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UNDERSTADING FINNISH COFFEE ENTHUSIASTS' PREFERENCES FOR SPECIALTY COFFEE - AN ARTISAN PRODUCT IN THE NEW FOOD MOVEMENT

Master's Thesis

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Abstract of master's thesis

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Abstract

Coffee, a globally coveted commodity, has long held a prominent place in Finland's consumption habits. Within it, specialty coffee can be seen as one phenomenon in the global new foods and beverages movement, artisan products, which highlighted small-scale production, meticulous craftsmanship, the utilization of locally sourced ingredients, and a steadfast commitment to natural and sustainable principles_Specialty coffee has its own audience, so-called coffee enthusiasts. Understanding how Finnish coffee enthusiasts make decisions when purchasing coffee beans is crucial for coffee producers and roasteries looking to excel in a competitive market. This study has two main objectives: (1) to identify the key attributes that Finnish coffee enthusiasts value most when evaluating and buying coffee beans and (2) to uncover distinct segments among Finnish enthusiasts with differing preferences for these coffee attributes.

To tackle the first objective, we employed Best-Worst Scaling (BWS), where participants evaluated sets of 11 tasks, each containing items they deemed most and least appealing. For the second objective, we used Latent Class Analysis (LCA) to discern latent consumer groups.

Expert interviews guided the selection of relevant survey attributes, which were then administered through an online survey shared across various social media channels and coffee enthusiast groups in Finland. The survey focused on four attributes: roast level, flavor profile, sustainable labels, and societal recommendations, with an additional item on discounts/promotions. The findings unveiled those societal recommendations ranked as the most valuable attribute among Finnish coffee consumers, closely followed by flavor profiles. Interestingly, roast level, sustainable labels, and promotions held less sway over their preferences.

LCA results identified four distinct consumer profiles: Social Savvy: This group highly values societal recommendations and is willing to pay more for their coffee; Dark Roast Eco-Champions: Enthusiastic about bold, dark-roasted coffee, they prioritize sustainability and peer recommendations; "Green" Bean Minimalists: Preferring light-roasted coffee, this group is less influenced by brand recognition or societal recommendations; Eco-Conscious Bargain Hunters: Open to promotions, they have diverse tastes and a willingness to explore different flavor profiles.

This study sheds light on the diverse landscape of coffee consumers, especially focused on coffee enthusiasts and in broader aspect, consumers of artisan products, in Finland, offering insights that open avenues for further research. Coffee production companies and related craft food and beverage companies can leverage this knowledge to tailor their strategies for different consumer groups, enhancing their ability to meet consumer preferences and reference points effectively.

Keywords coffee attributes, consumer reference, Finland, Best Worst Scaling, maxdiff, specialty coffee, artisan products, craft food movement

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Table of Contents

List of Tables

List of Figures

1 Introduction

1.1 Background

Finland has consistently demonstrated one of the world's highest per capita coffee consumption rates over the past several decades. As of the year 2022, the average coffee consumption per person in Finland stands impressively at 8.9 kilograms of roasted coffee (Clausnitzer, 2023). Despite not achieving the international recognition that other nations have for their coffee culture, coffee remains an integral part of Finnish society. It is primarily consumed within the confines of one's home or workplace, with coffee breaks being a cherished ritual. In Finland, these coffee breaks typically span between 10 to 15 minutes and hold legal status, being included in official working hours as regulated by law (Tyoelamanpelisaannot, 2021).

Concerning coffee bean preferences among Finnish consumers, the prevailing inclination leans towards light-roasted coffee, which constitutes a significant 80 percent of all coffee consumption (Korhonen, Paulig 2018). However, a noteworthy development in recent years has been the growing popularity of dark-roasted coffee (Pacifico, 2019). Finnish consumers display a keen sense of brand loyalty, often favoring established and familiar coffee brands. However, they do occasionally exhibit a willingness to explore alternative options, provided that these options do not markedly deviate from their customary choices (Taype, 2022).

A select few corporations overwhelmingly dominate the Finnish coffee market, most notably Paulig Oy and Meira. In the year 2014, Paulig Oy, a Finnish company and a prominent Northern European coffee and food producer, commanded a substantial two-thirds share of the coffee consumed in Finland (Nieminen & Puustinen, 2015). Fast forward to 2020, and the most trusted coffee brands in Finland include Juhla Mokka, Paulig, and Kulta Katriina (Clausnitzer, 2021). Notably, there has been a significant increase in the amount of tea and coffee enterprises operating in Finland from 2011 to 2020. This trend is particularly evident, with the number of such enterprises surging by 19.23 percent in 2019, followed by a continued increase of 16.13 percent in 2020 (Statista Research Department, 2023). Interestingly, in stark contrast to this expansion in enterprise numbers, the tea and coffee production in Finland witnessed a notable decline of 81.9 million euros, equivalent to a 21.16 percent decrease in 2019 compared to the year 2018 (Statista Research Department, 2023).

This divergence in trends signifies that while emerging independent coffee producers in Finland are striving to compete for market share, they face challenges stemming from economic shifts and changing consumer preferences. While the major players in the Finnish coffee production sector have the financial capability to conduct comprehensive market research, smaller enterprises often lack the resources to engage in such endeavors for the Finnish coffee market. This discrepancy in research capacity between large and small producers further contributes to the complexities of the industry.

In addition, the emergence of artisan and independent coffee producers is due to the rise of specialty coffee culture and the changes of consumers knowledge regarding the coffee industry (Van Der Merwe & Maree, 2016) The specialty coffee phenomenon is intricately linked to the broader global craft food and beverage movement that emerged in the late 20th century (Rivaroli et al., 2021b). The key distinction between artisanal craft products and their mass-produced, conventional counterparts lies in the former's inclination towards qualities such as small-scale production, meticulous craftsmanship, the utilization of locally sourced ingredients, and a steadfast commitment to natural and sustainable principles (Cirne et al., 2019). In the realm of specialty coffee, a notable distinction from traditional mass-produced coffee products lies in factors such as traceability, coffee processing, and roasting methods (Cirne et al., 2019). It is noteworthy that within this context, specialized industries frequently draw inspiration from each other, a phenomenon noted by Noa (2023), thereby fostering mutual growth and advancement. This is exemplified in the artisanal food movement plays a role in promoting sustainable development (Prados‑Peña et al., 2022) and spurring motivational purchasing behavior rooted in considerations of taste, health, and ethics (Cirne et al., 2019; Quintão & Brito, 2016b; Manzo, 2010).

At the heart of special coffee culture, the coffee enthusiasts and connoisseurs have been striving to discover high quality coffee beans and distinctive flavor profiles (Leokadia, 2023). In the scope of this study, the terms "coffee enthusiasts" and "connoisseurs" are used interchangeably, denoting individuals who possess a distinct passion for coffee as a commodity and demonstrate an elevated level of discernment in comparison to other consumers. This discernment, as outlined by Bourdieu (1984), Holbrook (1999), and Holt (1998), extends to their heightened awareness and appreciation of sustainability and ethical practices within the coffee industry. It's noteworthy that the coffee industry stands as a pioneer in championing and establishing benchmarks for certified sustainable products

(Giovannucci et al., 2010; Reinecke et al.,2012). This heightened discernment is often a result of their expertise or refined taste in the coffee marketplace.

This research initiative aims to bridge these gaps in understanding a glaring lack of research pertaining to the holistic preferences of Finnish consumers when it comes to coffee attributes. Specifically, the study will delve into the nuanced preferences of Finnish coffee enthusiasts, focusing on the fundamental aspects of coffee attributes, such as roast levels, flavor profiles, sustainability labels, and the influence of societal recommendations. By undertaking this comprehensive investigation, we hope to shed light on the intricate dynamics of the Finnish coffee market and provide valuable insights that can benefit both established and emerging players within the industry.

1.2 Research questions

The primary objective of this study is to investigate and explore the characteristics of Finnish coffee enthusiasts and their reference, at the same time, define whether there are distinct groups of coffee consumers based on their choices towards various coffee attributes. To achieve this aim, the research proposed the two following questions:

What are the preeminent attributes considered valuable by Finnish coffee enthusiasts when evaluating and purchasing coffee beans?

How do divergent segments of Finnish enthusiasts' manifest disparities in their preferences regarding these coffee attributes?

1.3 Structure of this thesis

This thesis included six sections which contribute substantively to the study. The initial section introduces background, an overview of research questions and motivation that led to the selection of research topic. The second section reviews theoretical literature and previous research on coffee consumption in Finland, coffee attributes and customer purchasing behavior; this extensive review of prior studies serves as the foundation which the survey is built upon. The third section presents research methodologies: expert interview, best-worst scaling method, Hierarchical-Bayes estimation, and latent class analysis with why and how the research methodologies shall benefits the study. The fourth section reveals the data collection approach: how the data is collected and processed, as well as how to ensure the reliability and accuracy of data collected. The fifth section presents sample descriptions and an in-depth exposition of research findings, complemented by a rigorous analysis of the results. The last section revisits the research questions and discusses the managerial implications, limitations, reliability, and validity of the study.

2 Literature review

2.1 The shift of customer reference under the parallel trend of craft beverage movement and specialty coffee

The craft beverage movement, a collective term encompassing beer, wine, spirits, cider, and non-alcoholic beverages, has played a pivotal role within the overarching craft and artisan food products movement. This movement, which has gained significant momentum from the late 20th century in the United States (Rivaroli et al., 2021b), represents a paradigm shift in consumer preferences. It gravitates towards products defined by characteristics such as small-batch production, meticulous handcrafting, utilization of locally sourced ingredients, and a commitment to natural and sustainable practices (Cirne et al., 2019).

Within this context, it's worth highlighting the interplay between various specialized industries, where they often draw inspiration from one another, as astutely observed by Noa in 2023. This dynamic not only fosters a sense of shared evolution and progress among these industries but also significantly contributes to the larger artisanal food movement.

The findings presented by Prados‐Peña et al. (2022) underscore the pivotal role played by artisanal products in promoting sustainable development, shedding light on their potential to instigate a positive shift in consumer behavior. This movement towards sustainability not only resonates with environmentally conscious consumers but also aligns with the growing importance of ethical consumption. Moreover, Cirne and his associates (2019), Quintão and Brito (2016b), and Manzo (2010) have conducted research that further corroborates the impact of artisanal products on consumer choices. Their studies reveal the intricate interplay between taste, health concerns, and ethical considerations in motivating purchasing behavior. The artisanal food movement serves as a fertile ground for these factors, offering a unique combination of flavors, health-conscious options, and ethical sourcing that consumers find increasingly appealing.

Within the spectrum of artisanal craft beverage products, craft beer has garnered considerable attention from academic researchers and consumers alike. This fascination stems from the intriguing dynamics of consumer behavior in this specific context (Carbone & Quici, 2020; Garavaglia, 2020). It is notable, however, that while the academic spotlight has shone brightly on craft beer, a substantial gap exists in comprehensive studies examining consumer behaviors across a broader spectrum of craft products (Garavaglia & Mussini, 2020).

Within this landscape, specialty coffee has established itself as a distinctive niche which “represent the most vibrant artisanal beverage scene” (Lee, 2021). Moreover, although the specialty coffee sector originally emerged as a niche within the coffee industry, it has experienced significant expansion since the 1980s and, as of the 2000s, has consistently held a prominent position in retail sales (Cassia, Fattore, & Paleari, 2006). This growth underscores the profound importance and influence of specialty coffee within the broader coffee industry.

There are several definitions of specialty coffee in the market, however, under the scale of this thesis, the official definition is from the Specialty Coffee Association White Paper. According to the Specialty Coffee Association White Paper (2021), specialty coffee is aptly described as a coffee or coffee experience recognized for its distinctive attributes. These attributes imbue it with significant added value in the marketplace. Specialty coffee has evolved in parallel with the broader craft beverage movement and has now become a global social phenomenon. It finds a fervent following among coffee enthusiasts—consumers whose behaviors are driven by an intense passion for taste, an unceasing quest for connoisseurship, and ethical considerations encompassing corporate social responsibility and sustainability (Ramírez-Correa et al., 2020; Cirne et al., 2019).

Intriguingly, these coffee enthusiasts have formed a subculture characterized by their shared devotion to the pursuit of coffee excellence and distinctive experiences (Manzo, 2010). This subculture has prompted research into various dimensions of their consumption social behavior, including ethical considerations, corporate social responsibility, and sustainability (Cirne et al., 2019; Lekakis, 2013). This subculture's existence, replete with its discerning tastes and unwavering pursuit of distinction, dovetails neatly with the overarching trend in the craft food industry, which is witnessing a surge in informed and enlightened consumer choices (Johnston & Baumann, 2010) which has been evolving market references (Quintão & Brito, 2016).

Consequently, this research embarks on a compelling journey to unravel the intricacies of the coffee enthusiast's references in Finland. The primary aim is to explore the multifaceted behaviors and underlying attributes in which reveals a fascinating intersection where cultural appreciation and consumer trends meet.

2.2 Coffee production in Finland

In the context of this thesis, coffee production in Finland pertains specifically to coffee roasting, as the country's geographical location at a northern latitude and its cold climate inherently preclude the possibility of coffee cultivation. The emergence and progression of the coffee roasting industry in Finland have been influenced by a multitude of factors, notably the nation's deep-rooted tradition of coffee consumption and the significant references made by consumers.

Significantly, when delve into the roasted coffee volume in Finland over the span of a decade, from 2010 to 2020, a noteworthy and consistent trend of decline becomes evident. This decline is particularly striking, with production volumes witnessing a significant reduction from 55,578 tons in 2010 to 41,324 tons in 2020, as meticulously illustrated in Figure 1.

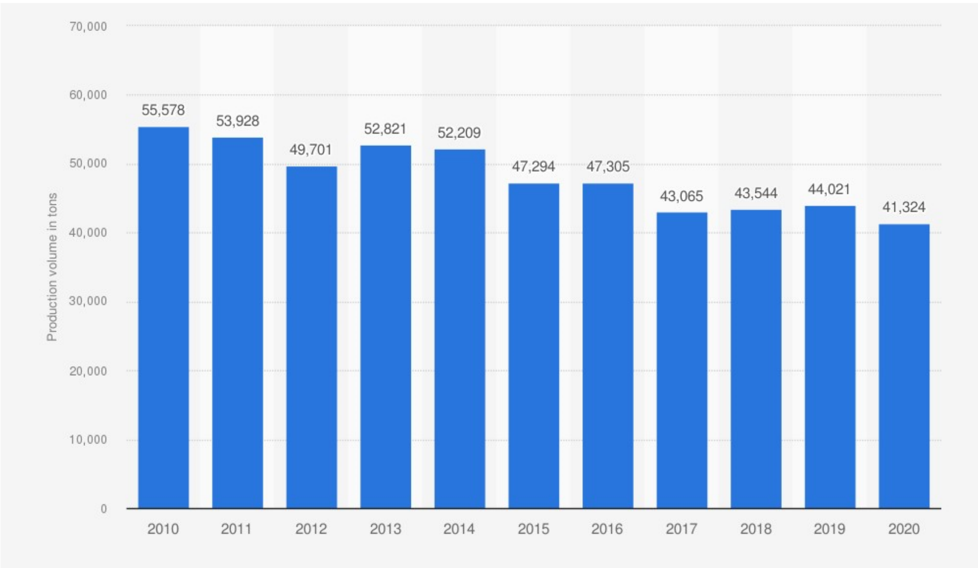

Figure 1. Production volume of roasted coffee in Finland from 2010 to 2020 (in tons).

This declining trajectory in roasted coffee production merits careful consideration, as it carries several implications for the Finnish coffee industry. While the data specifically focuses on roasted coffee and does not encompass decaffeinated varieties, it raises pertinent questions about the factors contributing to this sustained decrease in production.

Furthermore, it is crucial to place this trend in the context of broader global coffee consumption patterns. Over the same period, the global coffee landscape has witnessed a surge in demand for decaffeinated coffee and the convenience of capsule-based coffee systems. These trends, mirrored to some extent in Finland, could be influencing the production dynamics of the Finnish coffee industry.

In examining the roasted coffee production in Finland, Figure 2 paints a clear picture of the trends observed over the specified period. The pinnacle of production value was attained in 2012, reaching an impressive 361.14 million euros. However, this zenith was followed by a downward trajectory in subsequent years, with a noticeable decline until 2015.

A brief respite in this descent occurred in 2015, as production value saw a modest resurgence, peaking at 333.4 million euros. Regrettably, this upswing was not sustained, and the production value has been on a consistent decline since that point. By the year 2020, the roasted coffee production had dwindled to approximately 268.48 million euros, marking a significant shift from its peak in 2012. This fluctuation in production value underscores the dynamic nature of the roasted coffee industry in Finland, with various factors influencing its economic landscape.

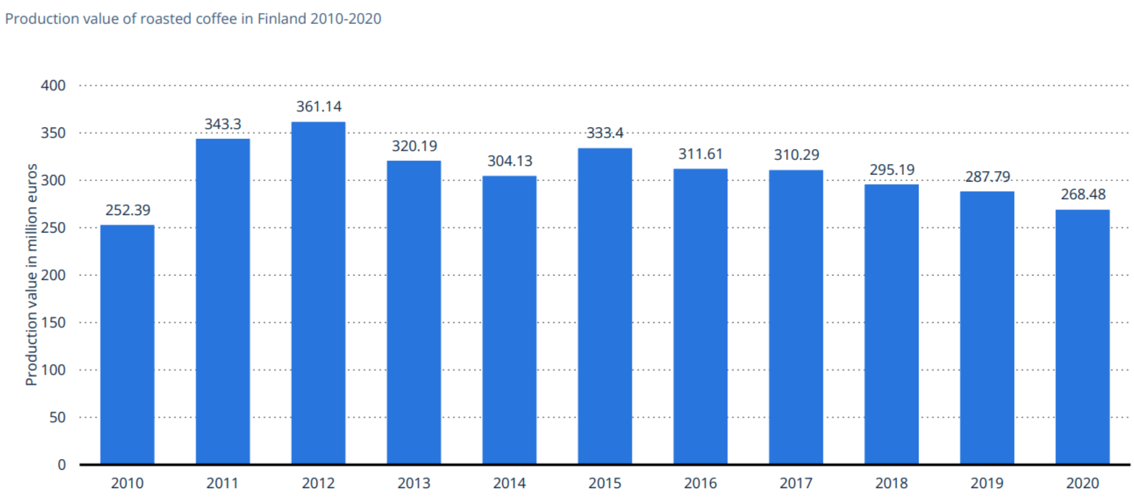

Figure 2. Production value of roasted coffee in Finland from 2010 to 2020 (in million euros).

When it comes to coffee production enterprises in Finland, their presence has historically been quite modest in comparison to other markets. It is worth noting that back in 2011, there were only seven tea and coffee processing companies in Finland. However, this landscape has experienced significant transformation over the years. By the year 2020, the number had surged to a total of thirty-six tea and coffee processing enterprises.

While this figure may seem relatively small when viewed through an international lens, it's important to recognize the remarkable growth that has taken place within the span of a decade. The number of such enterprises in Finland has multiplied by more than fivefold in just ten years, demonstrating an impressive rate of expansion. This trend underscores the increasing interest and participation of various entities in the coffee production sector within Finland. As a result, the concentration of coffee production in Finland has been on a downward trajectory, leading to a more diverse market landscape.

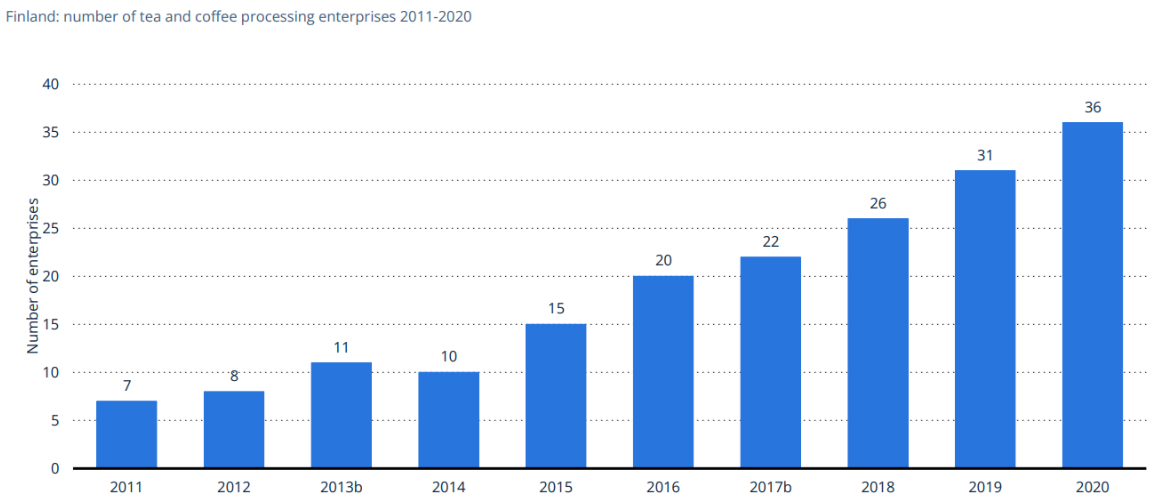

Figure 3. Number of enterprises in the processing of tea and coffee industry in Finland (2011-2020)

2.3 Finnish coffee market

Coffee, one of Europe's most widely consumed hot beverages and a pivotal global commodity, holds an undisputed reign in Finland's hot drink landscape. Within the Finnish context, coffee's prominence goes beyond mere popularity; it serves as a cornerstone of the nation's hot beverage culture. Coffee's significance extends deep into the daily lives and social fabric of Finland, offering a unique window into the country's distinct coffee culture and the preferences of its populace.

Looking ahead, the hot beverage market in Finland is poised for growth, with a projected increase of 88.5 million euros (increased 4.22 percent) in coffee-related revenue expected between 2023 and 2025. By 2025, the anticipated revenue is set to reach a substantial 2.2 billion euros (Clausnitzer, 2023). In contrast, the revenue of the coffee industry in Finland has exhibited fluctuations between 2012 and 2022. However, a notable shift is anticipated, with steady growth projected from 2023 to 2025, as illustrated in Figure 3.

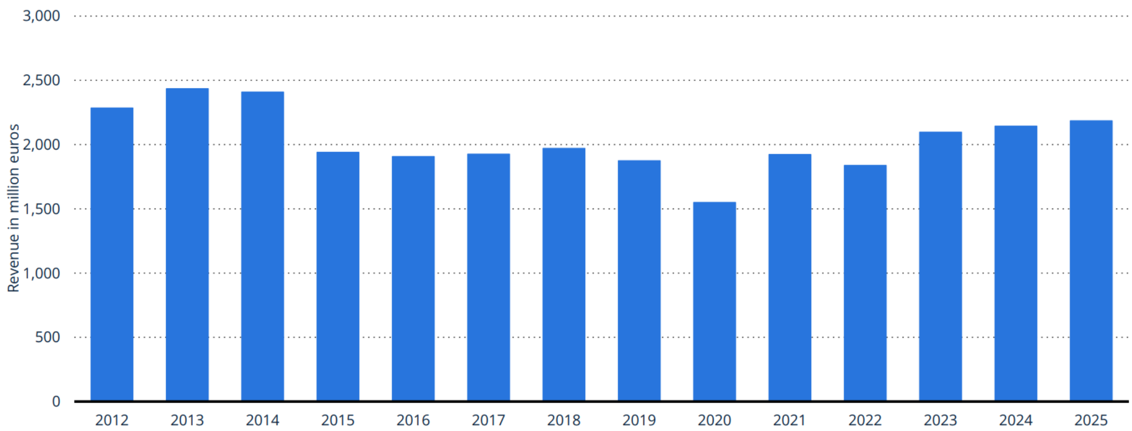

Figure 4. Revenue of coffee market in Finland from 2012 to 2025 (in million Euros).

Regarding the price dynamics of coffee, there has been a noticeable degree of fluctuation between 2012 and 2020 in Finland, followed by a steady and consistent increase thereafter. Projections suggest that this upward trajectory in coffee prices is set to continue through the year 2025, as depicted in Figure 4.

A comprehensive categorization of coffee retail prices in Finland is provided by Finnpartnership (2017), which delineates three primary segments: the upper-end, the middle-end, and the lower-end. The upper-end segment is defined by price ranges spanning from 30 euros to 67.70 euros per kilogram. The middle-end segment encompasses pricing levels ranging between 12 euros and 29 euros per kilogram, while the lower-end segment is characterized by prices ranging from 6 euros to 12 euros per kilogram.

Furthermore, it is worth highlighting that, as exemplified in Figure 5, the average price of one kilogram of coffee in 2017 stood at 36.47 euros. This figure underscores the predominance of coffee falling within the upper-end price range within the Finnish market.

This categorization framework serves as a valuable tool for comprehending the intricate pricing structure within the Finnish coffee market, facilitating in-depth analyses and insights into consumer preferences and market dynamics.

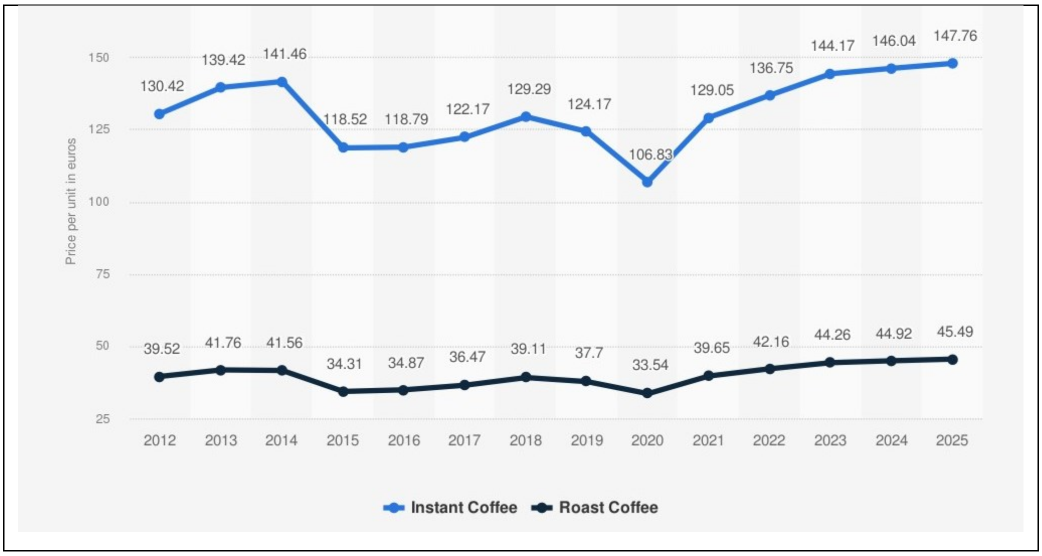

Figure 5. Price per unit of coffee in Finland from 2012 to 2025, by segment (in euros)

Besides, it is noticeable that the shares of coffee consumers by age in Finland are distributed increasingly by age as illustrated in Figure 6 below. A mere 8.58% of coffee consumers are from 18 to 24 years old. Remarkably, the most substantial cohort of coffee consumers in Finland falls within the 55 to 64-year age bracket, constituting a substantial 24.65% of the total. There is relatively limited disparity in the prevalence of coffee consumption across the other age groups, with 21.38% represented by individuals aged 25 to 34, 22.73% by those aged 35 to 44, and 22.66% by those aged 45 to 54.

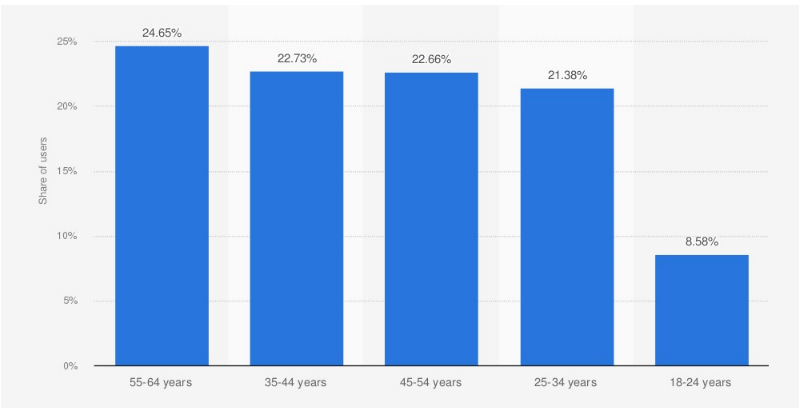

Figure 6. Share of users in coffee in Finland in 2021, by age

2.4 The theory of coffee consumption and purchasing behavior

2.3.1 Coffee consumption and purchasing behavior research.

A comprehensive and methodical exploration of consumer research on coffee has been previously undertaken, guided by the overarching objective of identifying and categorizing the motivations, references, and distinctive characteristics that shape coffee consumption and purchasing behavior. This systematic literature review was conducted by Samoggia and Riedel in 2018, yielding valuable insights into the multifaceted world of coffee-related consumer choices.

Within the ambit of this review, several key determinants of coffee consumption and purchasing behavior were discerned as illustrated in Figure 7. These determinants encompassed a spectrum of factors, ranging from personal references to economic attributes, coffee-specific characteristics, the context in which coffee is consumed, and socio-demographic considerations. Notably, the category of coffee attributes emerged as a central pillar within this framework, encompassing an array of intrinsic and extrinsic dimensions that exert a significant influence on consumer decisions.

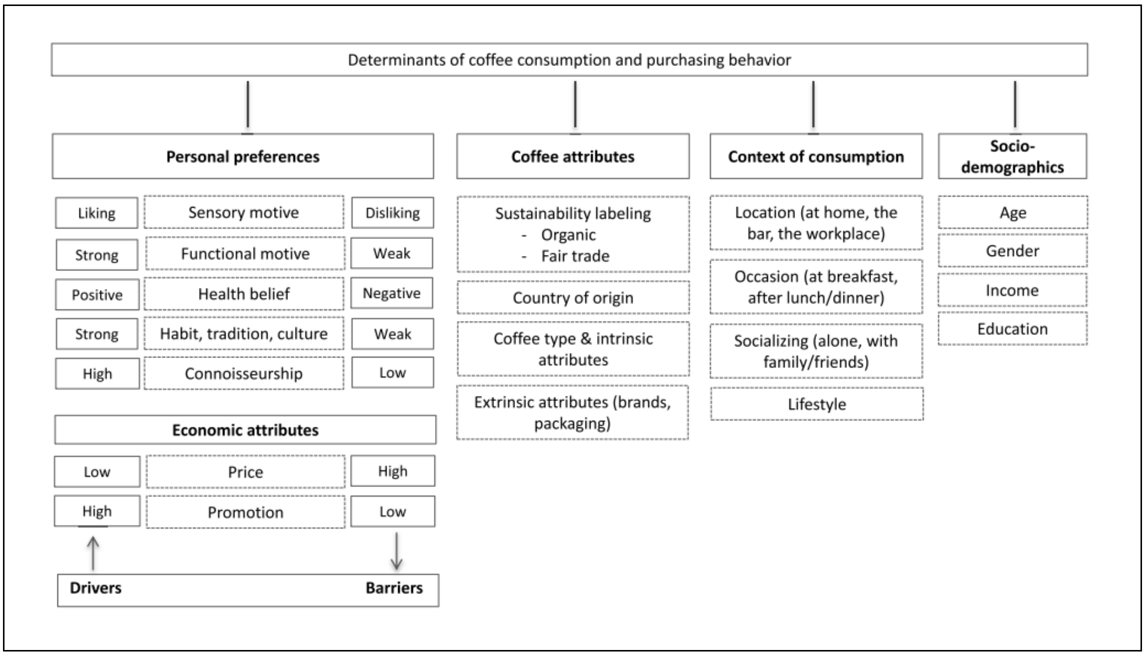

Figure 7. Factors influencing consumer behavior towards coffee

Among the coffee attributes under scrutiny, sustainability labeling occupied a prominent position. This category encompassed designations such as "organic" and "fair trade," denoting ethical and environmental considerations in coffee production. However, intriguingly, despite the extensive attention sustainability labeling has received in academic discourse, its relative importance to consumers appears to be somewhat subdued when contrasted with other attributes. Empirical research, notably that conducted by Van Loo et al. (2015), has shed light on this phenomenon. Their findings indicate that sustainability labeling, while undoubtedly significant, does not occupy the zenith of consumer priorities when making coffee-related choices. Instead, consumers often assign greater weight to attributes such as flavor, geographic origin, roast level, promotional offers, package volume, and even brand identity.

This systematic review underscores the intricate interplay of factors that underlie coffee consumption and purchasing behavior. While sustainability labeling holds undeniable value within the broader context of ethical and environmental considerations, it does not eclipse the multifarious array of other attributes that wield sway over coffee aficionados' preferences (Samoggia & Riedel, 2018). This nuanced perspective on consumer behavior within the coffee realm serves as a foundation upon which subsequent research, such as the current study, can build to further enrich our understanding of the intricacies of coffee choice and consumption.

Concurrently, there has been a noticeable evolution in the trajectory of researchers' interests concerning coffee consumer behavior. This transition unfolds as a timeline, with distinct focal points delineating the shifting tides of academic curiosity. Prior to 2010, the spotlight was rigidly fixed on the issue of fair trade within the coffee industry, serving as a paramount area of investigation. However, as the years progressed, the landscape of scholarly attention began to shift. Around 2012, a new wave of emphasis emerged, directing research inquiries toward the realms of coffee stores, brand dynamics, and the intricate tapestry of consumer experiences within the coffee sphere. This era witnessed an exploration of the nuances that define the consumer-retailer relationship and the intricacies of brand loyalty in the context of coffee. However, the trajectory of academic curiosity did not remain stagnant.

In recent years, there has been a discernible surge in studies that delve into the motives underpinning coffee consumption, the diverse contexts in which coffee is savored, and the phenomenon of coffee drinking as a lifestyle choice. This new wave of exploration has cast a spotlight on the broader sociocultural dimensions of coffee, revealing it to be a vessel through which individuals express their identities and affiliations.

However, despite this multifaceted evolution in coffee consumer behavior research, a conspicuous gap remains. The realm of consumer references in coffee attributes has been underexplored. This gap can be attributed to the inherent variability and idiosyncrasies that characterize consumers' references, which tend to be deeply rooted in personal habits, cultural backgrounds, and national traditions (Sousa et al., 2016). This complexity has rendered the study of consumer references in coffee attributes a challenging endeavor.

Moreover, it is noteworthy that consumers who regularly partake in coffee consumption harbor heightened expectations, particularly in the realm of sensory analysis. These expectations are not static but rather malleable, susceptible to influence by external information. Consequently, the information available to consumers can significantly modulate their sensory perception, thereby shaping their preferences and judgments in the realm of coffee (Bressani et al., 2021).

2.3.2 Coffee Attributes

As previously emphasized, the core focus of this research delves into the foundational dimensions of coffee attributes, encompassing roast levels, flavor profiles, sustainability labels, and the impact of societal endorsements. Consequently, it becomes imperative to provide precise definitions for each of these attributes within the specific context of this study:

- The roast level of coffee denotes the degree to which coffee beans are subjected to the roasting process, a critical determinant of the resultant flavor, aroma, and overall quality of the roasted beans (Aliah & Diana, 2015, Flament & Bessière-Thomas, 2001). Roast levels are typically classified into three or four categories, encompassing the light, medium, medium-dark, and dark spectrum. It is important to recognize that the precise definitions of these roast categories may exhibit some variation among individual roasters. For instance, what is considered a medium roast level in Italy might align more closely with a dark roast level in Nordic countries.

- The realm flavor profiles encompass a rich tapestry of sensory experiences which are composed by volatile and non-volatile compounds in coffee (Seninde & Chambers, 2020, Flament & Bessière-Thomas, 2001). The relationship between taste transformation and connoisseurship is also an interesting topic arising within craft beer and coffee industry (Quintão et al., 2017; Maciel & Wallendorf, 2016).

Within this domain, respondents were prompted to explore and identify their preferences among distinct flavor profiles which is also one of the interests of coffee drinkers (Sousa et al., 2016; Van Loo et al., 2015). These profiles span a spectrum of delectable notes, including the enticingly “fruity and floral”, the comforting and familiar “chocolate and nutty”, and the adventurous and exotic “funky and exotic”. Each of these flavor profiles offers a unique and nuanced coffee tasting journey, catering to a diverse range of palates and preferences among the participants.

- Sustainability labels serve as discernible markers, indicating the ethical and environmental considerations associated with the coffee product (Basu & Hicks, 2008). Sustainability labels on coffee packs encompass a range of designations, each signifying a commitment to responsible and eco-conscious practices in coffee production. These labels provide consumers with valuable information about the coffee’s origins, cultivation methods, and ethical sourcing practices, empowering them to make informed choices aligned with their values and environmental concerns. Regarding artisan goods, the presence of sustainable attributes in artisan products exerts a favorable impact on consumers' buying intentions, as demonstrated by Prados-Peña and colleagues in their 2022 study (Prados-Peña et al., 2022).

- The influence of societal endorsements extends to the dynamics of brand recognition and personal recommendations within the realm of consumer behavior. Personal recommendations from friends and family also contribute significantly to the brand's identity and play a vital role in molding both consumer loyalty and trust Alldredge & Grimmelt, 2021, Kim & Lee, 2017). This aspect encompasses the extent to which consumers are acquainted with specific coffee brands and whether these brands have been personally recommended by individuals within their social networks. The impact of societal endorsements in this context signifies the power of personal connections and brand familiarity in shaping consumer preferences and choices. It delves into the role that social interactions and recommendations from trusted sources play in guiding consumers toward coffee brands, underscoring the interplay between interpersonal relationships and consumer decision-making.

In the context of Finland, a few notable observations have emerged concerning coffee consumers, particularly regarding their personal references. One striking finding centers around the prominence of roast level as a focal point of discussion among Finnish coffee enthusiasts. Finnish coffee is renowned for its exceptionally light roasting, a characteristic that sets it apart from the darker roasts typically found in Southern and Central Europe. In fact, Finnish coffee is renowned as one of the lightest roasts globally. Interestingly, despite this preference for lighter roasts, there has been a noteworthy surge in the popularity of dark-roasted coffee in Finland. This trend has resulted in a significant growth in the consumption of dark-roasted coffee, even though light-roasted varieties continue to account for a substantial 80 percent of all coffee consumed in the country (Korhonen, J. 2018). This evolution in roast preferences within Finland serves as a testament to the dynamic and ever-evolving nature of coffee consumption habits, even in a nation known for its affinity for lighter roasts.

Despite the significance of coffee in Finnish culture, there haven't been many comprehensive studies that delve deep into the intricacies of consumer references in coffee attributes. This lack of research leaves a gap in our understanding of why certain attributes like roast level, flavor profiles, or sustainability labels matter to Finnish consumers. Understanding consumer references in coffee attributes is not just academically interesting but also has practical implications. Policymakers, coffee producers, and marketers can benefit from insights into what drives Finnish consumers' choices. This knowledge can inform marketing strategies, product development, and sustainability initiatives.

2.5 Summary of literature review

This literature review focuses on coffee production and consumption in Finland, highlighting key trends and factors shaping the country's coffee landscape. Finland's geographical location and cold climate make it unsuitable for coffee cultivation, so the focus here is on coffee roasting. The emergence of the coffee roasting industry in Finland is influenced by the nation's deep-rooted coffee consumption tradition and consumer preferences.

Coffee holds a central place in Finnish culture, serving as a cornerstone of daily life and social interactions. The hot beverage market in Finland is expected to grow, with a projected increase in coffee-related revenue between 2023 and 2025. Coffee prices in Finland have fluctuated between 2012 and 2020 but have been steadily increasing since then, with a projected upward trajectory through 2025. Coffee consumers in Finland are predominantly in the 55 to 64-year age bracket, while other age groups show relatively similar consumption rates. Meanwhile the production volume of roasted coffee in Finland declined consistently from 2010 to 2020, dropping from 55,578 tons to 41,324 tons. Notably, this figure excludes decaffeinated varieties, while global trends show increasing demand for decaffeinated and capsule coffee. Finnish coffee is known for its light roast, but there’s a growing popularity of dark-roasted coffee in the country, even though light roasts continue to dominate. This shift reflects the dynamic nature of coffee consumption habits in Finland.

Academic interest in coffee consumer behavior has evolved over time. Earlier research focused on fair trade, then shifted to explore coffee stores, brand dynamics, and consumer experiences. Recently, there’s been increased attention on the sociocultural dimensions of coffee consumption as a lifestyle choice. Despite the evolving research landscape, there’s a gap in understanding consumer references in coffee attributes. These references are influenced by personal habits, cultural backgrounds, and national traditions, making them challenging to study. Additionally, consumers’ sensory perceptions and preferences are influenced by available information.

Under the scope of this study, it focuses on four key coffee attributes: roast level, flavor profiles, sustainability labels, and societal endorsements. Roast level refers to the degree of roasting, flavor profiles encompass different sensory experiences, sustainability labels indicate ethical and environmental considerations, and societal endorsements explore the role of social connections in consumer decision-making.

In summary, this literature review provides valuable insights into the complex world of coffee production and consumption in Finland, emphasizing the importance of understanding consumer preferences and trends in this unique coffee culture. The limited research on Finnish consumer references in coffee attributes presents an opportunity for future studies to explore this fascinating area further. A more profound understanding of why Finns make specific choices when purchasing coffee can provide valuable insights into the dynamics of the Finnish coffee market and offer lessons for other regions with unique coffee cultures.

3 Research methodology

3.1 Best-worst scaling method

This study employs best-worst scaling as the primary data analysis method. Best-Worst Scaling (BWS) is a research method for evaluating the priorities of individuals. It asks the respondent to identify in a set of alternatives offered the least and most valued item– BWS is related to choice-based conjoint analysis, which also ask to choose the best among alternatives (product profiles) “This method was originated by Jordan Louviere in 1987 during his tenure at the University of Alberta, as indicated by Flynn and Marley (2014). This method was developed to overcome some limitations of traditional rating or ranking scales, offering a more nuanced and robust way to capture individuals’ preferences. The BWS method offers a solution to a common drawback of traditional ranking or rating scales. In conventional approaches, respondents often exhibit a tendency to gravitate toward neutral data points or assign equal ratings to multiple items. This poses a challenge for researchers in discerning the relative preferences or rankings of these items (Flynn and Marley, 2014).In a typical BWS study, respondents are presented with sets of items or attributes, for example, product features, brand characteristics, or policy attributes, and are asked to choose the most and least valued item from each set. This process is repeated across multiple sets that are planned with design of experiments. After respondents complete all the questions, it becomes feasible to establish a hierarchical ranking of the items, both on an individual and group level. Therefore, by requiring respondents to make both the best and the worse choices, BWS captures relative preferences and provides more discriminating data and avoid neutral data (Auger et al., 2006). The results are typically analyzed using various statistical techniques, such as logit or latent class models and hierarchical bayes estimation, to generate the underlying preferences and priorities of respondents. To be specific, the data collected from BWS is analyzed to calculate utility scores for each item studied. These scores reflect the relative importance/value of each item within the context of the study.

BWS offers several statistical information advantages over other preference measurement methods (Finn & Louviere, 1992). One of its primary advantages is that it can handle many items or attributes simultaneously, making it suitable for complex decision-making scenarios. It provides a more robust and interpretable measure of relative preference. In addition, it allows for the estimation of individual-level utilities and segment-level preferences. This method is versatile and can be applied in various contexts where values of different items need to be assessed. The application of BWS can be found in a wide range of fields, including marketing research (for example, product feature prioritization), healthcare (for example, patient preferences for treatment options), transportation (for example, mode choice modeling), and public policy (for example, policy attribute prioritization).

Theoretically, Best-Worst Scaling based on Discrete Choice Experiment (DCE) framework which draws its foundation from the principles of random utility theory (RUT). At its essence, RUT is grounded in the notion that individuals are rational decision-makers, aiming to maximize their utility based on the choices available to them (Louviere et al., 2013; Thurstone, 1927). The mathematical representation of an individual's utility function is as follows:

$$U = V + \varepsilon$$

In the formula above, the utility function is composed of two main components: the deterministic part, denoted as 'V,' and the stochastic element, represented by 'ε,' commonly referred to as random error. It is generally accepted that these random errors (ε) are independent and conform to either the Gumbel distribution or the Type I extreme value distribution, as suggested by Hu (2005).

3.2 Hierarchical-Bayes estimation

It recognizes that in BWS surveys, respondents may occasionally provide choices that appear contradictory or nonsensical. This can arise due to various reasons, such as respondent fatigue, misunderstanding of the task, or even random selection (Ku et al., 2015b). Hierarchical-Bayes estimation method, based on Bayesian statistical principles, serves as a sophisticated approach employed to mitigate the challenges posed by unqualified responses in BWS surveys. In the context of BWS, unqualified responses refer to participant selections that are inconsistent or do not align with the principles of rational choice, which is fundamental to the methodology.

The method utilizes a hierarchical model that incorporates both individual-level and population-level parameters. Individual-level parameters capture each respondent's unique preferences and tendencies, while population-level parameters account for shared patterns across respondents. Next, an estimation is conducted to measure the extent of variation between an individual's responses and the sample averages, aiming to identify any inconsistencies, as explained by Orme (2019).

Sawtooth Software, which is the chosen analytic tool for this study, displays the Root-Likelihood (RLH) for each respondent. That tells how well the estimated values fit the data the respondent provided. It can be used also 'RLH values span from 0 to 1. Higher values signify good fit, while lower values imply the opposite'.

The RLH metric is a valuable tool for pinpointing and excluding "bad" respondents from the dataset slated for analysis. The precise threshold for RLH scores is contingent upon the number of attributes encompassed in the survey, as described by Orme (2019). Essentially, it helps researchers identify respondents whose responses may not be reliable due to careless or random decision-making, ensuring that the subsequent analysis is based on data from more reliable participants.

3.3 Latent class analysis

Latent class analysis (LCA) is a sophisticated statistical method employed to uncover hidden structures or patterns within a dataset. Its primary purpose is to identify subgroups or classes of individuals or observations that exhibit similar characteristics, behaviors, or preferences, even if these groups are not explicitly observed or defined in the data. This makes LCA particularly useful when dealing with complex datasets where the underlying structures are not immediately apparent.

It shares close ties with cluster analysis, a method used to identify groups of cases based on observable data and, in some cases, assign those cases to specific groups. The inception of LCA dates to 1950 (Weller et al., 2020), and over time, it has undergone various refinements and enhancements. Both LCA and cluster analysis employ scoring patterns across datasets to categorize and segregate the sampled population into relatively homogenous groups or classes. Nonetheless, several distinctions set LCA apart from cluster analysis.

The version of LCA we employ is specifically designed for the clustering of choice data.it calculates the probabilities of a member belonging to a particular class without imposing strict boundaries. This probabilistic nature allows for a nuanced understanding of group membership, acknowledging that individuals may belong to multiple classes to varying degrees. To avoid the potential issue of converging to local optima, it is essential to perform the clustering process multiple times for a specified number of clusters. When it comes to identifying the ideal solution in scenarios where the cluster count is uncertain before analysis, the approach involves adjusting the number of clusters while relying on consistent information criteria. These criteria encompass AIC (Akaike Information Criterion), CAIC (Consistent Akaike Information Criterion), BIC (Bayesian Information Criterion), and aBIC (adjusted Bayesian Information Criterion), with a particular focus on the Akaike Information Criterion (CAIC).

The final solution is chosen to minimize the CAIC value while also being managerially interpretable. Thus, LCA solutions are not just mathematically derived; they are also chosen based on managerial interpretability. This means that the resulting classes are meaningful and actionable, making them valuable for decision-making. The concept of managerial interpretability centers around the requirement for discernible distinctions in segment utility patterns that can be readily explained (DeSarbo et al., 1995).

LCA which is applied in a BWS or choice based conjoint analysis data was implemented by Sawtooth Software. This software runs LCA with different starting points to carry out the estimation for varying numbers of groups. In practice, running LCA involves specifying first the number of latent classes you believe exist in the data (or trying different values), then the software estimates the item values for each of the groups as well as the memberships for the respondents using maximum likelihood estimation. Then the goodness of fit and interpretability of the resulting clusters are assessed for all the best solutions generated. The choice of the optimal number of classes often involves a trade-off between model fit and interpretability, and this is where information criteria come into play. The responsibility for identifying the optimal option lies with the researchers, who must assess the information criteria generated by LCA.

In summary, Latent Class Analysis is a powerful statistical tool that helps researchers uncover hidden patterns in data, segment populations, and make informed decisions. Its ability to handle mixed data types, provide probability-based insights, and assist in model selection makes it an asset in various fields, from market research to social sciences.

3.4 Expert interview

Expert interviews, a widely recognized and applied data collection method, offer researchers the unique opportunity to tap into the reservoir of knowledge possessed by individuals esteemed as experts in their respective fields. These interviews serve the dual purpose of exploring, systematizing, or even generating new theories (Bogner & Menz, 2009), and they are particularly effective in accessing specialized domain knowledge (Bogner et al., 2009; Döringer, 2021). In the context of this master's thesis project, expert interviews were not only cost-effective but also time-efficient, making them a fitting choice for capturing the implicit and holistic specialized knowledge required.

However, it is essential to acknowledge a limitation associated with the expert interview method, namely, the ambiguity that surrounds the definition of an expert. This ambiguity can potentially impact the reliability of the information obtained. To qualify as an expert, a candidate must satisfy a set of specific criteria, including educational qualifications, skills, relevance to the research topic, work experience in the subject matter, the quality of prior expert judgments, public recognition, and the ability to provide objective assessments (Libakova et al., 2015). In alignment with I. Ya. Steinber''s (2011) categorization, there are four distinct types of informants in expert interviews: "typical expert, key expert, theoretical expert, and false expert". Among these categories, key experts stand out as particularly valuable contributors, possessing developed analytical thinking and the capacity to reflect on research topics while generating independent conclusions (Steinberg, 2011), which is employed in this study's expert interviews.

To facilitate expert interviews, the study employed the versatile and widely utilized semi-structured interview method. This approach is a cornerstone in social science research, primarily when the researcher seeks to collect valuable and nuanced data (Bernard, 1988). It also serves as a valuable preliminary step before the design of comprehensive surveys (Wholey et al., 2010).

The semi-structured interview can be aptly described as a "conversation with purpose" (Burgess, 1984) or, as more recently coined, "an organized conversation" (Ahlin, 2019). This method involves utilizing an interview guide containing open-ended questions, while simultaneously allowing the interviewee the freedom to express their responses openly and candidly. The primary goal is to delve deeply into the interviewee's perspective, enabling an exploration of the subject matter from various angles and fostering an in-depth conversation.

Despite the labor-intensive demands of the semi-structured interview method (Ahlin, 2019), its inherent advantage lies in its adaptability and flexibility (Robson, 1993). Researchers have the latitude to conduct interviews in a variety of settings, whether in traditional face-to-face meetings, over the phone, or even through digital channels over the internet. This adaptability empowers researchers to choose the approach that best suits their specific research goals and the convenience of the interviewee, thus enhancing the method's overall utility and applicability. Furthermore, this adaptability can lead to a more diverse and representative sample of participants, contributing to the richness of the data collected.

In sum, the semi-structured interview method stands as an indispensable tool for researchers in social sciences, offering a balanced blend of structured guidance and participant autonomy to uncover insightful perspectives and gather in-depth data while being adaptable to the ever-evolving landscape of data collection methods.

4 Survey Design and Data collection

The data collection process consisted of two distinct stages. In the initial stage, qualitative expert interviews were conducted with various coffee roasteries in Finland. The objective of this stage was to identify and establish the key coffee attributes that hold significance in the eyes of coffee experts, roasters, and retailers when making coffee pack purchasing decisions. The insights gained from this first stage served as the foundational input for the subsequent phase of data collection. The interview was carried out through the utilization of semi-structured questions, a deliberate and methodical approach that allowed for both flexibility and depth in our discussions. For a comprehensive understanding of the interview process and its intricacies, please refer to Section 4.1 titled "Expert Interviews" where you will find a detailed account of the procedure.

The second phase of the research initiative entailed the deployment of a best-worst scaling questionnaire, meticulously designed to glean profound insights into the intricate landscape of coffee purchasing behaviors among Finnish consumers. To ensure optimal outreach and engagement with our target audience, the survey link was strategically disseminated within various Finnish coffee enthusiast communities across diverse social media platforms. This strategic placement facilitated access to a broad spectrum of coffee aficionados.

Furthermore, the accessibility of the survey was maintained for an extended period of four weeks, thereby affording ample time for participation from a diverse pool of respondents. This deliberate approach was instrumental in ensuring the comprehensiveness and richness of the data collection efforts. For a comprehensive overview of the survey methodology and the specifics of our data collection process, please refer to Section 4.2 titled "Survey" where you will find a detailed exposition of the procedures employed.

In compliance with the General Data Protection Regulation (GDPR), it is imperative to inform respondents about the intended use of their personal data and the specific purposes for which it will be utilized. To uphold this requirement, a clear message was prominently displayed at the outset of the survey. This provision ensured that respondents were fully aware of how their personal information would be used and gave them the option to discontinue the survey if they opted not to share their personal data (see appendix A).

4.1 Expert interviews

Drawing upon the literature framework that explores the determinants of coffee consumption and purchasing behavior (Samoggia & Riedel, 2018), this research study centers its attention on four essential coffee attributes: roast level, flavor profiles, sustainability labels, and societal recommendations. To kickstart the data collection process and gain valuable insights into the complex landscape of coffee consumers in Finland, expert interviews served as the initial phase of data acquisition.

Thus, a well-defined set of eligibility criteria was established to delineate a qualified "expert" within the context of coffee consumption in Finland. These criteria encompassed:

- A minimum of five years of professional experience within the Finnish coffee industry.
- Direct involvement in various aspects of the coffee supply chain, spanning sourcing, roasting, wholesaling, retailing, and consulting.
- Ongoing engagement and active participation within the contemporary coffee landscape in Finland.

- Recognition for prominence and influence within the coffee industry in Finland.

Having identified experts who met these rigorous standards, invitations for interviews were extended. The full list of experts can be found in Appendix C. These interviews, totaling eight sessions, took place during the spring of 2023, conducted through either face-to-face meetings or virtual interactions. Employing a semi-structured interview approach, each session adhered to a predetermined thematic framework and featured a set of pre-planned open-ended questions.

During the extensive interview process, the experts embarked on a comprehensive mission: to meticulously document an exhaustive list of potential coffee attributes that have the power to sway the discerning consumers of Finland in their purchasing decisions. This painstaking cataloging of factors set the stage for a more nuanced exploration.

As the interviews progressed, the experts were tasked with the challenging endeavor of distilling the vast array of identified attributes into a select few that held the most sway over consumers. This process involved careful consideration, deliberation, and ultimately, ranking the top three attributes that emerged as pivotal in the realm of coffee choices within the Finnish market. Having identified these key attributes, the conversation naturally delved deeper into each one. The conversation explored the intricate world of roast levels, the captivating tapestry of flavor profiles, the persuasive impact of promotions, the conscientious allure of sustainability labels, and the profound influence of societal recommendations. Each of these facets was scrutinized and dissected to gain a comprehensive understanding of their role in shaping consumer'' preferences and decisions.

For a detailed account of the questions that guided these insightful conversations, please refer to Appendix B, where you will find the list of semi-structured interview questions that guided our exploration of these critical coffee attributes.

Of particular interest is the remarkable alignment between the attributes targeted in this study and the top three critical attributes identified through the expert interviews. This congruence underscores the robustness of the research approach and the pertinence of our chosen attributes in the context of understanding coffee consumer preferences in Finland. The final list of attributes and levels were proposed as the following:

Table 1: Summaries of attributes and levels

Attribute	Description	Level
Roast level	Roast level is one key information to distinguish one coffee from another	Light Medium Dark
Flavor profiles	Flavor profile described how aroma and flavors perceived in consumers' sensory experiences	Fruity and floral Chocolate and nutty Funky and exotic
Sustainability labels	Sustainability labels are labels showing ethical and environmental considerations associated with the coffee product in the packages	The coffee is with sustainable label.
Societal recommendations	Societal recommendations reflect the dynamics of brand recognition and personal recommendations within the realm of consumer behavior	I know the brand. Recommended by other people.
Promotions	Promotions show whether any reduction of price at the time the coffee is purchased	The coffee is with offer 10% discount.

4.2 Survey

As previously indicated, in this study, Sawtooth Software plays a crucial role as the primary analytical tool. Sawtooth Software offers versatile capabilities not only for data analysis but also for the creation and acquisition of essential data inputs. The survey comprises three distinct sections, each chosen for its integral role in understanding the intricate landscape of coffee consumption behavior.

The initial section of the survey explores demographic inquiries, encompassing vital aspects like gender and age. Gender and age have been identified as pivotal factors providing valuable insights into the rich tapestry of preferences and consumption patterns exhibited among different segments of the population. This approach seeks to reveal how these variables influence coffee choices, leading to a deeper understanding of the diverse preferences and habits within the target audience.

Continuing with the survey, it is lead into the realm of coffee consumption habits. This section examines the quantity of daily coffee consumption and the preferred price range of coffee products. These inquiries serve as informative tools and are instrumental in understanding the practical dimensions of coffee choice and the economic underpinnings that drive it. The goal is to uncover how individuals navigate the various options and price points in the coffee market, shedding light on the decision-making processes that shape their coffee-related choices.

A major part of the survey incorporates a segment dedicated to references to various coffee attributes. By examining these aspects, we gain a holistic view of the factors influencing coffee consumption and purchasing behaviors. This multifaceted approach ensures a thorough exploration of the intricate web of factors at play in the coffee consumption landscape.

Utilizing the comprehensive list of attributes distilled from our expert interviews, as detailed in Table 1, we constructed the Best-Worst Scaling (BWS) questionnaire, consisting of a total of 10 distinct attributes. These attributes, carefully chosen to capture the multifaceted nature of consumer preferences, are as follows:

- Light roast
- Dark roast
- Medium roast
- Flavor profile: fruity and floral
- Flavor profile: chocolate and nutty
- Flavor profile: funky and exotic
- The coffee is with sustainable label.
- I know the brand.
- Recommended by other people.
- The coffee is with offer 10% discount.

Various software packages, such as Sawtooth Software's Lighthouse Studio and Nlogit, have been developed to facilitate the design and analysis of Best-Worst Scaling experiments. In this study, Sawtooth Software's Lighthouse studio is employed. In accordance with Chrzan's recommendations in 2006, an ideal Best-Worst Scaling (BWS) survey set should consist of four or five items. To ensure both efficiency and accuracy, each item should appear in the survey at least three times, a standard practice in BWS surveys (Chrzan & Peitz, 2019). Thus, taken the three times visibility into account, to determine the total number of choice tasks required, Sawtooth Software offers a formula:

$$\text{Number of tasks} = 3\ (K/k)$$

Here, K represents the total number of items, and k signifies the number of items per set. Given a list of 10 attributes and a choice to feature 4 items in each set, the minimum number of tasks should be 8. Recognizing the limited scope of their item list, the authors chose to increase the number of tasks to 11. This adjustment ensures that each item will be presented approximately 4 to 5 times throughout the entire survey, offering a more robust dataset for analysis. A sample set of questions presented to respondents is detailed as follows:

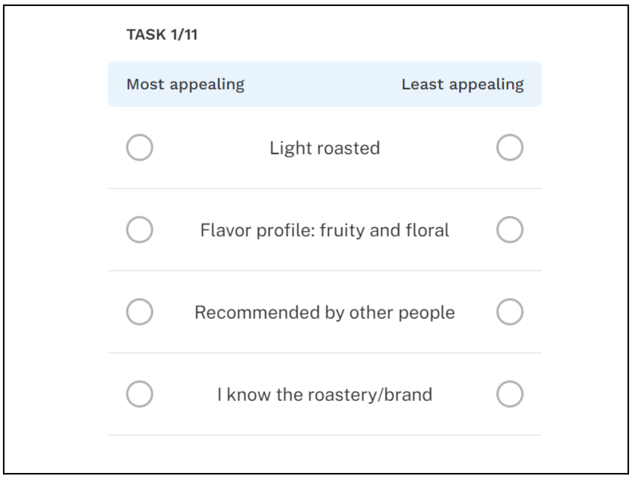

Figure 8. A set of BWS in the survey

In the pursuit of robust data collection, a deliberate and comprehensive strategy was employed to disseminate our survey across an array of social media platforms. This strategic approach bore fruit, attracting the enthusiastic participation of a vibrant community of coffee lovers and connoisseurs in the picturesque landscapes of Finland. Within the ambit of this research, the focus was on a distinct subset of individuals within Finland who are bound by an unbridled passion for coffee. These individuals aren't merely casual coffee drinkers; they constitute a dedicated community that thrives on their love for the caffeinated elixir. They are the kind of people who not only relish every sip but also immerse themselves in the world of coffee-related activities and discussions.

To identify and engage with this unique cohort of participants, the survey found its way into the heart of Finnish coffee culture. The surveys were strategically shared within various Finnish coffee-centric online communities where these aficionados gather to discuss the nuances of beans, brewing methods, and the sensory journey of a well-crafted cup. The surveys also made its presence known at coffee events held throughout Finland, where these individuals congregated to savor the finest brews, exchange ideas, and celebrate their shared love for coffee. Moreover, the author tapped into the influence of prominent Finnish coffee personalities whose social media channels serve as virtual coffee havens for thousands of dedicated followers. These influencers not only share their expertise but also inspire others to explore the depths of coffee appreciation.

The research seeks to illuminate the perspectives, preferences, and behaviors of this dynamic and passionate community of Finnish coffee enthusiasts. By engaging with their insights, the author aims to gain a deeper understanding of what makes coffee a cherished and integral part of their lives, and how it weaves the threads of camaraderie and culture within the Finnish coffee landscape.

The data collection process unfolded during the spring in 2023, spanning from June through July. For those interested in exploring the complete and detailed version of the survey, a comprehensive resource can be found in Appendix A. This resource provides a more in-depth look into the questions and inquiries guiding the investigation into the captivating world of coffee consumption behavior among the respondents.

5 Findings

5.1 Identifying bad responses

The Hierarchical Bayes estimation method was employed to generate root-likelihood (RLH) scores for each response to identify problematic responses. The RLH measure serves as a valuable indicator of the consistency of a respondent's answers within the survey and falls within the range of 0 to 1. A high RLH value signifies strong alignment with the additive model, indicating consistent responses, while a low RLH value suggests that a respondent's choices across different tasks may have been made haphazardly or randomly. Utilizing RLH allows for the pinpointing and exclusion of such "bad" respondents from the dataset before conducting further analysis. The specific minimum RLH threshold required for exclusion depends on the number of attributes utilized in the survey, as outlined by Orme (2019).

Furthermore, Sawtooth Software (2008) recommends employing RLH as a goodness-of-fit measure. In the Best-Worst Scaling (BWS) segment of the survey, respondents encounter eleven choice sets, each comprising four items, with each item presented approximately four times to the respondent. As per Sawtooth Software's guidance, achieving a minimum fit statistic of 0.312 is necessary to ensure a 95% correct classification of random responders, as illustrated in Table 2 below.

Table 2: Suggested Minimum Fit Statistic to Identify Random Responders with 95% Correct Classification (Sawtooth Software, 2021)

Items per Set	Suggested Minimum Fit. Each Item Shown Four Times to Each Respondent	Suggested Minimum Fit. Each Item Shown Three Times to Each Respondent
	0.416	0.445
4	0.312	0.336
5	0.254	0.269

Among the 118 respondents in the BWS portion of the study, an impressive 98.03 % exhibited RLH values exceeding the 0.312 threshold, there are only two disqualified responses. This elevated level of RLH consistency underscores the reliability of the BWS data for subsequent analysis.

5.2 Sample description

As outlined in the data collection methodology, the primary focus of the survey was directed toward coffee enthusiasts in Finland. The rationale behind selecting this survey group is grounded in the anticipation that their responses would yield significant and tangible practical as well as scholarly implications. Coffee enthusiasts constitute a pivotal cohort within the larger context of driving coffee consumption trends in Finland. Therefore, their perspectives and preferences bear noteworthy relevance in influencing the broader landscape of coffee consumption behavior, making their insights an invaluable resource for both practical applications and scholarly endeavors.

This section of the study places a deliberate emphasis on several key demographic and coffee-related variables among respondents. These variables include gender, age, daily coffee consumption levels, and the typical price range of the coffee products they prefer.

Within the context of this survey conducted among coffee consumers in Finland, the age group distribution of the respondents unveils a compelling demographic tapestry. A substantial 51% of the surveyed individuals belong to the 30 to 39 years old age bracket, highlighting a predominant representation within this age group. In parallel, a significant 42% of respondents fall within the 20 to 29 years old category, underlining the active participation of the younger generation in the survey. Meanwhile, 4% of participants are situated in the 40 to 49 years old range, while another 3% are aged 50 years and above. This diverse age distribution not only underscores the study's ability to capture insights from various generational segments but also showcases the robustness and inclusivity of the research approach, providing a holistic view of coffee consumption patterns among different age groups in Finland.

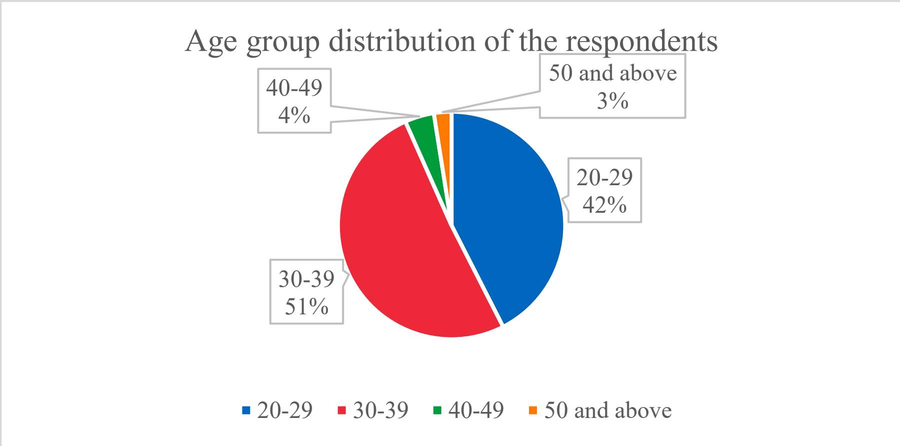

Figure 9. Age group distribution of the respondents.

The daily coffee consumption patterns among the respondents exhibit a diverse spectrum of preferences. Notably, 19.49% of participants do not partake in daily coffee consumption, reflecting a substantial segment that abstains from coffee daily. In contrast, a small yet distinct 0.85% indulge in an impressive tally of over 5 cups of coffee daily, signifying an avid group of coffee aficionados. A noteworthy 11.86% of respondents savor a single cup of coffee each day, while a substantial 42.37% opt for the consumption of precisely 2 cups daily. Meanwhile, a sizable 25.42% of participants fall within the range of 3 to 5 cups per day, showcasing the prevalence of moderate to elevated coffee intake among this cohort. This variegated range of daily coffee consumption habits provides a comprehensive glimpse into the nuanced preferences of the surveyed individuals.

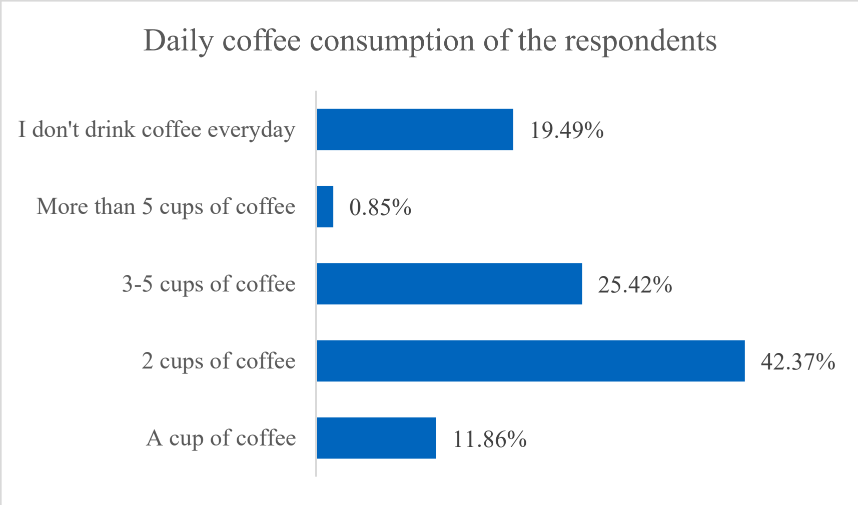

Figure 10. Daily coffee consumption of the respondents

The average price point for coffee packs containing 200-500g of coffee showcases a diverse range of spending patterns among respondents. Notably, 12.17% of individuals opt for coffee packs priced under 5 euros, reflecting a thrifty approach to their coffee purchases. In contrast, a substantial 33.04% allocate their coffee budget to the bracket of 5 to 8 euros, indicative of a moderately priced coffee preference. Remarkably, the majority, comprising 54.78% of respondents, are inclined to invest more generously, with their coffee packs exceeding the 8-euro mark. This multifaceted spectrum of price preferences illuminates the varied spending habits and coffee valuations prevalent among the surveyed participants.

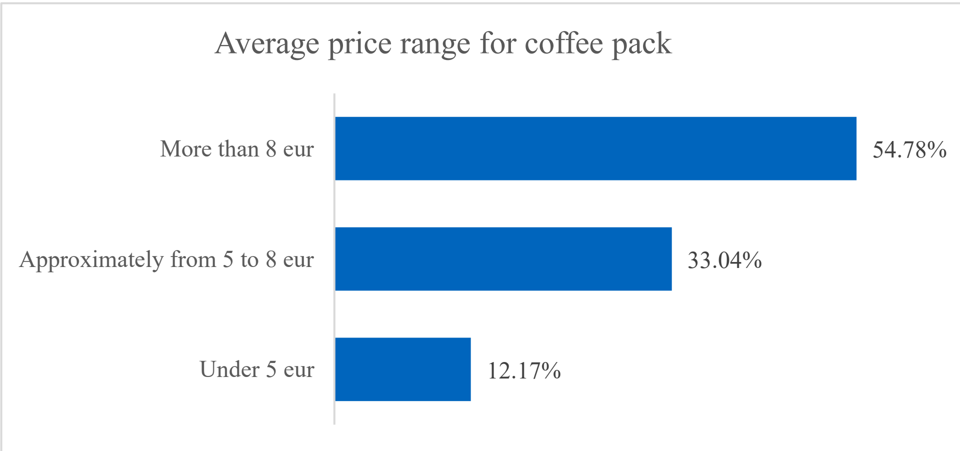

Figure 11. Average price range for the coffee pack

5.3 Consumer references on coffee attributes

The evaluation of attribute scores is a pivotal step in our analysis, facilitated by the robust capabilities of Sawtooth Software. These scores, after computation, are thoughtfully rescaled to a more accessible 0-100 range, enhancing their interpretability and utility. These scores follow a ratio scale, signifying that “an item with a score of 10 holds twice the preference (or importance) compared to an item with a score of 5” (Sawtooth Software, 2021).

This rescaling process not only simplifies the comprehension of the data but also allows for a more intuitive comparison of attribute importance. The resulting scores then guide the arrangement of survey items within our dataset, shaping the foundation for our subsequent analysis. This structured approach brings forth a clear hierarchy among the various attributes, providing valuable insights into respondent preferences.

Table 3 Average score of each attribute in BWS questions rescaled to 1–- 100

Item	Score
I know the roastery/brand	16.43
Recommended by other people	12.89
Flavor profile: fruity and floral	12.84
Flavor profiles: chocolate and nutty	12.03
Flavor profiles: funky and exotic	10.39
Light roasted	9.18
The coffee is with sustainable label	8.22
Dark roasted	6.60
Medium roasted	6.02
The coffee is with offer 10% discount	5.40

What particularly intriguing is the discovery that the top two items, boasting the highest scores, both fall under the category of societal recommendation: "I know the roastery/brand" and "Recommended by other people" These findings underscore the significant influence of social factors in shaping coffee preferences among our respondents. Delving deeper into the hierarchy of attribute scores, we observe that the next set of high-scoring items belong to the flavor profile category. Here, "fruity and floral" emerges as the leading attribute, closely followed by "chocolate and nutty" and "funky and exotic" These findings shed light on the pivotal role that flavor profiles play in influencing coffee choices.

Surprisingly, among our dataset, the item with the lowest score is "The coffee is with a 10% discount". This result suggests that discounts may not hold substantial sway over the preferences of our respondents. Furthermore, the second and third least scored items are "dark roasted" and "medium roasted" coffee, revealing that roast level is among the attributes of relatively lower importance to our respondents. The prominence of societal recommendations and flavor profiles, along with the relative indifference to discounts and roast levels, unveils valuable insights that will guide our subsequent analyses and inform our understanding of the intricate world of coffee preferences.

When we delve into the intricacies of our analysis, intriguing differences surface when comparing the average scores of attributes among consumers with varying price preferences: those who opt for coffee under 8 euros and those who lean towards the over 8 euros range. The study opted for the 8-euro threshold due to the extensive diversity in the Finnish coffee market, encompassing various types and brands. Retail prices in this market typically fall into three primary segments: the upper-end, middle-end, and lower-end categories, as delineated by Finnpartnership in 2017:

Upper-end: Priced between 30 € and 67.70 € per kilo.

Middle-end: Priced between 12 € and 29 € per kilo.

Lower-end: Priced between 6 € and 12 € per kilo.

Given that the upper-end category starts at 30 euros per kilo, the average cost of a 250g pack of upper-end coffee amounts to 7.5 euros. Hence, we chose 8 euros as the demarcation point between the upper-end and the remaining segments.

Examining different price ranges allows us to segment our customer base effectively. It enables us to identify distinct groups of consumers with varying preferences and behaviors related to pricing. In previous research, the cost of coffee wields a significant impact on consumer choices: when the price of coffee rises, the inclination to opt for specialty blends diminishes (Sepúlveda et al., 2016). Besides, Aguirre (2016) noted that individuals hailing from cultures with a deep-rooted coffee tradition exhibit a willingness to pay a premium for top-notch coffee that is roughly double their current expenditure.

In this study, the comparison between the two price groups is presented descriptively, providing the audience with intriguing observations. I''s worth noting that the comparison is based only on the averages with no information of the variation of the scores. These divergences in preference paint a fascinating picture.

Table 4: Average score of each attribute of Consumer with different price range rescaled to 1 – 100

Item	Under 8 euros	Over 8 euros
I know the roastery/brand	16.31	16.53
Recommended by other people	14.60	11.47
Flavor profile: fruity and floral	5.13	19.25
Flavor profiles: chocolate and nutty	17.89	7.16
Flavor profiles: funky and exotic	4.21	15.53
Light roasted	2.91	14.38
The coffee is with sustainable label	10.11	6.65
Dark roasted	11.97	2.14
Medium roasted	7.78	4.55
The coffee is with offer 10% discount	9.07	2.35

I''s worth noting that consumers with a lower price range exhibit a penchant for the attribute "flavor profiles: chocolate and nutty" This preference underscores the significance of these flavors among this group of coffee enthusiasts. In contrast, consumers with a higher price range exhibit a different preference for "flavor profiles: fruity and floral" and "flavor profiles: funky and exotic" as their top three attributes. Remarkably, these same attributes rank as the second and third least favored among consumers with a lower price range, emphasizing the striking variation in taste preferences based on budget constraints.

One notable constant across both price ranges is the attribute "I know the roastery/brand" which holds the second-highest score in both groups. This consistency underscores the enduring influence of societal recommendations within our survey’s coffee consumption landscape.

Furthermore, it is intriguing to observe that consumers with a higher price range align with the overall data pool when it comes to the least scored items. "Dark roasted", "Medium roasted" and "The coffee is with a 10% discount" are consistently ranked as the least favored attributes among this group. This alignment suggests a shared preference for specialty and quality in coffee choices among consumers with higher price ranges.

These findings shed light on the nuanced variations in attribute preferences among consumers with different price ranges. The emphasis on flavor profiles, the enduring significance of societal recommendations, and the consistent preference for quality and specialty options offer valuable insights into the diverse landscape of coffee choices among our respondents.

When it comes to assessing the diverse habits of daily coffee consumption, it is fascinating to observe how different groups exhibit distinct preferences. The initial three categories, encompassing individuals who enjoy between 1 to 5 cups of coffee daily, share remarkably similar proclivities when it comes to various coffee attributes. As the group drinking more than 5 cups of coffee daily consists only 1 respondent, the amount is minimum that we can ignore this group in the discussion. Furthermore, the latest statistic shows that an average Finn consumes from three to five cup of coffee per day (Clausnitzer, 2022). This figure is also similar to the survey's result of the FinRavinto in 2017 in which most Finns drink from 3 to 5 cups of coffee daily and an average Finns drink approximately 4.4 cups of coffee per day (Kahvi, 2017). Therefore, this study can focus on exploring the representative of Finnish consumers who consumes from 0 to 5 cups of coffee daily.

Table 5: Average score of each attribute of consumer with daily coffee consumption rescaled to 1 – 100

Item	A cup of coffee	2 cups of coffee	3-5 cups of coffee	I don't drink coffee everyday
I know the roastery/brand	16.72	16.89	17.13	15.03
Recommended by other people	11.90	10.93	13.94	16.08
Flavor profile: fruity and floral	12.49	15.17	12.70	8.55
Flavor profiles: chocolate and nutty	11.16	9.86	12.21	16.28
Flavor profiles: funky and exotic	8.44	12.96	10.61	6.07
Light roasted	11.64	12.19	7.28	4.07
The coffee is with sustainable label	9.21	7.11	6.41	12.78
Dark roasted	4.87	5.25	8.77	6.68
Medium roasted	5.35	5.86	6.09	6.54
The coffee is with offer 10% discount	8.21	3.77	4.87	7.93

One of the most prominent distinguishing factors is the "I know the roastery/brand" attribute. This attribute ranks among the top favorites for all groups.

In the realm of flavor profiles, the "fruity and floral" flavor profile emerges as a highly esteemed quality among those consuming 1 to 5 cups a day. It appears to tickle the taste buds and captivate the senses of this demographic. In contrast, the "I don't drink coffee every day" group displays a somewhat diminished interest in this aromatic dimension of coffee. Instead, they seem to be drawn towards the comforting allure of the "chocolate and nutty" flavor profile.

Turning our attention to the roasting levels, the medium roast occupies a somewhat neutral ground in terms of preference. It doesn’t stand out as a favorite or a least favorite among the various groups. However, the light roast, with its nuanced and delicate flavors, garners the least favor in the "I don’t drink coffee every day" group.

Curiously, the attribute "The coffee is with a 10% discount" does not seem to elicit strong reactions in any of the groups. It hovers somewhere in the middle, neither a favorite nor a least favorite. On the other hand, "The coffee is with a sustainable label" carries substantial weight among those who do not drink coffee every day, ranking as the fourth-highest preference. This highlights a growing consciousness among certain coffee consumers for ethical and sustainable sourcing practices.

All mentioned groups display a wider range of scores, with less pronounced differences among individual items, suggesting a more diverse and adaptable palate. In this intricate landscape of coffee preferences, we find a rich tapestry of tastes and inclinations, each group carving out its unique niche in the world of coffee connoisseurship.

5.4 Segmentation using Latent Class Analysis

Once more, the analytical prowess of the Sawtooth Software Lighthouse was harnessed to conduct the Latent Class Analysis, delving into the intricacies of our data. This analysis was meticulously executed, guided by a set of carefully chosen parameters that would unearth valuable insights.

For this endeavor, we embarked with the following parameters in tow: a minimum number of groups set at 3, offering an initial lens through which to view the data, and a maximum number of groups capped at 6, allowing for a comprehensive exploration of potential segments within the dataset. This analytical journey was further fortified by the deployment of 5 replications, ensuring robustness and consistency in the results, and a maximum number of iterations set at 10, providing ample room for the algorithm to converge towards meaningful solutions.

The outcome of this analytical voyage is laid bare in the table below, showcasing the best replication of each solution. Each solution represents a potential segmentation of the data, unraveling distinct patterns and groupings among the respondents. However, the question that naturally arises is, "Which solution is the best fit for our dataset."

To address this crucial question, we turn to the statistical information criteria, which stand as guiding beacons in our quest to select the most suitable solution. These criteria serve as a compass, helping us navigate the complex terrain of data segmentation. They offer us insights into the quality and validity of each solution, allowing us to make an informed choice. In essence, they become the yardstick against which we measure the efficacy and relevance of each potential segmentation solution, ultimately steering us toward a more profound understanding of our dataset. DeSarbo et al. (1995) proposed a prudent approach for selecting the most fitting solution, emphasizing the fulfillment of two critical criteria. Firstly, the chosen solution should boast the smallest Consistent Akaike Information Criterion (CAIC). Secondly, it should be amenable to managerial interpretability, ensuring that the insights derived are not only statistically sound but also practical and actionable in real-world scenarios.

Interestingly, a technical paper from Sawtooth Software (2021) offers an intriguing perspective on this selection process. Instead of solely fixating on identifying the solution with the lowest CAIC value, it recommends a more nuanced approach. One should keenly examine the trajectory of CAIC values across the solutions, pinpointing where the CAIC experiences the most substantial drop from one solution to the next. In doing so, we not only ensure statistical rigor but also uncover those solutions that bring about the most significant and insightful transformations, enriching our understanding of the data in a pragmatic and meaningful way.

Table 6: Summary of different latent class solutions

Groups	Replication	Log-likelihood	Pct Cert	AIC	CAIC	BIC	ABIC
3	2	-2635.34	26.77	5328.68	5527.67	5498.67	5406.53
4	1	-2537.01	29.50	5152.03	5419.64	5380.64	5256.72
5	1	-2473.52	31.27	5045.05	5381.27	5332.27	5176.59
6	4	-2414.79	32.90	4947.57	5352.41	5293.41	5105.95

As depicted in the Table 6 above, the CAIC values exhibit a discernible pattern of descent as we progress from the 3-groups solution to the 6-groups solution. Notably, the lowest CAIC value is achieved with the 6-groups solution, underscoring its statistical favorability. However, what draws our attention is the substantial drop in CAIC values from the 3-groups solution to the 4-groups solution. Following this notable plunge, the rate of decrease tapers off, resulting in a more gradual decline from the 5-groups solution to the 6-groups solution.

This intriguing dynamic prompts a deeper examination of the 4-groups and 5-groups solutions, particularly in the context of managerial interpretability. These solutions hold promise as they represent pivotal junctures where the data undergoes significant transformations, potentially revealing meaningful insights. To unravel these insights, we embark on a closer investigation, tabulating the 4-groups and 5-groups solutions against each other and in conjunction with other pertinent variables. This meticulous exploration promises to unveil valuable perspectives that can guide managerial decision-making with clarity and precision.

As delve into the tabulated comparison between the 4-group and 5-group solutions, a noteworthy observation comes to the fore. Group 1 in the 4-group solutions encompasses both Group 1 and Group 2 in the 5-group solution, indicating a considerable degree of overlap in their characteristics. The primary distinction between these two groups within the 5-group solution is their preference for dark-roasted coffee, with one exhibiting a notably stronger affinity for this attribute. However, i''s worth noting that dark roasted coffee does not emerge as a pivotal determinant in the segmentation process. It does not rank among the top 3 highest or lowest scored attributes across all groups, highlighting its relatively subdued influence.

Furthermore, within the 5-group solution, we encounter a relatively diminutive group, namely Group 4, accounting for approximately a mere 12% of the total dataset. Given the modest size of our dataset, comprising 116 respondents, it becomes prudent to exercise caution when considering an abundance of group solutions. An excessive proliferation of segments could lead to the fragmentation of the latent class analysis, potentially obscuring rather than illuminating the underlying patterns.

Considering these considerations, the 4-group solution emerges as the judicious choice for a more in-depth and focused exploration of segmentation. This streamlined approach promises to offer a clearer and more manageable lens through which to examine the intricate dynamics within our dataset, facilitating a more insightful and actionable analysis of the segmentation process.

In the following Table 7, it is the concise summary showcasing the average rescaled scores, ranging from 0 to 100, for each individual item within the context of four distinct groups. The rescaled scores are calculated from the raw utilities scores based on the recommended documentation in Sawtooth Software MaxDiff Technical paper. Each raw score is transformed as the following calculations:

$$e^{\boldsymbol{Ui}}/(e^{\boldsymbol{Ui}} + \boldsymbol{a} -- \mathbf{1})$$

where:

- Ui: zero-centered raw utility for item i

- a: number of items shown per set

The rescaled scores are from 0 to 100 and summed up to 100. These scores are on the ratio level, which means that “an item with a score of 10 holds twice the preference (or importance) compared to an item with a score of 5” (Sawtooth Software, 2021)

Table 7: Summary of scored item in different segments

Items	**Segment 1**	**Segment 2**	**Segment 3**	**Segment 4**
I know the roastery/brand	16.95	6.48	0.54	4.96
Recommended by other people	25.18	14.91	1.61	3.49
Flavor profile: fruity and floral	9.39	13.32	13.85	12.90
Flavor profiles: chocolate and nutty	17.27	14.18	12.22	18.71
Flavor profiles: funky and exotic	4.54	6.16	4.49	12.45
Light roasted	0.39	1.88	24.62	5.27
The coffee is with sustainable label	2.87	18.42	20.33	14.80
Dark roasted	15.89	18.63	4.75	2.19
Medium roasted	5.30	5.03	11.54	11.27
The coffee is with offer 10% discount	2.22	0.99	6.07	13.96
Segment size	**39%**	**16.9%**	**21.5%**	**22.5%**

The distinctive identities of each group are unveiled, illuminated by their unique characteristics as reflected in the scores presented above:

- Segment 1–“"The Social Savv”": This group is the biggest clusters accounted for 39% of the whole respondents and earns its moniker as "The Social Savvy" due to its pronounced affinity for societal recommendations and brand recognition, which are clearly reflected in their notably high scores for these attributes. They seem to rely on the collective wisdom of society and the trustworthiness of established brands when making their coffee choices. Delving into flavor profiles, "The Social Savvy" group exhibits a distinct penchant for the rich and indulgent flavors of chocolate and nutty, particularly when they are found in dark roasted coffee. These flavors resonate deeply with them, placing them among their top preferences. In contrast, attributes such as light roasted coffee, discounts, and sustainable labels are less influential in shaping their choices, ranking lower in their hierarchy of preferences.

- Segment 2–-"The Dark Roast Eco-Champion" account for 16.9% of the total dataset: True to their name, this group can be aptly labeled as "The Dark Roast Eco-Champions" They prioritize the bold and intense experience of dark roasted coffee, elevating it to the top of their preferences. Sustainability is another cornerstone of their coffee choices, with a strong preference for coffee bearing sustainable labels. Furthermore, they lean towards coffee recommended by their peers, valuing the collective judgment of others. However, i''s intriguing to note that discounts do not particularly resonate with this group, ranking as their least favored attribute.

- Segment 3–-"The 'Green' Bean Minimalist" cover 21.5% of the respondents: A distinctive profile emerges with this group, the "Green Bean Minimalists" Their standout feature is their resolute preference for light roasted coffee, setting them apart from the other segments. Like their eco-conscious counterparts, they place a significant value on coffee with sustainable labels, showcasing their commitment to environmentally friendly choices. What intriguing is that they do not attach great importance to factors such as brand recognition or societal recommendations when making their coffee selections. Knowing the roastery/brand or relying on other' recommendations also does not sway their preferences significantly, indicating a preference for simplicity and the purity of the coffee itself.

- Segment 4–-"Eco-Conscious Bargain Hunter" is the remaining 22.5% of the dataset: This group, named "Eco-Conscious Bargain Hunters" brings a unique perspective to the table. They stand as the sole advocates for discounts among their top five preferred attributes. Additionally, they exhibit a diversified palate, encompassing a wide spectrum of flavor profiles within their top five choices. This suggests a willingness to explore different taste experiences. Like the "Green Bean Minimalists" they do not prioritize societal recommendations or brand recognition. Dark and light roast options do not particularly appeal to them, but they do show a preference for medium roast coffee, striking a balance between different roast levels.

These comprehensive profiles unveil the intricacies of each group's preferences, offering valuable insights into their motivations and priorities when it comes to selecting coffee. By understanding these distinct segments, businesses and marketers can tailor their strategies to cater to the unique needs and tastes of each group, thereby enhancing their ability to connect with and satisfy a diverse range of coffee enthusiasts.

5.5 The difference in coffee attributes across between consumer groups

The study harnessed the power of cross-tabulation analysis, accompanied by the chi-square test, to scrutinize the relationship between our clusters and various background variables, including age, gender, daily coffee consumption, and price range. The objective was to ascertain whether these clusters and background variables operated independently or exhibited interdependencies.

The chi-square test served as our diagnostic tool, and its results were instrumental in drawing conclusions. If the p-values derived from this test exceeded the pre-defined significance level (alpha, set at 0.05), it signaled independence between cluster membership and the variables under consideration. Conversely, if the p-value fell below alpha, it indicated an association between cluster membership and the variables.

During the examination of background variables, we optimized our grouping for enhanced efficiency and improved managerial comprehension. We categorized price ranges into two groups: those equal to or under 8 euros and those exceeding 8 euros. This decision was made based on our previous mention of 8 euros as the critical threshold separating the upper-end from the other segments. Following this reassessment of price range, the percentage of respondents who is willing to pay 8 euros or less is 45.21% and the percentage of respondents who is willing to pay more than 8 euros for a pack of coffee is 54.79%, which made the ratio of these two price ranges is quite well-balanced.

In this cross-tabulation analysis, among the background variables examined, only one, namely "price range" demonstrated a significant association with cluster membership with the $\chi^2(3)= 56.6$, $p <0.001$. This suggests that the preferences of our distinct clusters are notably influenced by the price category of the coffee products they favor, offering a valuable insight into the dynamics of consumer choices within our dataset.

Table 8: How four segments' reference on price range

Price range	Equal 8 euros or less	Over 8 euros	Total
The Social Savvy	9%	91%	100%
The Dark Roast Eco-Champions	32%	68%	100%
The 'Green' Bean Minimalists	85%	15%	100%
Eco-Conscious Bargain Hunters	81%	19%	100%

As we delve into the insights offered by the table above, a clear trend emerges, shedding light on the payment behaviors of the distinct clusters. Notably, the "Social Savvy" group stands out as the most generous spenders within the clusters. Impressively, a staggering 91% of this cluster is willing to part with more than 8 euros for a pack of coffee, exemplifying their penchant for premium choices. Conversely, a mere 9% of them opt for coffee packs 8 euros or less.

The "Dark Roast Eco-Champion”" cluster also demonstrates a proclivity for higher-priced coffee, with 68% of its members favoring options that exceed the 8-euro mark. This group's willingness to invest in quality and flavor is evident in their preferences.

However, in a captivating twist, the "Green Bean Minimalist" exhibit a somewhat different stance on pricing. They seem less drawn to the higher price range, with only 15% willing to partake in coffee packs exceeding 8 euros. Instead, a substantial 85% of this cluster gravitates towards the price range of approximately 8 euros or less for a pack of coffee. Their choices appear to reflect a balance between cost and quality, emphasizing the importance of value for money.

Meanwhile, when shifting focus to the "Eco-Conscious Bargain Hunters" it is a diverse landscape. A noteworthy 81% of this cluster comfortably occupies cheaper ground when it comes to pricing. Their preferences span the range 8 euros or less, showcasing a discerning approach that combines eco-consciousness with a keen eye for cost-effectiveness.

These insights illuminate the intricate relationship between our clusters and their spending habits. Each cluster exhibits a distinct attitude towards pricing, reflecting a blend of their values, preferences, and priorities. Understanding these dynamics enables businesses and marketers to tailor their offerings and strategies to better cater to the diverse preferences of their target audience.

On the other hand, looking deeper of the cross-tabulation percentages, specifically examining their correlation with the broader price range categories, as presented in Table 9 below.

Table 9: Distribution of four segments in each price range

Price range	The Social Savvy	The Dark Roast Eco-Champions	The 'Green' Bean Minimalists	Eco-Conscious Bargain Hunters	Total
Equal 8 euros or less	8%	11%	42%	40%	100%
Over 8 euros	66%	20%	6%	8%	100%

Within the confines of the price range 8 euros or less, a striking pattern emerges. Here, the "Social Savvy" consumers constitute a relatively modest segment, making up just 8% of the total. In sharp contrast, most individuals in this price range identify as "Green Bean Minimalists" claiming a substantial 42% share. Not far behind are the "Eco-Conscious Bargain Hunters" comprising 40% of this category, while the "Dark Roast Eco-Champion" represent a respectable 11%.

Venturing into the upper echelons of the price range spectrum, where consumers are willing to invest more than 8 euros for a pack of coffee, a distinct and expected picture emerges. The "Social Savvy" cluster asserts its dominance, representing a substantial 66 % of the total purchasers in this premium range. Their penchant for premium and socially endorsed choices becomes particularly evident here. The "Dark Roast Eco-Champion" secure a respectable 20% share, underscoring their affinity for high-quality options and their willingness to invest in them. Interestingly, the "Green Bean Minimalist " and "Eco-Conscious Bargain Hunter" appear somewhat less enthusiastic in this price range, with a modest 6% and 8% representation, respectively. This may indicate that these groups, while conscious of eco-friendly choices, may be more price-sensitive in their decision-making when it comes to premium-priced coffee products.

In summary, these findings offer a nuanced understanding of how different consumer segments align with varying price points within the coffee market. The intricate interplay between cluster preferences and price range sheds light on the diverse motivations and priorities that drive coffee purchasing decisions across different price categories, providing valuable insights for businesses and marketers aiming to cater to these distinct consumer profiles.

6 Discussion

6.1 Revisit research questions

The most value attributes in coffee bean for Finnish consumers

The evaluation of attribute scores serves as a pivotal cornerstone in our analysis. Through this process, these raw scores are transformed into a more accessible 0-100 range, rendering them not only easier to grasp but also facilitating their comparative analysis, thus laying the groundwork for our subsequent investigations. Among these attributes, we observe an intriguing hierarchy.

Two attributes, "I know the roastery/brand" and "Recommended by other people" occupy the top echelons with the highest scores. These attributes fall under the realm of societal recommendations, underscoring the significant influence of social factors in shaping our respondent' coffee preferences. This reflects a deep-seated Finnish loyalty to familiar brands (Taype, 2022), in line with the broader consensus that societal endorsements play a pivotal role in molding both consumer loyalty and trust (Alldredge & Grimmelt, 2021; Kim & Lee, 2017).

Additionally, within the flavor profile category, "fruity and floral" stands out as a leading attribute, followed closely by "chocolate and nutty" and "funky and exotic". These findings highlight the pivotal role of flavor profiles in influencing coffee choices (Bressani et al., 2021), and a central aspect in artisanal craft products (Manzo, 2010; Cirne et al., 2019)

Surprisingly, the attribute with the lowest score is "The coffee is with a 10% discount" suggesting that discounts may not wield substantial influence over our respondent' preferences. Concurrently, attributes such as "dark roasted" and "medium roasted" coffee find themselves at the lower end of the preference spectrum, signifying that the roast level holds comparatively less significance. This observation mirrors the prevailing trend in Finnish coffee consumption, where approximately 80% of coffee is of the light roast variety (Korhonen, Paulig 2018). Furthermore, it's intriguing to observe that, despite being a significant point of differentiation between artisanal and mass-produced coffee products (Cirne et al., 2019), the roasting method appears to have a relatively modest impact on the Finnish consumer references.

In a similar vein, the impact of sustainable labels on consumer references was comparatively subdued, even though there's undeniable added value to the coffee itself (Samoggia & Riedel, 2018) and in a broader spectrum, sustainable images in artisan products are positively influenced consumer purchasing intentions (Prados-Peña et al., 2022).

When we scrutinize the scores in relation to different price preferences, a fascinating divergence emerges. Consumers with lower budgets tend to favor "flavor profiles: chocolate and nutty”" emphasizing the significance of these flavors. In contrast, consumers with higher budgets exhibit a preference for "flavor profiles: fruity and floral" and "flavor profiles: funky and exotic". Remarkably, these latter attributes rank lower among consumers with lower budgets, revealing variations in taste based on financial constraints.

Consistently, "I know the roastery/brand" remains influential, regardless of budget, highlighting the enduring power of societal recommendations. Furthermore, consumers with higher budgets align with the overall data in their least favored attributes, emphasizing a shared preference for specialty and quality in coffee choices.

Shifting our focus to daily coffee consumption habits, distinct preferences among groups emerge. Those consuming 1 to 5 cups daily share similar proclivities, emphasizing the importance of brand recognition and the "fruity and floral" flavor profile. In contrast, those consuming more than 5 cups a day display a penchant for dark roast and "chocolate and nutty" flavors, exhibiting more extreme scores across attributes, indicating a heightened sense of specificity in their coffee preferences. This contrasts with other groups, which exhibit a wider range of scores and less pronounced differences among individual items, showcasing a more diverse palate.

In this intricate tapestry of coffee preferences, each group carves its unique niche, providing a rich landscape of tastes and inclinations within the world of coffee connoisseurship.

Clusters profile of Finnish coffee consumers differ in their references.

The Latent Class Analysis, empowered by Sawtooth Software Lighthouse, was executed meticulously on the final dataset. A well-considered set of parameters guided this exploration to unveil insights among distinct segments within the data. The 4-groups solution appeared to be a judicious choice. It offers a focused lens for segmentation analysis without excessive fragmentation, facilitating a clearer and more insightful exploration of the dataset.

Besides, the study also scrutinized the relationship between our clusters and background variables using cross-tabulation analysis and the chi-square test. Among the background variables, "price range" was the only one significantly associated with cluster membership. This indicated that pricing significantly influenced the preferences of our clusters, providing valuable insights into consumer choices.

Within "price range" analysis, it became evident that "The Social Savv" group was the most willing to invest in premium coffee, with 91% choosing options exceeding 8 euros. In contrast, "The 'Green' Bean Minimalist”" and the "Eco-Conscious Bargain Hunters" preferred 8 euros or less range, emphasizing value for money. These insights shed light on the diverse dynamics of consumer choices within different price categories.

In Summary, here are profiles for the four distinct consumer clusters identified:

- **Cluster 1: The Social Savvy**
  - Characteristics: This group is characterized by their strong reliance on societal recommendations and brand recognition when choosing coffee. They are willing to invest in premium options, with a significant 91% opting for coffee priced over 8 euros.
  - Flavor Preferences: They favor the rich and indulgent flavors of chocolate and nutty, especially in dark-roasted coffee.
  - Attributes: Quality and peer endorsements are vital for them, while discounts and sustainable labels have less influence.
  - Consumer Behavior: They are discerning consumers who prioritize premium, socially endorsed coffee choices.
- **Cluster 2: The Dark Roast Eco-Champions**

- Characteristics: This group is known for their love of intense and bold dark-roasted coffee. They value sustainability and are influenced by peer recommendations.
- Flavor Preferences: They appreciate the robust character of dark-roasted coffee and may choose it over other flavor profiles.
- Attributes: Sustainable labels and peer endorsements matter to them, while discounts are not a significant factor.
- Consumer Behavior: They are eco-conscious coffee enthusiasts who prefer quality and sustainability in their choices.

- **Cluster 3: The 'Green' Bean Minimalists**
  - Characteristics: This group stands out for their preference for simplicity and light-roasted coffee. They are not heavily influenced by brand recognition or societal recommendations.
  - Flavor Preferences: They prioritize the purity of coffee and opt for light-roasted varieties.
  - Attributes: Brand recognition and societal recommendations have limited sway, but they appreciate value for money.
  - Consumer Behavior: They are minimalists who seek uncomplicated, environmentally friendly coffee experiences.
- **Cluster 4: Eco-Conscious Bargain Hunters**
  - Characteristics: This group exhibits a diversified palate and a willingness to explore different flavor profiles. They also seek value for money and are drawn to discounts.
  - Flavor Preferences: They enjoy various flavor profiles and do not limit themselves to one specific taste.
  - Attributes: Discounts are crucial for them, and they strike a balance between eco-consciousness and cost-effectiveness.

- Consumer Behavior: They are versatile coffee consumers who look for bargains while considering environmental factors.

These four distinct consumer clusters offer valuable insights into the varied preferences and priorities of coffee enthusiasts, enabling businesses and marketers to tailor their strategies to better connect with and satisfy these different consumer profiles. Exploring the nuances of coffee enthusiasts' subculture and its evolving tastes provides valuable insights into the shifting landscape of customer preferences within the craft beverage industry (Garavaglia and Mussini, 2020, Van Der Merwe & Maree, 2016). This is particularly significant in Finland, recognized as one of the world's foremost coffee-loving nations (Clausnitzer, 2023). Understanding these subcultural changes is a key facet of comprehending the evolving paradigms of consumer references.

6.2 Managerial implications

As highlighted earlier, the influence of societal recommendations, especially those stemming from "Recommended by other people" holds paramount significance among coffee consumers in Finland, irrespective of their budget constraints. Remarkably, the group most reliant on these recommendations and brand recognition for their coffee choices also happens to be the segment willing to invest the most in their coffee packs. This underscores the pivotal role that a brand's reputation and recognition play in securing the trust and loyalty of customers (Alldredge & Grimmelt, 2021; Kim & Lee, 2017). Therefore, it becomes imperative for coffee companies to focus on cultivating a positive brand image and enhancing their reputation to foster customer loyalty and attract those willing to spend more.

Simultaneously, flavor profiles emerge as one of the most valued attributes among consumers which once again highlighted the role of taste transformation in specialty coffee, and in broader background, the craft food products (Maciel & Wallendorf, 2016).

An intriguing observation surfaces: regardless of budget, consumers tend to gravitate towards "flavor profiles: chocolate and nutty" whereas only a segment of consumers with more diversity palate also exhibit preference for "flavor profiles: fruity and flora" and "flavor profiles: funky and exotic". This nuanced insight presents an opportunity for roasteries and coffee companies to delve deeper into their flavor profile offerings and refine their product portfolio and strategies accordingly. Recognizing the distinct flavor preferences of various consumer segments can aid in tailoring products to better meet the expectations and budgets of diverse customer groups.

The delineation of the four clusters provides a captivating glimpse into the diverse landscape of coffee consumers in Finland. For companies aiming to attract higher-end customers, a deeper understanding of the Social Savvy and Dark Roast Eco-Champions clusters is essential. These segments prioritize quality, societal endorsements, and sustainability, making them valuable targets for premium coffee products. Moreover, the 'Green' Bean Minimalists cluster presents an intriguing opportunity for companies seeking to introduce innovative and environmentally friendly coffee offerings, particularly in the realm of light-roasted coffee. This group, not swayed by societal recommendations, is genuinely seeking uncomplicated and eco-conscious coffee experiences. On the other hand, the Eco-Conscious Bargain Hunters cluster proves to be an ideal cohort for testing new products with budget-friendly options. Their diverse palate and willingness to explore various flavor profiles make them receptive to innovative coffee offerings that align with their preferences. By understanding these consumer clusters and their unique characteristics, coffee companies can refine their marketing strategies, product development, and pricing strategies to better cater to the diverse preferences and budget considerations of their target audience, ultimately enhancing their market presence and competitiveness in Finland's coffee landscape.

6.3 Limitations, reliability, and validity of the study

Limitations

This study, while informative, does come with certain limitations that warrant thoughtful consideration. Firstly, it is important to note that the dataset utilized for this research consists of a relatively small sample size, comprising a total of 118 responses. While the percentage of high-quality responses indeed reflects the caliber of the respondents, it's essential to bear in mind that the survey primarily catered to a specific demographic: coffee enthusiasts. In other words, the participants were individuals deeply engaged, exhibit a heightened interest in coffee consumption in their daily lives and intrigued by the world of coffee. Furthermore, it’s worth noting that a significant proportion of these coffee aficionados are concentrated in the larger urban centers throughout Finland with more visible coffee events and communities. Consequently, there's a possibility that the survey's target audience may not be fully representative of coffee enthusiasts in smaller towns and villages. Expanding the sample size could potentially provide a more comprehensive and detailed understanding of the cluster profiles and the outcomes of the cross-tabulation analysis.

Furthermore, it is important to recognize that this study places emphasis on specific coffee attributes, selectively focusing on a subset of chosen attributes. There exist several other coffee attributes that were not explored within the scope of this research. A broader and more inclusive examination of these additional attributes could potentially unveil further layers of consumer preferences and contribute to a more holistic comprehension of the factors that influence coffee choices.

Lastly, it is worth mentioning that the Best-Worst Scaling survey, while a valuable research tool, may pose certain challenges to participants. Given its unique format, participants may initially find the survey lengthy, and the questions may appear somewhat complex or overwhelming (Ku et al., 2015b). As a result, it is possible that some participants may not complete the survey in its entirety, and there is a likelihood that the survey responses may not perfectly align with the participant'' true thoughts and preferences. It is important for researchers and analysts to take these factors into account when interpreting the study's findings and drawing conclusions.

Considering these limitations, future research endeavors in this domain could benefit from a larger and more diverse dataset, encompassing a broader spectrum of coffee enthusiasts. Additionally, researchers might consider delving into a more extensive array of coffee attributes to capture a more comprehensive view of consumer preferences. As specialty coffee is a part of artisan food movement, and specialty industries usually influence and inspire each other (Noa, 2023), the study can be widened to other craft food and drink product to understand the influence of enthusiast/connoisseurs to the market references. By addressing these limitations and expanding the scope of investigation, future studies can further enrich our understanding of the intricate world of artisan and craft products choices and preferences among consumers.

Reliability

To ascertain the reliability of the research data, the study implemented a rigorous method for identifying and addressing potentially problematic respondents. This approach utilized the Hierarchical Bayes estimation method to calculate root-likelihood (RLH) scores for each respondent. By utilizing RLH scores, it was able to identify and exclude any "bad" respondents from the dataset before proceeding with further analysis. The specific minimum RLH threshold for exclusion was determined based on the number of attributes included in the survey, in accordance with guidelines provided by Orme (2019). Additionally, Sawtooth Software (2008) also recommended to use RLH as a goodness-of-fit measure. As per Sawtooth Software's guidance, achieving a minimum fit statistic of 0.312 is essential to ensure a 95% correct classification of random responders. Impressively, among the 118 respondents who participated in the BWS portion of the study, a remarkable 98.03% exhibited RLH values that exceeded the 0.312 threshold, with only two responses falling below this criterion. This exceptionally high level of RLH consistency serves as strong evidence of the reliability of the BWS data, providing a solid foundation for subsequent data analysis and interpretation.

Validity

The theoretical foundation of this study is firmly grounded in an extensive and methodical examination of existing consumer research pertaining to coffee. The approach to theory development was meticulous, with the overarching objective of identifying, categorizing, and comprehending the multifaceted motivations, influences, and distinct characteristics that govern coffee consumption and purchasing behaviors. To achieve this, a systematic literature review was conducted, drawing from the work of Samoggia and Riedel (2018), which provided valuable insights into the complex domain of consumer choices within the context of coffee. This robust theoretical framework was further enriched by insights gleaned from expert interviews, aligning the study with real-world perspectives and industry expertise (Bogner et al., 2009; Döringer, 2021). These interviews added depth to our understanding of the various factors at play in the coffee consumption landscape, reinforcing the relevance and applicability of our research.

In addition to the theoretical underpinnings, the study incorporates an array of data representing the contemporary state of the Finnish coffee market and consumption patterns. These data sources are not only current but also encompass a substantial time span, ranging from 2012 to the present day, with the inclusion of forecasted figures extending as far as the year 2025. This temporal breadth offers a comprehensive view of the evolving dynamics within the Finnish coffee market, allowing the study to discern trends, shifts, and emerging consumer preferences over time. By leveraging this wealth of up-to-date information, the study is positioned to provide a nuanced and holistic analysis of coffee-related consumer behavior in Finland. Furthermore, the integration of forecasted data permits us to make informed projections and anticipate potential developments in the coffee market, offering valuable insights for both academia and industry stakeholders. This combination of theoretical rigor and empirical relevance underscores the reliability and robustness of the research methodology, contributing to the overall credibility of our findings and conclusions.

6.4 Suggestions for future research

This study embarks on an exploration of the current coffee consumer landscape in Finland, focusing on coffee enthusiasts' group, shedding light on various facets that beckon further investigation and research avenues.

Firstly, expanding the scope to encompass a larger and more diverse sample size holds promise for future research endeavors. A broader, more extensive dataset has the potential to yield richer insights into the nuances of coffee consumption behaviors among the entire population. With a larger sample, researchers can delve deeper into the analysis of demographic variables, offering a more comprehensive understanding of the distinct profiles that emerge within different segments of the coffee consumer population.

Secondly, the role of coffee flavor profiles as a non-traditional attribute in shaping consumer choices presents an intriguing opportunity for holistic research. This study hints at the correlation between flavor profiles and customer'' willingness to pay, opening the door to further investigation in this domain. Unraveling the complexities of how flavor preferences intersect with pricing considerations could yield valuable insights into the factors that drive consumer decisions in the coffee market.

Thirdly, this study exclusively concentrated on passionate consumers within the coffee industry, particularly those who have a strong affinity for specialty coffee. A more comprehensive examination encompassing enthusiasts and connoisseurs in the realm of other craft and artisan products, such as food or wine, has the potential to bolster our understanding of how this specific cohort of consumers can contribute to the development and influence of the craft food movement.

Lastly, while this study delves into specific attributes, such as price range and flavor profiles, a broader exploration of additional attributes remains an untapped avenue for future research. Variables like country of origin, packaging, sustainability practices, and ethical considerations are all dimensions that can significantly influence consumer preferences and choices. Investigating the interplay between these attributes and their impact on consumer behavior could provide a more comprehensive picture of the multifaceted coffee consumer landscape.

In summary, this study not only elucidates the current references of coffee enthusiasts in Finland but also paves the way for future research endeavors. By expanding the sample size, delving deeper into flavor profiles, and exploring a wider array of attributes, researchers can uncover more profound insights into the intricate dynamics of coffee consumption or craft beverage movement in Finland, offering valuable contributions to the field of consumer behavior and market analysis. Additionally, this research aspires to encourage other craft beverage enterprises in similar domains to delve more profoundly into their customer base, uncovering the evolving trends in product references. This knowledge can empower them to enhance their offerings and better cater to the evolving market needs

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Appendix A: Survey

In this survey, we will gather information about the consumers reference in Finland towards coffee attributes while purchasing coffee pack.

If you have any questions or concerns throughout the survey, please do not hesitate to contact us via email: Ngoc Hoang (ngoc.hoang@aalto.fi)

Thank you for taking time to participate in our survey. We greatly value your insight and opinions. Let's begin

Information for Research Participants

You have been invited to participate in a research study. Participation in this study is voluntary and you can discontinue your participation in the study at any time.

The data will be processed anonymously. Identifying information such as IP addresses will not be gathered, and the responses cannot be traced back to you. Only basic demographic questions will be asked and processed in the research. Anonymized data is no longer personal data.

No personal data is stored, shared, or published.

This study is organized by ngoc.hoang@aalto.fi

Please mark the box to indicate your decision to participate or not to participate:

☐ I agree

☐ I disagree

I am:

☐ Female

☐ Male

☐ Other

My age is:

☐ Below 20

☐ 20-29

☐ 30-39

☐ 40-49

☐ 50 and above

I usually drink everyday...

☐ A cup of coffee

☐ 2 cups of coffee

☐ 3-5 cups of coffee

☐ More than 5 cups of coffee

☐ I don't drink coffee everyday

How much is a bag of coffee (200-250g) you usually purchase at the store?

☐ Under 5 euro

☐ Approximately 5-8 euro

☐ More than 8 euro

The next set of questions is concerning your reference when purchasing coffee pack. The questions may appear similar at first, but they are designed to be subtly different As you progress through the set, you will find the tasks becoming easier. This gradual progression is intentional, allowing you to adjust to the format and make more confident decisions as you become familiar with the process,

Considering only these attributes when buying coffee pack, which of them is the most appealing attribute and which is least appealing attribute to you?

TASK 1/11

Most appealing		Least Appealing
○	The coffee is with sustainable label	○
○	Dark roasted	○
○	Light roasted	○
○	Medium roasted	○

TASK 2/11

Most appealing		Least Appealing
○	The coffee is with offer 10% discount	○
○	Flavor profiles: chocolate and nutty	○
○	Flavor profile: fruity and floral	○
○	I know the roastery/brand	○

TASK 3/11

Most appealing		Least Appealing
○	Light roasted	○
○	Recommended by other people	○
○	I know the roastery/brand	○
○	Flavor profiles: funky and exotic	○

TASK 4/11

Most appealing		Least Appealing
○	Dark roasted	○
○	Medium roasted	○
○	Recommended by other people	○
○	The coffee is with offer 10% discount	○

TASK 5/11

Most appealing		Least Appealing
○	Flavor profiles: chocolate and nutty	○
○	Flavor profiles: funky and exotic	○
○	The coffee is with sustainable label	○
○	Flavor profile: fruity and floral	○

TASK 6/11

Most appealing		Least Appealing
○	I know the roastery/brand	○
○	Flavor profiles: chocolate and nutty	○
○	Light roasted	○

○	Dark roasted	○

TASK 7/11

Most appealing		Least Appealing
○	Medium roasted	○
○	The coffee is with offer 10% discount	○
○	Flavor profiles: funky and exotic	○
○	Flavor profiles: chocolate and nutty	○

TASK 8/11

Most appealing		Least Appealing
○	Flavor profile: fruity and floral	○
○	I know the roastery/brand	○
○	Medium roasted	○
○	Recommended by other people	○

TASK 9/11

Most appealing		Least Appealing
○	Flavor profiles: funky and exotic	○
○	The coffee is with sustainable label	○
○	Dark roasted	○
○	I know the roastery/brand	○

TASK 10/11

Most appealing		Least Appealing
○	Recommended by other people	○
○	Light roasted	○
○	Flavor profiles: chocolate and nutty	○
○	The coffee is with sustainable label	○

TASK 11/11

Most appealing		Least Appealing
○	Dark roasted	○

○	Flavor profile: fruity and floral	○
○	The coffee is with offer 10% discount	○
○	Light roasted	○

Thank you for taking our survey!

Your responses have been submitted successfully.

We greatly appreciate your cooperation and honest response.

Appendix B: Semi-Structure Expert Interview

Dimensions	Interview questions
Coffee attributes	Which coffee attritbutes do you think are the most appealing to Finnish coffee consumers?
Coffee attributes level	Can you elaborate more about the attributes that you just mentioned? For example: What are coffee roasted levels? What are coffee flavors?
Attribute ranking	In your opinion, among those which are the three most important attributes?
Others	If there anything else you wanted to mention? How about sustainability elements or promotions?

Appendix C: List of Experts

Mike Akins, R&D and Factory Manager, Kaffa Roastery. Date of interview: 31.03.2023

Long Nguyen, Coffee Roaster – Quality Control, Mokkamestari Oy. Date of interview: 02.04.2023

Levi Do Nascimiento, Barista and Brewmaster, Cafetoria. Date of interview: 31.03.2023

N.N, Coffee Consultant, Cappuzine. Date of interview: 05.04.2023

N.N, Coffee Roaster, Rost Kahvi. Date of interview: 21.04.2023

N.N, Coffee Consultant, Helsinki Coffee Festival. Date of interview: 22.04.2023

N.N, Coffee blogger. Date of interview: 21.04.2023

N.N, Coffee roaster, Paulig Oy. Date of interview: 23.04.2023