (H7) asserts that customer's willingness to pay is lower via the digital D2C model compared to traditional retail stores. A price sensitivity analysis is conducted to test this hypothesis, using the Van Westendorp Price Sensitivity Meter (PSM) for both digital D2C and traditional automotive retail stores. The independent variable in this analysis is the willingness to pay for a car via the digital D2C model, as measured by Q16, while the dependent variable is the willingness to pay for a car from traditional automotive retail stores, as measured by Q9.

The questions for both Q16 and Q9 assess respondents' willingness to pay by asking them to specify a price (in thousands of EUR) at which they would consider the car too expensive, too inexpensive, a good value for money, and expensive but still worth purchasing. The Van Westendorp PSM analysis generates key pricing metrics, including the accepted price range, the indifference price point, and the optimal price point for both purchasing scenarios.

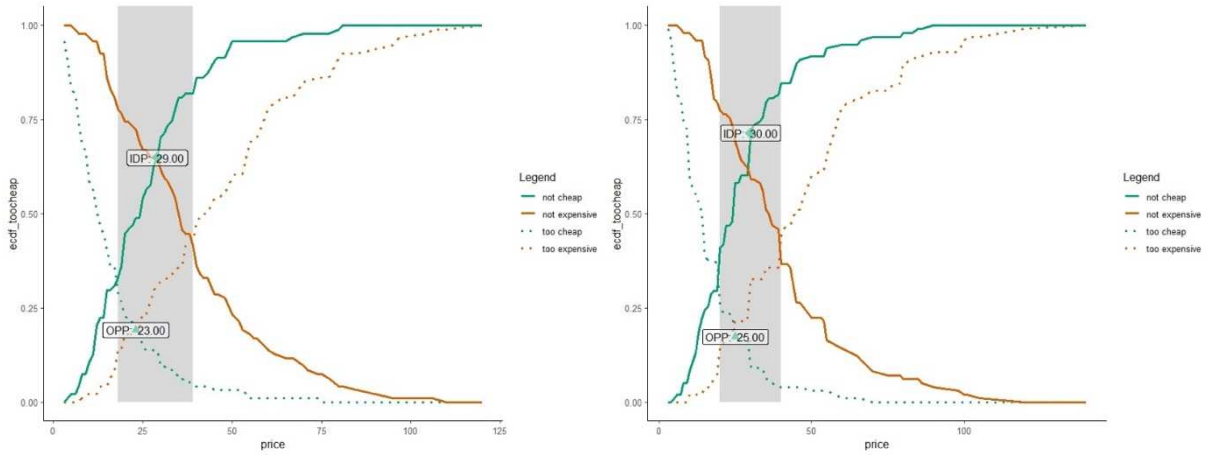

Figure 7: Price Sensitivity Meter traditional retail & Digital D2C H7 (Survey Data, 2024)

The results of the price sensitivity analysis for the digital D2C model (Q16) indicate an accepted price range between 18,000 EUR and 39,000 EUR, with an indifference price point of 29,000 EUR and an optimal price point of 23,000 EUR. In comparison, the analysis for traditional retail stores (Q9) shows a slightly higher accepted price range between 20,000 EUR and 40,000 EUR, with an indifferent price point of 30,000 EUR and an optimal price point of 25,000 EUR. These results suggest that respondents generally indicate a lower willingness to pay for cars purchased via the digital D2C model compared to traditional retail stores.

To further validate these findings, the means and medians of the prices specified for each scenario are compared. Given the observed differences, a Wilcoxon signed-rank test is performed to determine if the differences are statistically significant. The Wilcoxon test results confirm significant differences between the willingness to pay in the two purchasing contexts:

- For the price at which the car is considered too expensive (Q9_1 vs. Q16_1), the Wilcoxon test yields a V value of 4145 and a p-value of 1.234e-05, indicating a significant difference between the digital D2C model and traditional retail stores.
- For the price at which the car is considered too inexpensive (Q9_2 vs. Q16_2), the test yields a V value of 3331 and a p-value of 0.001, also indicating a significant difference.
- When considering the price at which the car starts to become a good value for money (Q9_3 vs. Q16_3), the test yields a V value of 3444.5 and a p-value of 0.020, indicating a significant difference.

- Finally, for the price at which the car is considered expensive but still worth purchasing (Q9_4 vs. Q16_4), the test yields a V value of 4041.5 and a p-value of 0.002, again indicating a significant difference.

These results collectively **support Hypothesis H7**, indicating that customer's willingness to pay is indeed lower when purchasing a car through the digital D2C model compared to traditional automotive retail stores.

4.2.8 Cluster Analysis for Demographic Profile

A cluster analysis is performed to evaluate the demographic profile of consumers likely to use the digital D2C model. This analysis identifies distinct groups based on demographic variables, including age (Q18), gender (Q19), education level (Q21), and monthly income (Q22). The aim is to categorize respondents into clusters that reflect similar demographic characteristics and purchase intentions related to the D2C model.

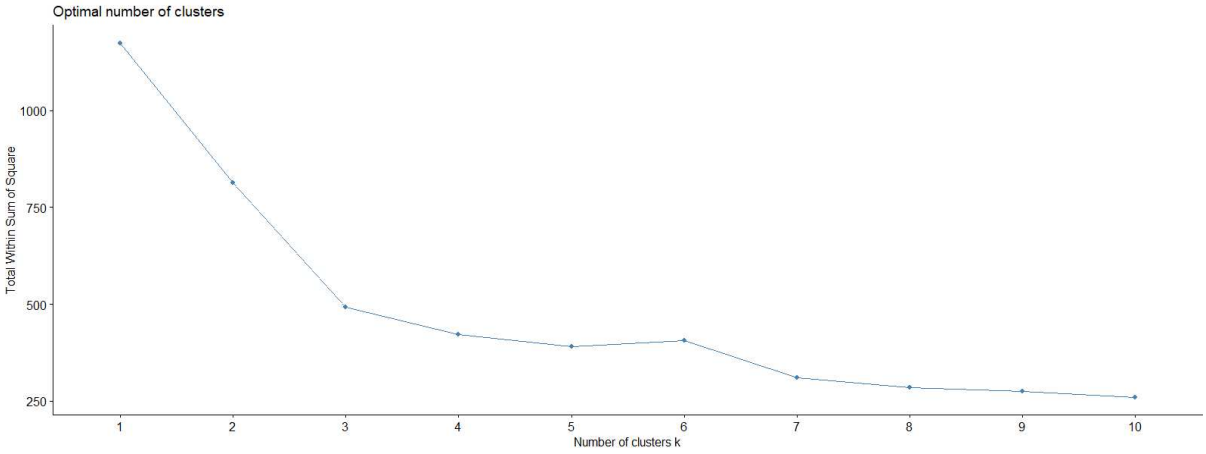

Figure 8: Optimal number of clusters (Survey Data, 2024)

The optimal number of clusters is determined by visually inspecting the bend in the within-cluster sum of squares (WSS) plot, resulting in the identification of three distinct clusters. The K-means clustering analysis groups the respondents into three clusters of sizes 37, 42, and 50, respectively.

The cluster means provide insights into the demographic profiles of each group:

- **Cluster 1** is characterized by older respondents (mean age closer to 55-64 years), a mix of genders, primarily those with an undergraduate degree, and higher monthly incomes (around €2,500 - €2,999).

- **Cluster 2** consists of younger respondents (mean age around 25-34 years) with a similar gender distribution, a higher level of education (graduate degrees), and lower monthly incomes (around €1,500 - €1,999).
- **Cluster 3** represents respondents with a mean age of around 35-44 years, with slightly more females, a higher level of education (professional degrees), and the highest income range (over €3,000).

The within-cluster sum of squares indicates how tightly grouped the data points are within each cluster, with Cluster 2 showing the lowest within-cluster sum of squares, suggesting more homogeneity within this group. The between-cluster sum of squares accounts for 66.4% of the total variation, indicating that the clusters are relatively well-separated from each other.

Descriptive statistics for purchase intention after showrooming (PID2CSR) by cluster reveal differences in attitudes toward the D2C model:

- **Cluster 1** has a mean purchase intention of 3.76, with relatively low variability (SD = 0.48), indicating consistent but moderate interest in the D2C model after showrooming.
- **Cluster 2** shows the highest mean purchase intention at 4.15, with greater variability (SD = 0.95), suggesting that younger, lower-income respondents with higher education levels are more inclined toward purchasing a car through the D2C model after visiting a showroom.
- **Cluster 3** has a mean purchase intention of 3.82, with variability similar to Cluster 2 (SD = 1.02), indicating a generally positive attitude towards the D2C model, particularly among middle-aged, high-income respondents.

In summary, the cluster analysis reveals distinct demographic profiles associated with varying levels of purchase intention for the D2C model. Cluster 2, consisting of younger, highly educated, but lower-income individuals, exhibits the highest purchase intention, suggesting that this demographic may be more receptive to the D2C model, particularly when combined with the opportunity for showrooming. Cluster 3, with older and higher-income respondents, also shows a strong interest, while Cluster 1, characterized by older and moderately affluent individuals, demonstrates moderate but consistent interest in the D2C model.

5 General Discussion

The shift towards digital direct-to-consumer (D2C) models in the automotive industry represents a significant evolution in consumer behavior and retail strategy. This study explored three central research questions to understand the key factors influencing purchase intentions, channel preferences, and the demographic profile of consumers in Austria and Germany. The findings offer insights that are crucial for automotive manufacturers and managers aiming to optimize their sales strategies in a rapidly digitizing market.

5.1 Influences on Purchase Intention via the Digital D2C Model

The analysis reveals that consumers with a positive attitude toward online shopping are more likely to have favorable attitudes toward purchasing cars online via the D2C model. This finding aligns with existing literature that highlights the growing acceptance of online shopping across various product categories (Dholakia et al., 2010) and a customer segment with a strong preference for online channels (Herhausen et al., 2019). The regression analysis supporting Hypothesis H1 indicates that consumers who perceive online shopping as useful (PUOS) (Khare et al., 2012) are more inclined to view the digital D2C model favorably. However, other factors, such as the frequency of online shopping, the types of products typically purchased online, and the perceived benefits of online shopping (Forsythe et al., 2006), do not significantly influence attitudes toward the D2C model. This suggests that while the general perception of online shopping plays a crucial role, specific shopping behaviors and product categories are less impactful in shaping attitudes toward online car purchases.

Further analysis of purchase intentions confirms that positive attitudes towards the D2C model significantly enhance the likelihood of purchasing a car through this channel (H2). The findings confirm a robust and significant correlation, indicating that consumers who perceive the D2C model favorably are more likely to exhibit higher purchase intentions. This suggests that fostering positive consumer perceptions of the D2C model is critical for automotive manufacturers aiming to drive digital sales, as supported by the theory of customer channel choice, which involves assessing differentiators among channels before culminating in a preference (Trenz et al., 2020).

Another factor this analysis examined is the impact of age on purchase intentions via the D2C model (H3). Literature suggests that younger consumers are more inclined to adopt online sales channels, which currently represent a smaller share of total car sales but are expected to grow in importance (Budde et al., 2020). The analysis confirms this, showing a significant negative

effect of age on purchase intention, indicating that younger respondents are more likely to purchase a car through the D2C model than older ones. These results reinforce the notion that younger demographics are key drivers of the shift toward digital car sales, supporting the hypothesis that age is a critical factor in determining the likelihood of adopting digital sales channels in the automotive industry.

The exploration of car categories and their influence on purchase intentions via the digital direct-to-consumer (D2C) model, as addressed in Hypothesis 5, yields results that diverge from the expectations suggested by existing literature. Bacher (2020) posits that digital D2C models are particularly suited for pre-configured, simple, electric, and inexpensive vehicles, which are assumed to align well with online sales channels due to their straightforward nature and lower price points. However, the data analysis in this study does not support this hypothesis. Spearman's rank correlation analysis shows no statistically significant relationship between car category and purchase intention via the digital D2C model. Additionally, showroom visits do not appear to influence this relationship. These findings suggest that the type of car, whether simple and inexpensive or more complex and luxurious, does not significantly impact consumers' likelihood of purchasing through a digital D2C model. This lack of significant correlation implies that factors beyond the car category may be more pivotal in driving consumers' decisions to purchase vehicles online.

Furthermore, this study also highlights the critical role of showrooming (H6), where the ability to physically inspect a car before making an online purchase significantly boosts consumer confidence and purchase intentions. This finding is consistent with the literature on channel choice, which suggests that integrating online and offline channels can create the most fluid retail experience as current technologies combine the best of both worlds (Arora et al., 2022). The regression analysis shows that the opportunity to visit a showroom mitigates some of the age-related reluctance, suggesting that a hybrid approach combining online sales with physical touchpoints could be particularly effective in expanding the appeal of the D2C model across different age groups. This finding underscores the importance of integrating physical touchpoints within a predominantly digital sales strategy, aligning with the need for omnichannel integration as discussed in the literature (Bacher, 2020; Firmansyah & Purnamasari, 2023; Trenz et al., 2020).

Hypothesis H7 addresses the impact of price sensitivity on purchase intentions within the D2C model, revealing that consumers generally exhibit a lower willingness to pay when purchasing

cars online compared to traditional retail environments. This finding underscores the importance of competitive pricing strategies for automotive manufacturers implementing the D2C model, as price remains a crucial factor in consumer decision-making, especially in an online context where transparency and comparison are readily available. This also aligns with the additional finding from SSI results, where all participants' willingness to pay via D2C is equal to or lower than at traditional retail stores.

5.2 Channel Preferences for Automotive Purchases

Understanding consumer preferences for traditional retail versus online channels is critical in shaping effective sales strategies in the automotive industry. The analysis of the channel preferences among consumers in Austria and Germany reveals distinct patterns that align with broader trends in retailing and consumer behavior, as outlined in the literature.

The study's exploration of channel preferences (H4) reveals a differentiated landscape in Austria and Germany, where consumer preferences are influenced by age and the specific phase of the customer journey. The findings indicate a strong preference for online channels during the research phase, particularly among younger consumers. However, when it comes to the actual purchase, the preference for traditional retail channels remains strong, especially among older consumers, which is consistent with the findings from previous research about the customer journey in new car sales (Bacher, 2020). The cluster analysis shows that younger consumers, particularly those in the 25-34 age group, demonstrate a growing preference for online channels. Also, “Spearman’s Rank-Order Correlation” shows a moderate negative relationship between age and the preference for online channels, indicating that younger consumers are more inclined to embrace digital platforms for both researching and purchasing vehicles.

Research shopping, particularly showrooming, plays a significant role in shaping channel preferences. The analysis shows that showrooming positively impacts purchase intentions for the digital D2C model, particularly among younger consumers (H6). These consumers often prefer to gather information online before making a final purchase in-store, reflecting a hybrid approach to channel usage. This behavior aligns with the findings of Verhoef et al. (2007), who identified cross-channel synergies as a key driver of research shopping.

The ability to leverage the strengths of both online and offline channels, such as the convenience of online research and the confidence gained from in-store purchases, highlights the importance of maintaining a seamless omnichannel strategy. As suggested by Bacher (2020), an effective

omnichannel approach can provide the best possible experiences for customers in automotive retailing. Furthermore, it can cater hybrid consumers by offering integrated services such as in-store pickups for online orders or showroom visits as part of the online purchasing process.

5.3 Demographic Profile of Consumers Using the Digital D2C Model

The demographic analysis confirms that age is a significant factor in determining the likelihood of adopting a digital D2C model for automotive purchases. Due to the cluster analysis, particularly Cluster 2, those aged 25-34 have the highest mean in purchase intention for the digital D2C model. The regression analysis associated with H3 reveals a clear age-related divide, with younger consumers being more inclined to use digital channels for purchasing cars. Conversely, with increasing age, people become less likely to engage with digital D2C models, as indicated by the negative correlation between age and purchase intention in the regression analysis. These findings are also consistent with the literature (Budde et al., 2020).

Regarding Gender distribution within the clusters, the digital D2C model appeals to male and female consumers. However, there is a slightly higher representation of males in the clusters who are more inclined towards D2C adoption. Nonetheless, the gender gap in digital D2C adoption is not as pronounced as in other sectors, indicating that the automotive industry's digital transformation appeals to a broad audience across gender lines. This trend may reflect the increasing importance of convenience and efficiency in automotive purchases, which appeal to male and female consumers.

Education level also plays a critical role in shaping consumer behavior towards the digital D2C model. The cluster analysis reveals that consumers with higher education levels, particularly those holding undergraduate and graduate degrees, are more likely to use the digital D2C model. This trend is particularly evident in Cluster 2, which comprises younger, highly educated individuals who exhibit the highest purchase intentions for cars via the digital D2C model.

Income level is another significant demographic factor influencing the adoption of digital D2C models. The cluster analysis indicates that while younger consumers with higher education are more likely to adopt the D2C model, their income levels vary. Cluster 2 (mean age around 25-34 years), which shows the highest inclination towards the digital D2C model, has lower income levels (around €1,500 - €1,999) compared to Cluster 3, which includes older (mean age around 35-44 years), higher-income (over €3,000) individuals who also demonstrate a strong interest in the D2C model. These findings suggest that while income does influence purchasing decisions, it is not the sole determinant of digital D2C model adoption. Younger consumers

with lower incomes might be more motivated by the potential cost savings and the convenience of online transactions, even if their purchasing power is relatively lower. On the other hand, higher-income consumers, especially those in Cluster 3, may be attracted to the D2C model's premium offerings and the ability to access exclusive or highly customized products.

6 Main Conclusions

With a particular focus on the German and Austrian markets, this thesis examines the revolutionary move in the car industry towards digital direct-to-consumer (D2C) models. Three core research questions are evaluated in this study: the factors influencing purchase intentions via the digital D2C model, the channel preferences of consumers, and the demographic profiles of those most likely to adopt the D2C model.

Furthermore, this study also reveals that a positive attitude towards online shopping results in a positive attitude towards digital D2C models, which is a crucial driver of consumers' willingness to purchase cars through the digital D2C model. As discussed in existing literature, as consumers become part of a segment more accustomed to online shopping, they are also more likely to consider purchasing high-value items like cars through digital channels.

Also, the age group emerged as a significant factor, with younger consumers showing a stronger preference for online car purchases than older demographics. Targeting younger audiences in digital marketing strategies is crucial, as seen by this age-related disparity.

Interestingly, the analysis found no significant relationship between car categories and the likelihood of purchasing through a digital D2C model. This suggests that whether a car is simple and inexpensive or complex and luxurious does not significantly influence consumers' decisions to purchase online. Hence, this finding implies that automotive manufacturers can potentially market a broad range of vehicles through digital channels.

Additionally, the study also highlighted the role of showrooming as a critical factor in enhancing consumer confidence in the digital purchasing process. The ability to physically inspect a car before completing an online purchase significantly boosts purchase intentions, particularly among older consumers. This finding supports the integration of physical and digital touchpoints in the automotive sales process, aligning with the omnichannel strategies suggested in the literature.

Furthermore, the analysis of consumer willingness to pay revealed that consumers generally exhibit a lower willingness to pay when purchasing cars online compared to traditional retail environments. This suggests that competitive pricing remains a crucial strategy for automotive manufacturers adopting the D2C model, as consumers expect cost benefits when shopping online.

The findings reveal that consumers in Austria and Germany exhibit distinct channel preferences depending on the phase of their purchasing journey. While online channels are increasingly favored for research, particularly among younger consumers, traditional retail channels remain the preferred choice for the actual purchase, especially among older demographics. This preference for offline purchases highlights the enduring value of physical interactions in the automotive buying process, suggesting that a hybrid approach combining online research with offline purchasing might be the most effective strategy for automotive manufacturers.

A demographic analysis confirms that age is a significant factor in determining the likelihood of adopting a digital D2C model for automotive purchases. Younger consumers, particularly those aged 25-34, are more inclined to use digital channels for purchasing cars, reflecting a generational shift towards online shopping. Another finding of this thesis is that while there is a slight gender disparity favoring male consumers, both genders show a growing interest in the digital D2C model. Additionally, higher education levels correlate with a greater likelihood of adopting the D2C model. Income level significantly influences D2C model adoption. Younger, highly educated consumers in the 25-34 age group show the highest interest in D2C models despite often having lower incomes. Their interest is possibly driven by cost savings and convenience. In contrast, older, higher-income individuals in the 35-44 age group are also drawn to D2C, likely due to premium offerings and customization options. This indicates that while income plays a role, it is not the sole factor in D2C adoption.

6.1 Managerial & Academic Implications

For managers in the automotive industry, these findings underscore the **necessity of developing robust digital sales channels while also maintaining the option for physical interactions**, such as showroom visits. The study suggests that targeting younger consumers through tailored digital marketing strategies could enhance the adoption of the digital D2C model. Moreover, the lack of a significant relationship between car categories and online purchasing decisions suggests that manufacturers can promote a diverse range of vehicles through digital channels, focusing on enhancing the overall digital experience.

Academically, this research contributes to the relatively unexplored area of digital D2C models in the automotive sector, particularly within the Austrian and German markets. It provides empirical data that fills gaps in existing literature, which has been inconsistent in determining which aspects of the customer journey should be digitalized.

6.2 Future Research & Limitations

While this study offers valuable insights, it is crucial to be aware of its limitations. The research is geographically limited to Austria and Germany, which may affect the generalizability of the findings to other markets. Additionally, the cross-sectional nature of the data collection limits the ability to observe changes in consumer behavior over time. One significant limitation is the age distribution of the participants, with only 2.31% of respondents falling within the 35-44 age range. This underrepresentation may skew the results and limit the applicability of the findings to this demographic, which is particularly relevant given the potential differences in online shopping behaviors across age groups. Furthermore, the participants were drawn primarily from the researcher's personal and professional network, which could introduce biases related to familiarity with the researcher or homogeneity in demographic backgrounds, potentially limiting the diversity and representativeness of the sample.

Future research could explore the adoption of digital D2C models in other regions, providing a broader perspective on the factors influencing digital car purchases. Additionally, the study could delve deeper into the impact of brand perception on purchase intentions in digital car sales, as brand strength may play a pivotal role in consumer trust and willingness to engage in high-value online transactions.

Further studies could also benefit from investigating consumer willingness to pay in more depth, particularly how it is influenced by different pricing. Longitudinal research tracking changes in consumer preferences as digital sales channels evolve, as well as the impact of emerging technologies like virtual reality showrooms or AI-driven customer service, could provide a more comprehensive understanding of the future of digital car sales.

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Appendix A - Semi-structured Interview

1. Introduction & demographics/geographics
    - Introduction of the participant: gender, age, marital status, place of residence, educational background, profession
    - Introduction to research topic

2. Online shopping behavior
    - How often do you shop online?
    - What are the product categories you shop online?
    - What is your opinion on online shopping?
    - What are in your opinion the main benefits of online shopping?
    - What are in your opinion the main disadvantages of online shopping?

3. Digital direct sales model (direct to consumer model - D2C)
    - Are you familiar with this model?
    - Have you already purchased through online through a D2C model?
    - What makes you consider purchasing online through a D2C model?

"DTC models empower brands to directly engage with their customers using digital channels and technologies, removing unnecessary costs from the transaction by eliminating the manufacturers' need to include retailers in the value chain. An example of a digital direct sales model is the approach taken by Tesla, Inc. Unlike traditional automotive manufacturers who sell through franchised dealerships, Tesla sells its vehicles directly to consumers through its own network of showrooms and online platforms. This approach allows customers to purchase cars directly from the manufacturer without the need for traditional dealerships as intermediaries."

    - What are your first impressions and thoughts about this model?
    - Have you ever heard or tried this model, and for which products and why?
    - Which advantages do you perceive from this model and why?
    - Which disadvantages do you perceive from this model and why?
    - How would you assume a user of this model? (characteristics)

4. Automotive behaviour
    - Do you own a car?
    - How many kilometers per year do you drive?
    - What car category best suits your personal needs? (e.g., compact car, station wagon, SUV, sports car, minivan, pick-up truck, etc.)
    - What are the main criteria for a purchase decision for cars? (price, space, eco-friendliness, brand, design, etc.)

5. Willingness to adopt
    - Imagine you could purchase your products online through a D2C model. Would you do so?
    - Which products could you imagine buying online via the D2C model?
    - Does the brand have an impact on your decision to use a D2C model?

6. Research shopping
    - Do you use different channels for different parts of the customer journey, and why? (eg. Searching on the internet and buying in-store or going to a showroom and buying online)
    - What channels do you use for searching products and why?
    - What channels do you use for purchasing products and why?

7. Willingness to pay
    - How much are you willing to pay at a car dealership
    - How much are you willing to pay to purchase online via the D2C model?

Appendix B – Qualtrics Survey

Start of Block: Block Introduction

Dear participant,
Welcome, and thank you for participating in this study at Católica Lisbon School of Business and Economics.
Your responses are anonymous and will contribute to academic research. Therefore, please read the provided information carefully and answer honestly since there are no correct or incorrect answers. The survey will take approximately 5 to 10 minutes, and the collected data will exclusively be used for research purposes.
If you have any questions regarding this survey, please feel free to contact me anytime: s-djagob@ucp.pt
By continuing, you agree to participate. Many thanks in advance!

End of Block: Block Introduction

Start of Block: Block Online Shopping Behaviour

Q1: How often do you shop online?

- ○ More than 1x per month (1)
- ○ 1x per month (2)
- ○ 1x every two months (3)
- ○ 2x to 3x per year (4)
- ○ 1x per year (5)
- ○ Less than 1x per year (6)
- ○ I never order online (7)

Q2: What kind of products do you usually purchase online? (choose all that apply)

- [ ] I don't order online (1)
- [ ] Groceries (2)
- [ ] Hygiene and personal care products (3)
- [ ] Clothing and accessories (4)
- [ ] Books (5)
- [ ] Sports equipment (6)
- [ ] Technology products (7)
- [ ] Other products (8)

_____

Q3: Which of the following options are in your opinion the main advantages of shopping online?
(please choose between 2 and 5 options)

- [ ] I can shop in the privacy of my home (1)
- [ ] I can shop whenever I want (2)
- [ ] Items from everywhere are available (3)
- [ ] Broader selection of products (4)

- [ ] I don’t have to wait to be served (5)
- [ ] To try a new shopping experience (6)
- [ ] The excitement to receive a package (7)
- [ ] I can custom-design products (8)
- [ ] I see no advantage in shopping online (9)
- [ ] Other (please fill in) (10) _____

Q4: Please indicate your level of agreement with the following statements, taking into consideration the digital purchase via online shops:

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
Using the Internet for shopping is attractive (1)	○	○	○	○	○
Using the Internet for shopping is worth it (2)	○	○	○	○	○
Using the Internet for shopping is pleasant (3)	○	○	○	○	○
Using the internet for shopping is a good idea (4)	○	○	○	○	○

End of Block: Block Online Shopping Behaviour

Start of Block: Block Automotive Shopping Behaviour & Preferences

Q5: Do you have a driving license?

- ○ Yes, I have a driving license (1)
- ○ No, I don't have a driving license (2)

Q6: Do you own a car?

- ○ Yes, I own a car (1)
- ○ No, I don't own a car (2)

Q7: What car category fit's your personal need best?

- ○ Micro Cars (very small cars designed for low cost and high maneuverability, suitable for city driving) (1)
- ○ Subcompact Cars (slightly larger than micro cars, designed for efficiency and affordability) (2)
- ○ Compact Cars (medium-sized vehicles that balance affordability with space and features) (3)
- ○ Mid-Size Cars (offer more space and features than compact cars, suitable for families) (4)
- ○ Full-Size Cars (large cars that offer maximum space, comfort, and typically, a higher range of features) (5)
- ○ Luxury Cars (often mid-size or full-size vehicles but with premium features, higher-quality materials, and advanced technology and performance) (6)

Q8: What are your main criteria, for a car purchase decision? (please rank the items below 1 most important to 7 least important)

_____ Performance (1)
_____ Brand (2)
_____ Technology (3)
_____ Quality (4)
_____ Safety and security (5)
_____ Economic reasons (Price, Income - Value) (6)
_____ Socio-cultural (a combination of values, ideas, attitudes e.g., environmental reasons) (7)

Control Question: To make sure you read this question carefully, please select "Strongly agree".

- ○ Strongly disagree (1)
- ○ Disagree (2)
- ○ Somewhat disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Somewhat agree (5)
- ○ Agree (6)
- ○ Strongly agree (7)

Q9: Imagine you find a new car that meets all your preferences, and you are now willing to purchase it.
How much would you be willing to pay for the car if you were purchasing it from a traditional car dealership?
(Please specify a price in thousand EUR)

0 20 40 60 80 100 120 140 160 180 200

At what price would you consider the car too expensive to consider purchasing?	
At what price would you consider the car to be so inexpensive that you would question its quality?	
At what price would you consider the car starting to become a good value for the money?	
At what price would you consider the car expensive, but you would still buy it because it meets your values?	

Q10: When considering purchasing a car, do you prefer to:
(please rank the items below 1 most important to 4 least important)
_____ Research online and buy in a store (1)
_____ Research in a store and buy online (2)
_____ Research and buy online (3)
_____ Research and buy in a store (4)

End of Block: Block Automotive Shopping Behaviour & Preferences

Start of Block: Block Digital D2C Model

Q11: Are you familiar with online purchases via the direct-to-consumer model?

- ○ Extremely familiar (1)
- ○ Very familiar (2)
- ○ Moderately familiar (3)
- ○ Slightly familiar (4)
- ○ Not familiar at all (5)

Text Digital D2C: ***"Direct-to-consumer models empower brands to directly engage with their customers using digital channels and technologies. An example of a digital direct sales model is the approach taken by Tesla, Inc. Unlike traditional automotive manufacturers who sell through franchised dealerships, Tesla sells its vehicles directly to consumers through its own network of showrooms and online platforms."***

Q12: Have you ever purchased a car online?

- ○ No (1)
- ○ Yes (2)

Scenario D2C: Imagine you find a car that fits all your preferences on the website of a well-known automotive manufacturer. They provide the possibility to perform the entire experience of purchasing a car online (there are no offline interactions).

Therefore, you receive the following benefits:
- **Exclusive Online Pricing**: Receive a discount exclusively through the online platform.
- **Customization Options**: Customize your car's color, engine, and add-ons like audio systems or safety features.
- **Fixed Price Guarantee**: The displayed online price is the final price; no haggling is required.
- **Flexible Ownership Options**: Options to lease, finance, or buy outright, with straightforward terms for each.
- **Convenient Delivery**: Free home delivery at your scheduled convenience.
- **Easy Cancellation**: Option to cancel without penalty before delivery.
- **Virtual Assistance**: Immediate online support for any inquiries regarding the car or purchase process.

Q13: Please indicate your level of agreement with the following statements, taking into consideration the entirely digital purchase of your new car via the direct-to- consumer model (D2C) presented to you:

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
Using the digital D2C model for purchasing a car is attractive (1)	○	○	○	○	○
Using the digital D2C model for purchasing a car is worth it (2)	○	○	○	○	○

Using the digital D2C model for purchasing a car is pleasant (3)	○	○	○	○	○
Using the digital D2C model for purchasing a car is a good idea (4)	○	○	○	○	○
I am interested in buying my car online via D2C model (5)	○	○	○	○	○
I would consider purchasing a car online via D2C model (6)	○	○	○	○	○
I intend to purchase a car online via D2C model (7)	○	○	○	○	○
I would see myself using the digital D2C model for my car purchase (8)	○	○	○	○	○

End of Block: Block Digital D2C Model

Start of Block: Block Showrooming

Scenario D2C + SR: Imagine now the same offer as above, but this time, you could visit a showroom beforehand to test and feel your potential new car and clarify outstanding questions with the showroom personnel.
The purchase of the car will still be online, on the website of a well-known automotive manufacturer, with the same benefits as above:

- **Exclusive Online Pricing**: Receive a discount exclusively through the online platform.
- **Customization Options**: Customize your car's color, engine, and add-ons like audio systems or safety features.
- **Fixed Price Guarantee**: The displayed online price is the final price; no haggling is required.
- **Flexible Ownership Options**: Options to lease, finance, or buy outright, with straightforward terms for each.
- **Convenient Delivery**: Free home delivery at your scheduled convenience.
- **Easy Cancellation**: Option to cancel without penalty before delivery.
- **Virtual Assistance**: Immediate online support for any inquiries regarding the car or purchase process.

Q14: Please indicate your level of agreement with the following statements, taking into consideration the digital purchase of your new car via the direct-to- consumer model (D2C) after the visit of a showroom:

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
Using the digital D2C model for purchasing a car is attractive (1)	○	○	○	○	○
Using the digital D2C model for purchasing a car is worth it (2)	○	○	○	○	○
Using the digital D2C model for purchasing a car is pleasant (3)	○	○	○	○	○

Using the digital D2C model for purchasing a car is a good idea (4)	○	○	○	○	○
I am interested in buying my car online via D2C model (5)	○	○	○	○	○
I would consider purchasing a car online via D2C model (6)	○	○	○	○	○
I intend to purchase a car online via D2C model (7)	○	○	○	○	○
I would see myself using the digital D2C model for my car purchase (8)	○	○	○	○	○

Q15: Please rank the reasons why you would like to visit a showroom before purchasing a new car online.

_____ To receive a lower price (1)
_____ To collect more product information (2)
_____ To make a more confident purchasing decision (3)
_____ To get professional expertise on the vehicle (4)
_____ To touch and feel the car (physical experience) (5)
_____ To test the drive a car (6)
_____ I see no need to visit a showroom before purchasing a car online (7)

Q16: How much would you be willing to pay for the car if you were purchasing it online on the website of a well-known automotive manufacturer via direct to consumer model? (Please specify a price in tousand EUR)

	0 20 40 60 80 100 120 140 160 180 200
At what price would you consider the car too expensive to consider purchasing?	
At what price would you consider the car to be so inexpensive that you would question its quality?	
At what price would you consider the car starting to become a good value for the money?	
At what price would you consider the car expensive, but you would still buy it because it meets your values?	

End of Block: Block Showrooming

Start of Block: Block Demographics

Q17: Which country do you currently live in?

- ○ Austria (1)
- ○ Germany (2)
- ○ Other (3)

Q18: How old are you?

- ○ Under 18 (1)
- ○ 18-24 years old (2)
- ○ 25-34 years old (3)
- ○ 35-44 years old (4)
- ○ 45-54 years old (5)
- ○ 55-64 years old (6)
- ○ 65+ years old (7)

Q19: Please specify your gender:

- ○ Male (1)
- ○ Female (2)
- ○ Prefer not to say (3)
- ○ Other (4)

Q20: What is your current employment status?

- ○ Employed (working for a third party) (1)
- ○ Self-employed (2)
- ○ Student (3)
- ○ Working student (4)
- ○ Unemployed, looking for work (5)
- ○ Unemployed, not looking for work (6)
- ○ Retired (7)
- ○ Unable to work (8)

Q21: What is your highest level of education completed?

- ○ Less than high school (1)
- ○ High school graduate (2)
- ○ Undergraduate degree (bachelor or equivalent) (3)
- ○ Graduate degree (Master or equivalent) (4)
- ○ Professional degree (PhD or equivalent) (5)
- ○ Other (please specify) (6) _____

Q22: What is your monthly income (net)?

- ○ Less than €500 (1)
- ○ €500 - €999 (2)
- ○ €1.000 - €1.499 (3)
- ○ €1.500 - €1.999 (4)
- ○ €2.000 - €2.499 (5)
- ○ €2.500 - €2.999 (6)
- ○ More than €3.000 (7)

End of Block: Block Demographics