



**COVID-19 and its Lasting Impact on the Consumer Goods and
Services Industry:
How Does the Change in Consumer Behavior Affect the New Normal in
Online and Offline Consumption?**

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Abstract

The COVID-19 pandemic has drastically changed consumer behavior, habits and patterns worldwide. Although there is literature on the impact COVID-19 has had on consumer behavior in the consumer goods and services industry, there is little research on the effects the pandemic has had, now that almost all government mitigation policies are lifted around the globe. This research first reviews the available literature on the impact of epidemics and pandemics on consumer behavior. The second part consists of an empirical survey study using the five-step logic from Nicosia's (1982) consumer decision-making model. Here, COVID-19's impact on consumer behavior changes is measured at each stage of the consumer's decision-making process. A within-subject design is used to elicit the subject's perceptions at three different points in time. Time period one marks the time before COVID-19 was declared a pandemic, time point two marks the time during COVID-19 peak periods and before the introduction of vaccines, and time period three marks the time after the lift of several mitigation policies. The main findings are that consumers return to normal in service-intensive industries such as restaurants or fitness studios. Consumers continue to value sanitation products and avoid contact with sales staff and other customers. Moreover, they return to spending time in retail facilities and increasingly use online channels to search and buy products and services.

Keywords: COVID-19, consumer behavior, consumer decision-making model, consumer goods and services industry, online, retail

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Abstrato

A pandemia de COVID-19 alterou drasticamente os comportamentos, hábitos e tendências do consumidor a nível internacional. Embora exista literatura sobre o impacto que a pandemia teve no comportamento do consumidor na indústria dos bens de consumo e serviços, a pesquisa sobre os efeitos que a pandemia tem agora que as políticas governamentais de mitigação são levantadas em todo o mundo é limitada. Desta forma, a primeira parte desta tese analisa a literatura disponível sobre o impacto das epidemias e pandemias nos hábitos do consumidor. A segunda parte consiste num estudo empírico que utiliza a lógica de cinco passos do modelo de tomada de decisão do consumidor de Nicósia (1982). O método “within subject design” é utilizado para obter as percepções do consumidor em três pontos diferentes no tempo: o período de tempo um marca o tempo antes da COVID-19 ser declarada uma pandemia; o ponto de tempo dois corresponde ao tempo durante os períodos de pico da COVID-19 e antes da introdução de vacinas e o período de tempo três equivale ao tempo após o levantamento de várias políticas de mitigação. As principais conclusões são que os consumidores regressam à normalidade em indústrias de serviços intensivos, tais como restaurantes ou estúdios de fitness. Os consumidores continuam a valorizar os produtos de saneamento e a evitar o contacto com o pessoal de vendas e outros clientes. Além disso, regressam a passar tempo nas instalações de retalho e utilizam cada vez mais canais em linha para pesquisar e comprar produtos e serviços.

Palavras-chave: COVID-19, comportamento do consumidor, modelo de decisão do consumidor, indústria de bens e serviços de consumo, online, retalho

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Título da dissertação: COVID-19 e o seu impacto duradouro na indústria de bens e serviços de consumo: Como é que a mudança no comportamento do consumidor afecta o novo normal em linha e consumo offline?

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List of Abbreviations

ANOVA	One-way repeated measures-analysis of variance
COVID-19	Coronavirus disease
EPPM	Extended parallel process model
FOMO	Fear of missing out
MERS	Middle East respiratory syndrome
SOR	Stimulus-organism-response
TRA	Theory of Reasoned Action
T1	Time period before COVID-19 was declared a pandemic
T2	Time period during the peak phases of COVID-19 and before the introduction of vaccines
T3	Time period after the lift of COVID-19 mitigation policies

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1 Introduction

The COVID-19 pandemic was declared in March 2020 after the novel coronavirus was found first in China in the fall of 2019. It has initiated a cascade of effects on people, organizations, and overall society. Social distancing and lockdowns greatly affected the daily lives of consumers, leading to a significant shift in the spending behavior of consumers (Baker et al., 2020), including turbulent buying patterns that have caused operational disruptions and significant supply chain issues (Hobbs, 2020) (Kirk and Rifkin, 2020). Consumer spending, for instance, dropped by almost a third to 1.1 trillion dollars in the US in the first quarter of 2020. The pandemic also has modified consumers' habits and behavior, including more online shopping, higher hygiene and sustainability consumption, and an inclination to local products (Pandey, 2021). There has been an increase in technology usage, including increased online purchases during and after lockdowns and social distancing measures were put in place by governments (Dey, Al-Karaghoul and Muhammad 2020, p. 298; Gu et al. 2021, p. 2277). As a consequence, many retail-based companies needed to alter their strategy and increased their online offerings, while others, who did not already supply through online channels, struggled to uphold their businesses.

Prior research has highlighted eight immediate effects COVID-19 had on consumer behavior. The review section of this paper highlights five of these effects: Hoarding, Consumer Improvement, Pent-Up Demand, Usage of Digital Technology and Switching to Online Purchasing (Sheth, 2020). There was a change in how people consume and a substantial shift to e-commerce since people avoided public places and travel because of the risk of infection (Jung et al. 2016, p. 1). This shift to new technologies in general and e-commerce, in particular, is also connected to herd behavior, in which people discount their information and focus more on imitation (Sun 2013, p. 1013).

Panic buying has also emerged as a phenomenon during COVID-19. People urge to stockpile products that they feel are important and might be affected by disruptions in the supply chain (Roy et al. 2020, p. 3). This unusual buying behavior is also related to restrictions imposed by the government and correlated to the expected time to be spent in isolation (Laato et al., 2020). This paper explains panic buying with Resource Scarcity, Contagion theory, Crowd Psychology, and Fear of Missing Out (FOMO).

There is heterogeneity in the kind of impact a COVID-19-like virus has on different product categories during its different phases. In their study during the Middle East respiratory syndrome (MERS) in Korea, Jung & Sung (2017) found that the effect was different for electronics,

semi-luxury, and grocery products. Another study on consumer purchasing motivation and behavior during COVID-19 found different motivating factors for consuming essential and non-essential products (Vázquez-Martínez, Morales-Mediano, and Leal-Rodríguez, 2021). The overall impact of COVID-19 on consumer behavior may also change as consumers go through a journey throughout a virus. However, the fear of a virus may dissipate, leading to a change in consumer behavior (Sheng, Ketron, and Wan 2021, p. 26).

There is still little empirical research on the effect of COVID-19 on individual consumer behavior between peak COVID-19 periods and the recent lift of several mitigation measures. A gap remains in theoretical and practical implications and further research is needed to determine if consumers return to old habits and what a new normal in the consumer goods and services industry can look like.

Using the traditional five-step consumer decision-making model developed by Nicosia (1982), this research aims to bridge this gap in three aspects:

1. It adds to the current knowledge about consumer behavior during the COVID-19 pandemic.
2. It adds to how consumer decision-making changed over the course of the COVID-19 pandemic.
3. It provides insights and implications for the consumer goods and services industry on how to react to consumer behavior changes.

The structure of this research is as follows: First, it reviews the literature on the impact of epidemics and pandemics on consumer behavior. Then, it poses the hypotheses at each step of the consumer decision-making model. The research methods section is followed by the data analysis presenting results and findings, the interpretation of results and managerial implications. It then provides a limitations section and the conclusion.

2 Literature Review

2.1 Effect of COVID-19 on Consumer Behavior

Extreme events such as worldwide pandemics cause deep-rooted and permanent changes to the economy and society (Jung et al., 2016, p. 1; Jung and Sung, 2017, p. 2). Such events like natural disasters (e.g. earthquakes, and hurricanes), global pandemics (e.g., COVID-19), as well as regional conflicts and wars (World War II) majorly govern or disrupt consumer habits (Sheth, 2020, p. 280), and have a qualitatively different impact on consumer behavior compared to macroeconomic factors (Jung et al., 2016, p. 11). COVID-19 has lasted for more than two years now and is still spreading. The disease forces governments to place social restrictions and limit outdoor activities where the infections are high (Jung and Sung, 2017, p. 15). Consumers worry about their safety in this uncertain situation, which affects their consumption behaviors and patterns (Hyams, Murphy, and Wessely, 2002, pp. 273–277).

Sheth (2020) summarized eight immediate effects of COVID-19 on consumption behavior. This review section highlights five of these effects that are relevant. (1) Hoarding: Consumers stockpile products they feel are essential, including toilet paper, water, bread, and disinfection products, resulting in temporary shortages and stockouts in stores. That is a common phenomenon when the future supply of basic needs products is uncertain. (2) Improvisation: Consumers learn to improvise when faced with constraints. Consumers, thus, discard old habits and find new ways to consume. (3) Pent-Up Demand: Consumers postpone the purchase of discretionary products during times of crisis and uncertainty like COVID-19. (4) Embracing Digital Technology: Consumers adopt new technologies and their applications out of sheer necessity during a crisis like the COVID pandemic. (5) Store Comes Home: Because of lockdowns and restrictions in many countries, consumers cannot go to physical stores and outlets for shopping. That has led to an increased usage of e-commerce for home deliveries.

Viruses like COVID-19 change the daily behavior of individuals. A study done on the attitudes of Indian consumers during COVID-19 found that they were willing to follow the social restrictions put in place by the government. The study found that more than 80% of the people were worried about the virus, 82% felt the need to avoid social contact, 77% reported the need to use sanitizers and gloves, and 31% felt the need to stock up essential items at home (Roy et al., 2020, p. 5). Research done during MERS in Korea found that such a virus has varying impacts on consumer expenditures (Jung et al., 2016). This research found that consumers reduced their expenditures at departmental stores by 18%, reduced expenditures on food outside

by 8.24%, increased e-commerce expenditures by 5.24%, reduced expenditures on recreation and culture by 6.87%, and maintained their level of expenditures in groceries. (Jung et al., 2016, pp. 10–11).

The rise in COVID-19 and the social distancing measures have disrupted the shopping behavior of consumers (Sheth 2020, p. 280). There was a change in online and offline consumption after the surge of COVID-19. That is because consumers tend to avoid travel and public places to reduce the chance of getting infected (Jung et al. 2016, p. 1). Furthermore, Laguna et al. (2020) established in their study that there is a strong relation between self-quarantine and the intention to procure uncommon products. This shopping behavior was directly connected to the expected time to be spent in quarantine (Gu et al. 2021, p. 2278). They found that isolation measures taken by people were driving the unexpected shopping behaviors witnessed in March 2020 (Laguna et al., 2020).

2.2 Adoption of New Technologies

Breakthrough technologies like the internet, smartphones, and e-commerce significantly impact consumer behavior and break the old habits of consumers (Sheth, 2020, p. 280). Imminent changes that COVID-19-related lockdowns have had is a higher use of various digital technologies and internet-based services (De', Pandey, and Pal, 2020, p. 1). There have been changes in consumers' preferences and behaviors, such as changing to online shopping and alternative delivery and pick-up options (Dey, Al-Karaghoul, and Muhammad, 2020, p. 300). Consumers have switched channels due to a virus before as well. During the MERS outbreak in Korea, a study found that consumers dramatically cut down expenditure in traditional shopping channels and substantially increased e-commerce spending because of fear of infection (Jung et al., 2016, p. 2).

In the context of shifting to new technologies, research finds a significant effect of herd behavior (Sun, 2013, p. 1033). Concerning this adoption of new technologies, *herd behavior* means discounting the efforts of self and focusing more on imitation of others (Sun, 2013, p. 1013). Such behavior is widespread when many people have already adopted a new technology. Furthermore, uncertainty about adopting a new technology also leads people to believe that their information is insufficient and leads them to discount it (Sun, 2013, p. 1033). This same study also finds that these adoption decisions are fragile and might reverse post-adoption. This adoption pattern – i.e., a widespread acquisition followed by subsequent abandonment – has been

observed in several new technologies, including Amazon's Kindle, Apple products, as well as Web 2.0 technologies (Sun 2013, p. 1013).

2.3 The Substitution Effect Between Online and Offline Channels

The use of internet has been on the rise since the 1990s, and an increasing number of consumers consider it an essential venue for shopping. At the same time, many companies have incorporated e-commerce into their channel strategy and devoted substantial resources (Chu et al., 2010, p. 251). Compared to brick-and-mortar stores, the internet majorly reduces search costs, provides easy access to product information, enables convenient product comparison, and involves no travel or restrictions on shopping hours. On the other hand, it does not allow physical examination of products, instant gratification, and interpersonal communication like offline shopping (Chu et al., 2010, p. 251).

If two forms of consumption are substitutes, a rise in the demand of one will result in the fall of the other due to crowding out (Auteri and Costantini, 2010, p. 782). The study of Jung et al. in 2016 conducted in Korea found that epidemics lead to a decrease in the expenditures in traditional shopping channels, and consumers prefer online channels to avoid catching the virus (Jung et al., 2016, p. 2). The likelihood of catching COVID-19 is high in offline consumption, with grocery and other physical stores being hot spots from where such an infection could spread (Chang et al. 2021, p. 84). That leads consumers to contemplate how often they should visit physical outlets for shopping (McKinsey & Company 2020a). The total consumption might not be affected after an external shock since alternative shopping channels are now available in the market. For example, during the MERS outbreak in South Korea, the retail consumption of electronic products fell by 7.9%, while online consumption rose by 7.03% (Jung and Sung, 2017, p. 13). However, research conducted by Pozzi (2013) found that the introduction of an online shopping service had limited cannibalization on offline sales (Pozzi 2013, p. 569), indicating that they are not pure substitutes.

Sheth (2020) articulated that consumers may return to old ways of shopping as the COVID-19 situation improves. However, there are also chances that this shift of consumers to use online shopping is a more permanent shift as consumers discover more convenient and cheaper modes of shopping, and the sellers introduce novel practices in the online world of shopping (Sheth, 2020, pp. 280–283).

2.4 Panic Buying and Stockpiling

Apart from its macroeconomic effects, COVID-19 has also affected people's mental well-being and daily lives on a micro-level. Among the anxiety and chronic distress that this uncertainty has brought, panic buying also emerged as a phenomenon during the COVID-19 pandemic, which has a significant impact on buyers' actions (Prentice, Quach, and Thaichon, 2022, p. 1). *Panic buying* is the procurement of products in bulk due to a prediction that a crisis or disaster will disrupt their supply (Yuen et al., 2020, p. 1). Roy et al. (2020), in their study regarding COVID-19, revealed that approximately one-third of the people have the urge to stock up products they find essential during a pandemic. Seeing friends, family, and unacquainted others on social media stock up on products may also enhance the fear of missing out, leading to panic buying behavior (Roy et al., 2020, p. 3).

Government measures to combat the virus like social distancing, lockdowns, and curfews are also related to panic buying. Laato et al. (2020) researched purchasing behavior during the initial stages of COVID-19. They found a strong relationship between intention to quarantine and intention to engage in unusual buying behavior. Using the stimulus-organism-response (SOR) framework, this study finds that exposure to online information sources is an environmental stimulus. *Unusual purchase behavior*, which is a milder version of panic buying (Laato et al., 2020, p. 5), is individuals' response in such situations. Furthermore, the extent of this unusual purchasing behavior links to the expected amount of time people spend in isolation. This study also found that excessive online information about the virus led to *cyberchondria*, which refers to stress and anxiety about health leading to compulsive and excessive online health-related searches, which further fuels the anxiety and tension (Starcevic and Berle 2013). Cyberchondria further led to voluntary quarantine measures and unusual purchase behaviors.

Prentice et al. (2022) studied the effect of social media and peer influence, government measures, and fear of missing out on panic buying behaviors drawing on the theories of resource scarcity, contagion theory, and crowd psychology (Prentice, Quach, and Thaichon, 2022):

1. Resource Scarcity: There is often a surge in demand and subsequent scarcity of essential items during a health crisis, and consumers search for cues in such situations whether they should stockpile (Cannon, Goldsmith, and Roux, 2019). Purchase of products that might be perceived to be scarce soon is a coping strategy and helps mitigate the regret linked to shortages in the future (Prentice, Quach, and Thaichon 2022, p. 2). The realization of fear and anxiety of surrounding people about scarcity and stockouts may trigger similar emotions and lead to panic buying (ibid., 2022, p. 3).

2. Contagion Theory: Individuals' emotions and behaviors can spread through "contagion" (ibid., 2022, p. 2). *Contagion* is "the process by which a person or group influences the emotions or behavior of another person or group through the conscious or unconscious induction of emotion states and behavioral attitudes" (Schoenewolf, 1990, p. 50). Contagion theory also supports the urge to stay connected with what other people are doing, known as the fear of missing out (Przybylski et al., 2013). FOMO further enhanced by social media, is defined as the "pervasive apprehension that others might be having rewarding experiences from which one is absent" (ibid., 2013, p. 1841). FOMO prompts consumers to focus on what other people are purchasing, reminding them of purchases they might be missing and thus leads to panic buying behavior (Prentice, Quach, and Thaichon, 2022, p. 3). In such circumstances, consumers might also be prone to follow herd behavior (Bernheim, 1994).

3. Crowd Psychology: Crowd psychology indicates that maladaptive crowd behaviors like panic buying and stockpiling during such diseases may result from psychological weakness (Drury, Novelli, and Stott 2013, p. 19). Media influence in the form of pictures and videos of empty shelves and stories of stockpiling suggests that others are only watching out for themselves and provokes a desire to follow a similar behavior (Bavel et al., 2020, p. 462). Social media images of empty shelves and messages about the toilet paper crisis lead consumers to think about product scarcity (Przybylski et al. 2013).

These theories of Resource Scarcity, Contagion, and Crowd Psychology enrich and back the understanding of panic buying.

2.5 Contrasting Impact on Demand Among Product Categories

The effect of a global pandemic on consumption varies among product categories, where some are resilient to it, and others are vulnerable to it (Xu, Gao, and Zhang 2021, p. 992). The study of Jung et al. in 2016 conducted in Korea also found that the disruptions caused by epidemics were not widespread in all categories (Jung et al., 2016, p. 12). The tourism industry, for example, and all products related to it are highly vulnerable and impacted after epidemics or disasters (Papatheodorou and Pappas, 2017; Pine and McKercher, 2004, p. 143). On the other hand, there might be an increase in the demand for children's products, sporting items, medical supplies, and entertainment goods (Gu et al., 2021, p. 2266).

Jung and Sung (2017) studied MERS effect on the online and offline sales of electronic, semi-luxury, and grocery products. During this syndrome, online and offline markets acted as pure substitutes for electronics goods. For semi-luxury products, the offline sales decreased for two

months by about 22.12%, but there was no impact on the online sales. That could be because semi-luxury products neither satisfy consumer needs like grocery products nor are they essential for business like electronics (Jung and Sung, 2017, pp. 11–12). Therefore, there is a delay in sales in semi-luxury products consumption. There was no statistically significant effect of the MERS outbreak on grocery products since groceries are a necessity rather than an option. This study, therefore, summarized that such a virus has contrasting effects based on the product category in focus.

Vázquez-Martínez, Morales-Mediano, and Leal-Rodríguez (2021) did research on the consumer purchasing motivation and behaviors during COVID-19. They observed many changes in how people consume, what they consume, and changes in the frequency of this consumption. There was a rise in the consumption of essential goods, including health products like disinfectants. Concerning non-basic products, some people increased consumption in this area, while others decreased. The research uncovered that people who increased consumption of non-essential products were motivated by entertainment purposes or to cater to utilities of products at home because of the spread of COVID-19. Those who decreased spending on non-basic products were motivated to save money due to the uncertain pandemic situation or did so because they canceled their travels and leisure. Concerning durable goods, people mainly postponed rather than canceled these expenditures. All these purchase behaviors were motivated by four factors: fear of contagion, restrictions by the government, shortages of products in the market, or the economic situation of people in the coming months (*ibid.*, pp. 5–6).

2.6 Behavioral Changes Through a Pandemic

Concerning consumer shopping behaviors, do old habits die or return? According to Sheth (2020), most old habits will return. However, some habits will certainly stick since consumers have found alternative ways that provide more convenience, affordability, and accessibility (*ibid.*, p. 282). A universal law of consumer behavior suggests that a habit given up comes back as a recreation or a hobby, thus raising the possibility that shopping in physical locations becomes more of a recreation or hobby (*ibid.*, 2020, p. 282).

The impact of COVID-19 on consumer behavior and buying patterns seems to diverge sharply. While some consumers have strong reactions to the virus, leading them to quarantine measures and bulk buying (Wang et al., 2020, p. 744), others believe that the virus is exaggerated and overstated in the media, and extreme measures or reactions are not necessary (Sheng, Ketron, and Wan, 2021, p. 2). Research has found that individuals' differences and risk perceptions

affect their shopping behaviors, specifically in-store shopping vs. home deliveries (Grashuis, Skevas, and Segovia, 2020, p. 5).

There is little work done on identifying distinct, pandemic-based consumer segments. Sheng, Ketron, and Wan (2021) tried to reduce this research gap by identifying the various consumer segments present during COVID-19, their attitudes and behaviors, and if these segments changed in nine months. The researchers used the Extended Parallel Process Model (EPPM) (Witte, 1992), which is a prominent health communications theory, and the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975) in this paper. They used EPPM to offer insights into how consumers might respond to communication about health threats. On the other hand, they used TRA to connect perception and attitude about a threat perception to behavior (Sheng, Ketron, and Wan, 2021, p. 3). These two theories offer an excellent framework to predict the perception and behavior of consumers in the COVID-19 pandemic.

The study revealed three major consumer segments during the early stages of a pandemic: (1) The Apprehensive: This segment is particularly threatened by the virus, exhibits positive attitudes towards companies enforcing COVID-19 guidelines, and engages in panic buying, hoarding, and stockpiling. (2) The Prepared: This segment perceives a lower sensitivity towards the virus but still takes Covid threats seriously and exhibits a positive attitude towards Covid guidelines enforcing companies. (3) The Dismissive: This segment downplays the risks of the virus and exhibits adverse reactions to COVID-19 mitigation measures. After research was done again after nine months, the segments changed, and the main two segments found were The Prepared (now called The Dedicated) and The Dismissive (ibid., pp. 24–25). The study also found that two-thirds of the people in the initial stages fell into a category that took the pandemic seriously. That, however, was not the case later on, as the fear was largely dissipated (ibid., p. 26).

In line with the study above, Kirk and Rifkin (2020) propose that consumers go through a specific journey during a pandemic. At introducing the potential of such a threat, they react, attempt to form a defensive strategy and stay away from a difficult situation. As time passes, they adjust their behaviors in the second stage to align with new realities and gain control over other domains. The study finds that consumers adapt to the environment and the new normal in the last stage. Instead of being reactive to the situation, they show more resilience.

3 Consumer Decision-Making Model & Hypotheses

The literature proposes the five-step consumer decision-making model developed by Nicosia (1982) to assess the perception and buying behavior changes of consumers during the COVID-19 pandemic. It was used before by Mason, Narcum and Mason (2020) to test consumers' COVID-19-related behavior and perception changes before and after the pandemic was declared. It includes problem recognition (the need for a service or a product), information search, product alternative evaluations, purchase decision behavior (the actual purchase) and post-purchase evaluation, which is the consumers' reflection on the purchase. A corresponding diagram of the consumer decision-making model is provided below (ibid., 2020, p. 302).

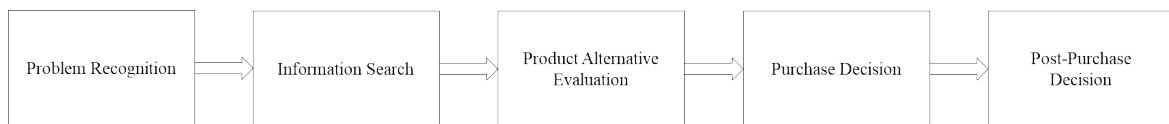


Figure 1 – The Five-Step Consumer Decision-Making Model after Nicosia (1982)

3.1 Problem Recognition Stage

In the first stage, problem recognition occurs “when a consumer’s actual state and their desired state of being are incongruent“ (Bruner, 1987, qtd. in Mason, Narcum and Mason., 2020, p. 302). Moreover, problem recognition activates a perceived need that would resolve the problem (Mason, Narcum and Mason, 2020, p. 303). During the current COVID-19 pandemic, consumers’ perceived needs for essential products like personal sanitation and cleaning products shifted drastically, while their needs for public goods and services such as transportation or public gyms decreased. McKinsey & Company (2020b) also state that consumers now value health-promoting products higher and put more emphasis on healthy nutrition and dietary needs since the start of COVID-19 pandemic. Although one can assume that many consumers’ desires and needs are shifting back again to conservative pre-pandemic levels, there is still doubt in what way the past pandemic-ridden years have left their mark on consumers’ perceived needs. However, taking into account recent lifts of COVID-19 restrictions in many European countries and others to follow in the summer of 2022, one could postulate the following hypotheses:

Hypothesis 1: *Consumers' perceived needs for publicly consumed goods and services are significantly higher after the lift of COVID-19 mitigation policies compared to pre-COVID-19 times.*

Hypothesis 2: *Consumers' perceived needs for personal sanitation and cleaning products are significantly higher after the lift of most COVID-19 restrictions to pre-COVID-19 times.*

Hypothesis 3: *Consumers feel a greater need to buy health-promoting products to actively protect themselves against diseases like COVID-19 (pre- to post-COVID-19 restrictions).*

3.2 Information Search Stage

In the second stage, consumers actively search for information before buying a product or service. The information search process can be internal or external. Internal information search occurs when the consumer already stored information in memory, while external information search must first be acquired from the environment (Schmidt and Spreng, 1996, p. 247). The information process also differs for products with different priorities for the consumer. For instance, a consumer who seeks to buy everyday products such as bread or a haircut usually exerts less effort than for more important decisions such as the purchase decision of real estate or an insurance contract. Consumers, therefore, use peripheral routes to process information if the involvement is low and form product understanding from simple cues (colors, music, smiling faces), but are higher involved when the product or service requires more in-depth research from multiple resources. In this case, consumers tend to talk directly to marketers, experts or other peer consumers to gather product information. (Mason, Narcum and Mason, 2020, p. 304) The COVID-19 pandemic has altered product information search significantly. Consumers were able to spend less time outside during lockdowns and were forced to gather their information primarily via online media or TV advertising. Therefore, one can assume that the information process regarding the search for products or services increasingly took place in front of digital screens. Another problem emerged, as Knowles and Olatunji (2021, et al.) found out, that customers feared physical contact with each other and to retail personnel and thus avoided public spaces as well.

However, since recent lifts of government mitigation policies due to the alleviation of the COVID-19 pandemic by several less severe variants and effective vaccines, consumers can use the full spectrum of information search yet again. However, there is uncertainty to what extent

consumers return to pre-pandemic information search behaviors. Consequently, the following hypotheses are postulated:

***Hypothesis 4:** Time spent in retail facilities after the lift of COVID-19 mitigation policies is significantly lower compared to pre-COVID-19 times.*

***Hypothesis 5:** Consumption of online advertising and online search for information is significantly higher after the lift of COVID-19 mitigation policies compared to pre-COVID-19 times.*

3.3 Product Alternative Evaluation Stage

After the completion of the previous stage, the consumer creates a set of alternative products in what is called the product alternative evaluation stage. During this step, consumers evaluate all their product and brand options on a scale of attributes that can deliver the benefits the customer desires. The brands and products to compare represent the alternatives consumers consider during the problem-solving process. Basically, the consumer identifies an evoked set, i.e., the set of products that exhibits the perceived product attributes that can provide the desired benefit (Mason, Narcum and Mason., 2020, p. 305). The process itself differs again for low and high-involvement products. For products that require extensive external research, the consumer usually uses extended problem-solving that justifies the higher exerted effort for an expensive or scarce product (Course Hero Consumer Marketing, 2022). Here, the consumer looks at more than one brand to evaluate. For the assessment of low-involvement products or services, the process is easier as they are mostly inexpensive, low-risk, and thus require only habitual problem-solving (ibid.).

The COVID-19 pandemic has led many people to put more emphasis on products or services with a high perceived safety, which means that consumers may choose a product with a high perceived safety over another product, even if other characteristics eventually outperform. Therefore, consumers might choose a restaurant, for instance, based on the safety measures taken into place and put location, food reviews and other criteria further behind. One can assume that newly formed habits help to sustain the relevance of product and service safety for consumers after this pandemic. Therefore, one can come up with the following hypothesis:

***Hypothesis 6:** Consumers' perceived safety for products and services is significantly higher after the lift of COVID-19 mitigation policies compared to pre-COVID-19 times.*

3.4 Purchase Decision Stage

Upon completion of the product evaluation stage, consumers are set to make a purchase decision. This happens once the consumer decided which product, brand, service or solution to buy. The purchase decision also contains the vendor selection, the timing of the purchase and the payment method (Mason, Narcum and Mason, 2020, p. 306). Moreover, there is a time lag between the buying decision and the actual purchase (Stankevich, 2017, p. 11). This time delay differs again for complex purchases such as cars, computers and other durable goods and low-involvement non-durable, everyday goods (ibid., p. 11).

The perceived risk of a considered product or service is a salient factor in the purchase decision stage. “The perceived risk is the consumer’s fear that a product may not perform as desired” (Mason, Narcum and Mason., 2020, p. 306). Consumers often seek advice and consultation from friends and family or perceived experts. However, due to consumers’ fear of getting infected by COVID-19 and mitigation policies put into play by governments, the social influence on consumers’ perceived risk is reduced.

For the above-mentioned reason, a similar observation can be made as to why consumers spent less time in retail stores. Both government decisions and a collective fear of the virus lead people to move purchase activities online or use product pick-up services on-site to avoid the interior facilities of brick-and-mortar stores. These new dynamics will likely mean that in-store promotions and retail sales staff will have less influence on the actual purchase decision. It is under review if these changes prevail once the pandemic is over. In any way, the accommodation of healthcare policies forced retailers to change design, layouts and the nature of in-store marketing stimuli. (Mason, Narcum and Mason, 2020, p. 307)

However, recent restriction lifts helped retailers to abandon government measures. Still, there is a trend to observe that consumers return to retail facilities but sustain online purchases in many ways.

Following the new purchase decision-making behavior, consumers may be inclined to increase e-commerce purchases compared to pre-pandemic times but reduce “pick-up” services to a level close to pre-pandemic times. Therefore, the following hypotheses are proposed:

***Hypothesis 7:** Consumers significantly decrease the use of store pick-up services between COVID-19 peak periods and the lift of COVID-19 mitigation policies.*

Hypothesis 8: *Consumers usage of online delivery services is significantly higher after the lift of COVID-19 mitigation polices compared to pre-COVID-19 times.*

3.5 Post-Purchase Decision Stage

During the last stage – the post-purchase process – consumers evaluate and review the product or service (Stankevich, 2017, p. 11). Additionally, they create feelings that are connected to their levels of satisfaction or discontent with the transaction made (Mason, Narcum and Mason, 2020, p. 307). Moreover, consumers question themselves if the product or service was the right one to choose if expectations were met and promises fulfilled.

The post-purchase process is an important stage for marketers. It is the time when consumers elaborate whether to buy the product or service again. If they decide to rebuy at a specific vendor, they usually form loyalty behavioral intentions. (Ibid., p. 307)

The COVID-19 pandemic has altered consumers' post-purchase processes significantly as well. Mason, Narcum and Mason (2020), for instance, point out that service providers like physicians needed to make more frequent use of telemedicine procedures due to social distancing policies. Fitness clubs were also forced to offer online training plans and courses to retain members during closing periods. Mason, Narcum and Mason (2020) found also that providing these services virtually hindered post-purchase marketing activities, which resulted in lower levels of customer satisfaction compared to pre-pandemic times. These findings may be true for post-purchase satisfaction levels of traditional retail consumers that were forced to shift to online channels. However, recent lifts of COVID-19 mitigation policies allow consumers again to choose freely the channels they prefer for shopping. Consequently, one can expect an increase in shopping satisfaction levels compared to COVID-19 peak periods. Therefore, the following hypothesis is posed:

Hypothesis 9: *Consumers' overall purchase satisfaction levels are significantly higher after the lift of COVID-19 mitigation policies compared to COVID-19 peak periods.*

4 Research Methods

The purpose of this study is to gain insights into the changes in consumers' perceptions and behaviors developing over the course of the recent COVID-19 pandemic.

A within-subject design is used, with the treatment variable "time", where each subject had to rate the same item at three distinct time points. The data was gathered in May 2022 using a *Qualtrics* questionnaire.

The dependent variables are specific consumers' perceptions and behavioral intentions (related to their buying behavior and decision-making processes). They are the survey participants' answers on problem recognition, product information search behaviors, product alternative evaluations, purchase decision behaviors and post-purchase product satisfaction levels. The independent variable is the impact of the COVID-19 pandemic on consumer-decision making. (Mason, Narcum and Mason, 2020, p. 308). Since recent mitigation policies are in effect by almost all European countries, declaring COVID-19 not as a severe illness anymore, three time periods, related to the pandemic, to measure the impact of COVID-19. The first time period is the time before COVID-19 was declared a pandemic. Specifically, before the spring of 2020. The second time period represents the time after the pandemic was declared and most importantly before the introduction of COVID-19 medicine and vaccines – at the beginning of 2021. Time period three marks the end of most restrictions and mandatory masks in public spaces implemented to mitigate COVID-19 (Spring, early summer 2022).

The survey consists of 47 statements, divided into seven blocks (Appendix). The first five blocks strictly follow the five-step logic of Nicosia's (1982) consumer decision-making model (39 statements), where some survey questions were partially adapted from Mason, Narcum and Mason (2020) but remodeled to the three-time point logic. An additional block six elicits the consumers' perception towards sustainability and social responsibility at two time points – before COVID-19 and now, after the end of government mitigation policies (four statements). The last block entails four questions, merely of demographic nature.

A five-point scale with a range from one = "very low" and five = "very high" is used to rate items within the consumer decision-making model. For the four questions in the sustainability and social responsibility block, a five-point scale with a range from one = "very unimportant" and five = "very important" was used. 108 respondents participated in this study. The population of interest mainly concentrates on consumers from different European nationalities, but with proximity to Lisbon, Portugal due to many respondents being either students or former

students of Católica Lisbon School of Business and Economics at the time of this research. Table 1 provides more insights into demographics such as age, gender, education level and nationality.

Demographic Variable	Description
Age	20% between 18-24 years old 73% between 25-34 years old 7% between 35-44 years old
Gender	67% male, 33% female
Education Level	6% Apprenticeship 47% Bachelor's degree 47% Master's degree
Nationality	7% Austria, 7% France, 53% Germany, 7% Italy, 18% Portugal, 8% Spain

Table 1 – Sample Pool, N = 108

The literature proposes a one-way repeated-measures analysis of variance (ANOVA) for the present data. This procedure is frequently used when the same subjects are measured more than once at different points in time. Hence, I used this approach although the data fails Shapiro-Wilk's test and does not fulfill the normality assumption. The Appendix includes normality tests in *R Studio*. However, the Central Limit Theorem (CLT) states that if a sample is sufficiently large, the sampling distribution of the mean will always be normally distributed. By convention, if the sample size is $n \geq 30$, the CLT applies. Here, I experimented with a sample size of $n = 108$. Thus, the sample size is indeed sufficiently large, and the data is approximately normally distributed.

According to Schober and Vetter (2018, p. 570) ANOVA provides an overall p-value but is unable to identify which group means are different from one another. A solution to this problem is to use post-hoc tests that compare means at all three time points among each other. Another concern is that ANOVA techniques make quite strong assumptions about correlation and sphericity (ibid., p. 570). The “violation of constant correlation between repeated measurements for the same subject” is a common threat. Sphericity “means that the variances between any two time points are the same”. (ibid., p. 570) The Greenhouse-Geisser sphericity correction is automatically applied in the ANOVA command that is used in *R Studio*. Paired t-tests are used as post-hoc tests to measure effects between the different time periods. The p-values are corrected

by the Bonferroni method, which reduces the chances to receive “false-positive results when multiple pair-wise tests are performed on a single data set” (Napierala, 2012).

5 Data Analysis

The problem recognition stage is the first stage of Nicosia's (1982) consumer decision-making model. Here, different items about needs and perceptions of products or services are used to test the hypotheses. Table 2 shows a summary of relevant statistics. Time period one (T1) specifies the time point before COVID-19 was declared a pandemic, time period two (T2) specifies the time point during the peak phases of COVID-19, but before the introduction of vaccines, and time period three (T3) marks the preliminary end of the COVID-19 pandemic after the lift of almost all pandemic-related government mitigation policies.

The ANOVA test for all problem recognition items yields a statistically significant difference for the time groups ($p < 0.01$) (Appendix). Consequently, one can proceed to the post-hoc t-tests. For the first statement "Desire to eat out in a restaurant", the paired t-tests identify a significant pairwise difference among all three time groups (Table 2). These findings are in line with *Hypothesis 1* that consumers show an increased need to dine out in restaurants after the drop of COVID-19 measures. The mean difference of 0.35 shows a positive shift (T2 to T3) toward consumers' increased desire to dine in restaurants yet again. Moreover, there is a significant statistical difference between respondents' need to dine out in a restaurant before the COVID-19 pandemic and during its peak phases. Due to general closings, mitigation policies and a general fear of the virus, consumers considerably decreased their desire to dine out during COVID-19s' peak phases. Another hard-hit industry by the pandemic are sports and recreation facilities. T-test results from the statement "Desire to work out in a gym" over the course of the pandemic have a significant statistical difference between T2 and T3, showing an increased need to work out in public gyms again, looking at the group means. At the 10% level, there is a statistically significant difference between the desire to work out in a gym before COVID-19 and now. This is an early indication, looking at the group mean differences, that people increase going to the gym compared to pre-pandemic times. Furthermore, the perceived need for sanitation and cleaning products is significantly different among all three points in time. This is in line with *Hypothesis 2* that consumers increased their need for these product categories. Looking at the group means of all ratings, one can determine the direction of the effect being positive from T1 to T2 and declined significantly at T3. Given the fact that the pandemic is not officially over yet and still poses a significant risk to vulnerable populations, the high mean rating at T3 indicates a continued caution for the virus and an increased hygiene need. Respondents' rating for health-promoting and disease-prevention products shows pairwise

statistically significant differences among all time points. These findings prove, looking at mean group ratings, that from T1, respondents feel a greater need to actively protect themselves against diseases such as COVID-19. The group mean for T2 is 4.07 and then decreases significantly to 2.69 at T3. However, when looking at the differences between T1 and T3, there is great evidence to assume respondents’ increased awareness of health-promoting products or services. These findings are in line with *Hypothesis 3*.

Stage 1	Mean (Standard Deviation)			Adjusted P-Value		
	T1	T2	T3	T1 and T2	T1 and T3	T2 and T3
Problem Recognition Perceptions						
Desire to eat out in a restaurant	3.65 (1.06)	3.06 (1.7)	4.00 (0.98)	<0.01*	<0.01*	<0.01*
Desire to work out in a public gym	2.99 (1.38)	2.56 (1.54)	3.25 (1.52)	<0.05*	<0.10*	<0.01*
Desire for sanitation products	1.51 (0.84)	4.07 (1.01)	2.69 (1.09)	<0.01*	<0.01*	<0.01*
Desire for health-promoting products	2.59 (1.06)	3.50 (1.06)	3.22 (1.04)	<0.01*	<0.01*	<0.01*

Table 2 – Problem Recognition Stage Results of Paired T-Tests

The second stage in the consumer decision-making model represents the information search stage for products or services. The ANOVA test for all the below information search perception items (Table 3) yields a statistically significant difference for time groups with ($p < 0.01$) (Appendix B). Looking at the time point means of the “Time spent in retail facility” item, one recognizes a big downward trend (T2) because of consumers’ reaction to lockdowns, curfews and general fear to contract the virus. Moreover, there is a significant difference from T2 to T3, indicating that consumers indeed return to normal, to be observed by the similar average mean ratings between T1 and T3. This is not in line with *Hypothesis 4* that consumers’ time spent in retail facilities is significantly lower after the lift of COVID-19 mitigation policies compared to pre-COVID-19 times. There is no statistically significant difference between T1 and T3. Additionally, the similar mean ratings at T1 and T3 may indicate that retailers can expect consumers to return to their facilities. However, consumers seem to still fear the contraction of the virus or indoor mass gatherings in general. This is indicated by the statement’s results “Avoidance of personal contact with sales staff and other customers”. Here, the mean differences from T1 to T3 show a striking increase by 0.56 points on average. The usage of online channels to

search for products and services also obtains a statistically significant difference among all three time groups. The group mean at T1 already indicates a high use to gather product and service information online prior to COVID-19. Moreover, there is a preliminary peak (4.20) during the worst periods of COVID-19. Nevertheless, the group mean at T3 remains statistically significantly different from T1 after the lift of measurements. The high mean rating at T3 (3.82) compared to T1 (3.44) confirms *Hypothesis 5*. Consumers considerably increase online research for products and services. These findings seem to explain COVID-19 as a major behavioral change event in consumers' information search processes for products and services.

Stage 2	Mean (Standard Deviation)			Adjusted P-Value		
Information Search Perceptions	T1	T2	T3	T1 and T2	T1 and T3	T2 and T3
Time spent in retail facility	3.02 (0.94)	2.01 (1.07)	3.00 (1.11)	<0.01*	not significant	<0.01*
Avoidance of personal contact with sales staff and other customers	2.01 (0.98)	3.41 (1.32)	2.57 (0.97)	<0.01*	<0.01*	<0.01*
Usage of online channels to search for products or services	3.44 (1.01)	4.20 (0.87)	3.82 (0.97)	<0.01*	<0.01*	<0.01*

Table 3 – Information Search Stage Results of Paired T-Tests

Table 4 shows the results of respondents' product evaluation and purchase perceptions and behaviors. The ANOVA test at these two stages yields again a statistically significant difference for the time groups ($p < 0.01$) (Appendix B). The following results from the post-hoc paired t-tests confirm statistically significant differences in respondents' importance of product and service safety between T1 and T2 (+0.73 on average) and T1 and T3 (+0.47 on average). There is no statistically significant change from T2 to T3 in mean ratings. The findings indicate an increased need for product and service safety even after the peak phases of COVID-19. This result also draws inferences about the continuation of cautious behaviors for product and service safety formed during the peak phases of COVID-19. The results are in line with *Hypotheses 6* as well. Concerning purchase behaviors, the sampled consumers elicited a medium use of online delivery services before the pandemic (mean of 2.93). The high mean rating for T2 indicates the statistically significant shift toward the usage of online delivery services during COVID-19s peak periods. The statistically significant different adjusted p-value from T1 to T3 shows an increase in to use of online delivery services in the future, just short of the high level T2 value. The usage of store pick-up services also elicits significant behavior changes from consumers. These purchase behaviors confirm the respondents' increased anxiety to physically

visit stores. However, the results between T2 and T3 indicate that respondents reduce pick-up services significantly. This is in line with *Hypotheses 7 & 8*.

Stage 3 & 4	Mean (Standard Deviation)			Adjusted P-Value		
Product Evaluation Perceptions	T1	T2	T3	T1 and T2	T1 and T3	T2 and T3
Importance of product and service safety	2.78 (1.14)	3.51 (1.00)	3.35 (0.97)	<0.01*	<0.01*	not significant
Purchase Behaviors						
Usage of online delivery Services	2.93 (1.10)	4.05 (0.99)	3.32 (1.07)	<0.01*	<0.01*	<0.01*
Usage of store pick-up services	1.70 (0.86)	2.40 (1.18)	1.82 (1.03)	<0.01*	not significant	<0.01*

Table 4 – Product Evaluation & Purchase Stage Results of Paired T-Tests

Table 5 presents the results of respondents’ post-purchase perceptions and satisfaction. The ANOVA test at this stage yields again a statistically significant difference for the time groups for all items with ($p < 0.01$) (Appendix B). The following paired t-tests for “Satisfaction with healthcare services” have a significant value for both T1/T2 and T2/T3. This result clarifies, looking at the group means, the decreased satisfaction levels during COVID-19 peak periods. Interestingly, the non-significant value between T1 and T3 explains that there is no statistically significant perception change between pre-pandemic and post-measurement lifts. The satisfaction levels for fitness services are also significant between T1/T2 and T2/T3. Looking again at the group means, there is high evidence of a significant drop in satisfaction levels as a result of temporary gym closings and consumers’ fear of personal contact with other club members. The overall shopping and purchasing satisfaction is significantly different for T1/T2 and T2/T3. The group mean of T2 indicates relatively low satisfaction levels, indicating the result of store closings and lockdowns. The significant values for T2/T3, however, demonstrate significant shifts towards relatively high shopping and purchasing satisfaction levels. These findings are in line with *Hypothesis 9*.

Stage 5	Mean (Standard Deviation)			Adjusted P-Value		
Post-Purchase Perceptions	T1	T2	T3	T1 and T2	T1 and T3	T2 and T3
Satisfaction with healthcare services	3.28 (1.01)	2.95 (1.04)	3.34 (0.94)	<0.01*	Not significant	<0.01*
Satisfaction with fitness services	3.27 (1.14)	2.29 (1.11)	3.22 (1.16)	<0.01*	Not significant	<0.01*
Overall shopping and purchasing satisfaction	3.57 (0.87)	2.67 (1.06)	3.59 (0.86)	<0.01*	Not significant	<0.01*

Table 5 – Post-Purchase Stage Results of Paired T-Tests

Moreover, there is little research on consumers’ reaction to COVID-19 to the importance of regional supply chains, sustainability and social responsibility. Again, paired t-tests are used to measure significant statistical differences between the two time points. The below results in Table 6 give already an early indication that there is indeed a significant effect between the time points before COVID-19 was declared a pandemic and the time point now, after the lift of COVID-19 restrictions. As the data shows, for both topics, the direction of the effect is positive from T1 to T3 as shown by the average mean differences. Important to note is that these results must not necessarily be in connection with COVID-19, which is why no COVID-19 peak time period is used here. These results should merely be additional to recent consumer behavior change findings in the area. The reason behind is that these trends are still developing with no different impact to be assumed at COVID-19 peak periods. Time period (T2) was therefore not considered.

Environmental and Social Topics	Mean (Standard Deviation)		P-Value
	T1	T3	T1 and T3
Importance of locality/regional in products and services	3.00 (1.03)	3.43 (0.98)	<0.01*
Importance of sustainability and social responsibility in products and services	3.20 (1.04)	3.55 (1.02)	<0.01*

Table 6 – Sustainability & Social Responsibility Results of Paired T-Tests

6 Interpretation & Managerial Implications

The significant obtained results from the problem recognition stage indicate that the sampled consumers already had high desire levels to dine in restaurants prior to COVID-19 and increased these for the time after the drop of mitigation measures. Surprisingly, consumers had already high average desire levels to dine out in restaurants during the peak phase of COVID-19 in what could be explained as their need to break out from lockdown patterns subconsciously. Both the significant values between T1 and T3 and T2 and T3 explain that restaurants can expect a full recovery of the pandemic owed closings and an immediate return of customers. Similar values are obtained for other service industry members such as fitness clubs. Consumers who already valued fitness clubs or gyms before COVID-19 seem to return to fitness clubs at a similar level. Health and fitness clubs should therefore market their offerings more aggressively to potentially increase memberships. Unsurprising is the increased desire for sanitation products after the start of the pandemic and during peak periods. Although there is a real drop to observe in the valuation and usage of these products, one can argue that sanitation products will play an increased role even after the formal end of the COVID-19 pandemic. Consumers will probably put more emphasis on personal sanitation to avoid contracting other diseases in spaces where personal contact is inevitable. This is also an implication that consumers continue to value sanitation highly in retail facilities. Therefore, store managers should continue to put increased emphasis on disinfection dispensers and other sanitation features in their facilities. COVID-19 also seems to influence the perception of health products. It is expected that health-promoting products play a more significant role relative to pre-pandemic times. Consumers might want to be better protected and put a different meaning to what health-conscious nutrition means. The information search processes changed for obvious reasons during COVID-19. Although the data does confirm the hypothesis that consumers spend less time in retail facilities compared to pre-pandemic times, there is a significant shift in consumers using more other channels than brick-and-mortar facilities to find product or service information. The significant value obtained for consumers to avoid personal contact with sales staff and other customers indicates that people still feel the need to be cautious and to some degree fear the virus. COVID-19 accelerated and intensified the use of digital channels and media. It is to expect that people, that already spent time online for product searches continue to do this in the future. Marketers of retail-based firms should in any case increase their online activities to attract and retain customers for their brick-and-mortar businesses. Therefore, it will be important to market products and services online that are only available in offline facilities.

Moreover, consumers evaluate more products and services according to safety standards. The observations from the data could explain that especially for the service-based industry with high staff-to-customer proximity, consumers pick the “safer” option. For restaurants that could be better ventilated (open-air) spaces or places with increased safety standards and available sanitation. In terms of purchase behavior changes, it is expected that consumers increase their online orders relative to before the COVID-19 pandemic. However, the significant values also indicate that consumers do not stick to the obtained level during the peak phases of COVID-19. The findings for store pick-up services don’t really give much room for interpretation and implications. However, there is a significant change to the degree that people might slightly increase the usage of these services in the future for ease and convenience reasons. Restaurants, for instance, should increase marketing and promotions in their pick-up offerings. The results for post-purchase satisfaction levels especially for the hard-hit service industry reveal that consumers were less satisfied with both healthcare services and fitness services. This phenomenon could be explained by the respondents’ “dislike” of digitized consultations and treatments such as telemedicine or fitness clubs’ offering of online training courses and on-demand programs. The digital age cannot be reversed, but implications clearly show that the service industry should focus on their offline businesses at least with the same force as they are increasing their online activities. The increase of online purchasing intentions by respondents reveals that especially retail-based vendors need to realign their sales channels.

The role of regional supply chains, sustainability and corporate social responsibility is becoming increasingly important and most international companies are already turning their business around with the aim to make a difference by generating both environmental and social impact. These trends seem to prevail as corporations are gradually moving away from traditional growth thinking and value creation. The obtained results confirm the trends that justify the shifts in the consumer goods and services industry. As a consequence, managers in the industry need to continue their strive to become more sustainable along the entire value chain.

7 Limitations

Mason et al. (2020) used a similar design for the experiment with two time points, one before and one during the COVID-19 pandemic. Although the present study adds a new time point to the available research, there are four main limiting factors.

Due to the research being conducted with a survey, all questions related to the different COVID-19 time periods were answered at one time. Hence, the respondents' perceptions at T1 and T2 are only reflective compared to current perceptions at T3.

Another problem is that these perceptions are only preliminary results that need further research. Longitudinal studies that concentrate on consumers over a longer time period after the end of the COVID-19 pandemic are necessary to assess long-term effects and changes in consumer decision-making behavior. Such studies can assess if there are systemic consumer behavior changes. Future research should analyze customer buying data from different sectors and industries to better assess real-world effects.

Furthermore, the hypotheses concentrate on a small excerpt of COVID-19-affected business types and only take a universal look into the consumer goods and services landscape. Therefore, more detailed analyses are necessary to draw inferences and comparisons between different product and service groups.

Lastly, due to time and budget constraints, this research has been conducted in proximity to Católica Lisbon School of Business and Economics. Future research should use a more robust spectrum of respondents with higher demographic variety with different population segments.

8 Conclusion

The COVID-19 pandemic has had a significant impact on the consumer goods and services industry. COVID-19 as a major historical event has been a stimulus for consumer behavior changes and accelerated dynamics in the industry. The results show striking evidence of consumers' shift to value more product and service safety, higher sanitation standards and healthier lifestyles. Moreover, consumers may increase the use of online search channels for products and services and reveal a higher willingness to buy online.

As Sheth (2020) predicted, though, most old habits will return. Service industry members such as restaurants and fitness clubs expect a full recovery of their businesses and a return of customers as these "experiences" in offline settings, cannot be equally substituted online. It may be a surprising result that consumers return to retail facilities in the same way compared to before the COVID-19 pandemic. However, for the classic brick-and-mortar consumer goods businesses, the outlook should be viewed with caution. The findings do show that consumers increase both their time spent online searching for products and their online purchases relative to the time before COVID-19. This can have an inverse impact on the retail industry if consumers decide to return to retail facilities only as a recreation or hobby (Sheth, p. 282). In this case, consumers shift their buying intentions away from physical facilities to virtual settings. These newly formed habits may then lead to a further increase in online purchases. Marketing experts in the retail industry will need to find new ways to counterattack these patterns in the future because already now, new trends are emerging that may alter the industry's landscape yet again. It remains to be seen to whether and to what extent the industry has drawn its conclusions from the consequences of COVID-19 and how its reaction will look like.

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Appendix

Survey Instrument

This survey contains statements at distinct time periods. Most of these statements ask first at a time point before the COVID-19 pandemic, followed by a second time point during the peak phases of the COVID-19 pandemic, but before the introduction of vaccines, and a third time point after the lift of most COVID-19 restrictions.

Dear Participant,

This research study is being conducted at Católica Lisbon School of Business and Economics and aims to understand consumer behavior during the COVID-19 pandemic.

Next, you will find a short survey that we would like you to fill out. The survey will take about 6 minutes. Your participation in this study is completely voluntary and your responses are anonymous and confidential. You can only take the survey once, but you can go back between pages to change your answers if necessary.

Important instruction:

This survey contains statements at distinct time points. Most of these statements ask first at a time point **before** the COVID-19 pandemic, followed by a second time point **during the peak phases** of the COVID-19 pandemic, **but before the introduction of vaccines**, and a third time point **after the lift** of most COVID-19 restrictions.

Please think carefully about your perceptions at past points in time.

Thank you for your responses! We highly appreciate your input!

Problem Recognition Block
The following items use a scale from 1 = very low to 5 = very high.
<ul style="list-style-type: none"> • Please rate the degree to which you needed or valued dining in restaurants before the COVID-19 pandemic. • Please rate the degree to which you needed or valued dining in restaurants during the peak phases of COVID-19 and before the opportunity to get vaccinated against COVID-19. • Please rate the degree to which you need or value dining in restaurants now, after the lift of COVID-19 restrictions. <p>(Remodeled after Mason, Narcum and Mason (2020))</p>
<ul style="list-style-type: none"> • Please rate the degree to which you desired exercising in a public gym before the COVID-19 pandemic. • Please rate the degree to which you desired exercising in a public gym during the peak phases of COVID-19 and before the opportunity to get vaccinated against COVID-19. • Please rate the degree to which you desire exercising in a public gym now, after the lift COVID-19 restrictions. <p>(Remodeled after Mason, Narcum and Mason (2020))</p>
<ul style="list-style-type: none"> • Please rate the degree to which you needed or valued personal sanitation products (e.g., plastic gloves, face masks and hand sanitizer) products before the COVID-19 pandemic. • Please rate the degree to which you needed or valued personal sanitation products (e.g., plastic gloves, face masks and hand sanitizer) during the peak phases of COVID-19 and before the opportunity to get vaccinated against COVID-19. • Please rate the degree to which you need or value personal sanitation products (e.g., plastic gloves, face masks and hand sanitizer) now, after the lift of COVID-19 restrictions. <p>(Remodeled after Mason, Narcum and Mason (2020))</p>
<ul style="list-style-type: none"> • Please rate the degree to which you needed or valued health-promoting or disease prevention products or services before the COVID-19 pandemic.

<ul style="list-style-type: none">• Please rate the degree to which you needed or valued health-promoting or disease prevention products or services during the peak phases of COVID-19 and before the opportunity to get vaccinated against COVID-19.• Please rate the degree to which you need or value health-promoting or disease prevention products or services now, after the lift of COVID-19 restrictions.
Information Search Block
<ul style="list-style-type: none">• Please rate the degree to which you spent time in a retail facility before the COVID-19 pandemic.• Please rate the degree to which you spent time in a retail facility during the peak phases of COVID-19 and before the opportunity to get vaccinated against COVID-19.• Please rate the degree to which you spend time in a retail facility now, after the lift of COVID-19 restrictions. <p>(Remodeled after Mason, Narcum and Mason (2020))</p>
<ul style="list-style-type: none">• Please rate the degree to which you avoided personal contact with other customers and sales staff when shopping for products before the COVID-19 pandemic.• Please rate the degree to which you avoided personal contact with other customers and sales staff when shopping for products during the peak phases of COVID-19 and before the opportunity to get vaccinated against COVID-19.• Please rate the degree to which you avoid personal contact with other customers and sales staff when shopping for products now, after the lift of COVID-19 restrictions. <p>(Remodeled after Mason, Narcum and Mason (2020))</p>

<ul style="list-style-type: none">• Please rate the degree to which you used online channels to search for products or services before the COVID-19 pandemic.• Please rate the degree to which you used online channels to search for products or services during the peak phases of COVID-19 and before the opportunity to get vaccinated against COVID-19.• Please rate the degree to which you use online channels to search for products or services now, after the lift of COVID-19 restrictions.
Product Evaluation & Purchase Block
<ul style="list-style-type: none">• Please rate the degree that product or service safety was important to you before the COVID-19 pandemic.• Please rate the degree that product or service safety was important to you during the peak phases of COVID-19 and before the opportunity to get vaccinated against COVID-19.• Please rate the degree that product or service safety is important to you now, after the lift of COVID-19 restrictions. <p>(Remodeled after Mason, Narcum and Mason (2020))</p>
<ul style="list-style-type: none">• Please rate the degree to which you used online delivery services to acquire products before the COVID-19 pandemic.• Please rate the degree to which you used online delivery services to acquire products during the peak phases of COVID-19 and before the opportunity to get vaccinated against COVID-19.• Please rate the degree to which you use online delivery services to acquire products now, after the lift of COVID-19 restrictions. <p>(Remodeled after Mason, Narcum and Mason (2020))</p>
<ul style="list-style-type: none">• Please rate the degree to which you used store pick-up services to acquire products before the COVID-19 pandemic.

<ul style="list-style-type: none"> • Please rate the degree to which you used store pick-up services to acquire products during the peak phases of COVID-19 and before the opportunity to get vaccinated against COVID-19. • Please rate the degree to which you use store pick-up services to acquire products now, after the lift of COVID-19 restrictions. <p>(Remodeled after Mason, Narcum and Mason (2020))</p>
Post-Purchase Block
<ul style="list-style-type: none"> • Please rate the degree to which degree you were satisfied with healthcare services before the COVID-19 pandemic. • Please rate the degree to which degree you were satisfied with healthcare services during the peak phases of COVID-19 and before the opportunity to get vaccinated against COVID-19. • Please rate the degree to which degree you are satisfied with healthcare services now, after the lift of COVID-19 restrictions. <p>(Remodeled after Mason, Narcum and Mason (2020))</p>
<ul style="list-style-type: none"> • Please rate the degree to which degree you were satisfied with fitness services (e. g. fitness studios) before the COVID-19 pandemic. • Please rate the degree to which degree you were satisfied with fitness services (e. g. fitness studios) during the peak phases of COVID-19 and before the opportunity to get vaccinated against COVID-19. • Please rate the degree to which degree you are satisfied with fitness services (e. g. fitness studios) now, after the lift of COVID-19 restrictions.

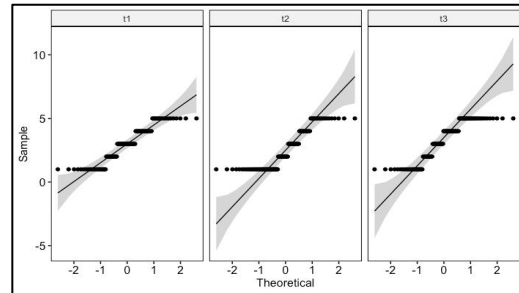
<ul style="list-style-type: none"> • Please rate your overall shopping and purchasing satisfaction levels before the COVID-19 pandemic. • Please rate your overall shopping and purchasing satisfaction levels during the peak phases of COVID-19 and before the opportunity to get vaccinated against COVID-19. • Please rate your overall shopping and purchasing satisfaction levels now, after the lift of COVID-19 restrictions. <p>(Remodeled after Mason, Narcum and Mason (2020))</p>
<p>Additional Block</p>
<p>The following items use a scale from 1 = very unimportant to 5 = very important.</p>
<ul style="list-style-type: none"> • How important was it for you to purchase local or regional products before to the COVID-19 pandemic? • How important is it for you to purchase local or regional products now?
<ul style="list-style-type: none"> • How important is it for you to buy sustainably and socially responsible manufactured products or services before the COVID-19 pandemic? • How important is it for you to purchase sustainably and socially responsible manufactured products or services now?
<p>Demographic Block</p>
<ul style="list-style-type: none"> • What is your age? • What is your gender? • What is your highest degree or level of education you have completed? • What is your nationality?

R Studio Output for Normality Tests

For each time point the normality assumption is checked with the Shapiro-Wilk test. The data (variable “rating”) is not normally distributed ($p \leq 0.05$). The normal probability plot on the right side (Q-Q) compares the data's distribution to the predicted normal distribution. The data is non-normal at every time period as the data points do not lie approximately on a straight line.

time <fctr>	variable <chr>	statistic <dbl>	p
T1	rating	0.9050481	1.118499e-06
T2	rating	0.9057690	1.215900e-06
T3	rating	0.9000625	6.338742e-07

R Studio Shapiro-Wilk Test Output



Q-Q plot

R Studio Output for Significance Tests

Problem Recognition Block

1.

time <fctr>	variable <chr>	n <dbl>	min	max	median	mean	sd	se
T1	rating	108	1	5	4	3.648	1.062	0.102
T2	rating	108	1	5	3	3.056	1.465	0.141
T3	rating	108	1	5	4	4.000	0.976	0.094

R Studio Output Summary: “Desire to dine out in a restaurant”

Effect	DFn	Dfd	F	p	ges
time	1.48	157.99	22.749	<9.7e-08*	0.098

R Studio ANOVA Test Output: “Desire to dine out in a restaurant”

.y. <chr>	group1 <int>	group2 <dbl>	n1	n2	statistic	p	p.adj	p.adj.signif
rating	t1	t2	108	108	3.594545	4.93e-04	1.00e-03	**
rating	t1	t3	108	108	-3.888213	1.76e-04	5.28e-04	***
rating	t2	t3	108	108	-6.006900	2.64e-08	7.92e-08	***

R Studio Pairwise T-Tests Output: “Desire to dine out in a restaurant”

Appendix

2.

time <fctr>	variable <chr>	n <dbl>	min	max	median	mean	sd	se
T1	rating	108	1	5	3	2.991	1.384	0.133
T2	rating	108	1	5	2	2.556	1.537	0.148
T3	rating	108	1	5	4	3.250	1.517	0.146

R Studio Output Summary: "Desire to work out in a public gym"

Effect	DFn	Dfd	F	p	ges
time	1.87	199.96	13.548	<5.42e-06*	0.036

R Studio ANOVA Test Output: "Desire to work out in a public gym"

.y. <chr>	group1 <int>	group2 <dbl>	n1	n2	statistic	p	p.adj	p.adj.signif
rating	t1	t2	108	108	2.955520	4.00e-03	1.20e-02	**
rating	t1	t3	108	108	-2.226112	2.80e-02	8.40e-02	*
rating	t2	t3	108	108	-5.000000	2.26e-06	6.78e-06	***

R Studio Pairwise T-Tests Output: "Desire to work out in a public gym"

3.

time <fctr>	variable <chr>	n <dbl>	min	max	median	mean	sd	se
T1	rating	108	1	4	1	1.509	0.837	0.081
T2	rating	108	1	5	4	4.074	1.011	0.097
T3	rating	108	1	5	3	2.685	1.091	0.105

R Studio Output Summary: "Desire for sanitation products"

Effect	DFn	Dfd	F	p	ges
time	2	214	278.844	<2.5e-60*	0.533

R Studio ANOVA Test Output: "Desire for sanitation products"

.y. <chr>	group1 <int>	group2 <dbl>	n1	n2	statistic	p	p.adj	p.adj.signif
rating	t1	t2	108	108	-21.62575	7.47e-41	2.24e-40	***
rating	t1	t3	108	108	-11.18821	1.04e-19	3.12e-19	***

Appendix

rating	t2	t3	108	108	13.64849	3.59e-25	1.08e-24	***
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R Studio Pairwise T-Tests Output: "Desire for sanitation products"

4.

time <fctr>	variable <chr>	n <dbl>	min	max	median	mean	sd	se
T1	rating	108	1	5	2	2.593	1.059	0.102
T2	rating	108	1	5	3.5	3.500	1.063	0.102
T3	rating	108	1	5	4.0	3.222	1.044	0.100

R Studio Output Summary: "Desire for health-promoting products"

Effect	DFn	Dfd	F	p	ges
time	1.69	180.66	45.428	<6.99e-15*	0.115

R Studio ANOVA Test Output: "Desire for health-promoting products"

.y. <chr>	group1 <int>	group2 <dbl>	n1	n2	statistic	p	p.adj	p.adj.signif
rating	t1	t2	108	108	-7.884157	2.85e-12	8.55e-12	***
rating	t1	t3	108	108	-6.599509	1.63e-09	4.89e-09	***
rating	t2	t3	108	108	3.527302	6.20e-04	2.00e-03	***

R Studio Pairwise T-Tests Output: "Desire for health-promoting products"

Information Search Stage

5.

time <fctr>	variable <chr>	n <dbl>	min	max	median	mean	sd	se
T1	rating	108	1	5	3	3.019	0.937	0.090
T2	rating	108	1	5	2	2.009	1.072	0.103
T3	rating	108	1	5	3	3.000	1.111	0.107

R Studio Output Summary: "Time spent in retail facility"

Effect	DFn	Dfd	F	p	ges
time	1.82	195.23	80.848	<9.4e-25*	0.171

R Studio ANOVA Test Output: "Time spent in retail facility"

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.y. <chr>	group1 <int>	group2 <dbl>	n1	n2	statistic	p	p.adj	p.adj.signif
rating	t1	t2	108	108	10.2066937	1.73e-17	5.19e-17	***
rating	t1	t3	108	108	0.2451094	8.07e-01	1.00e+00	ns
rating	t2	t3	108	108	-10.2965253	1.09e-17	3.27e-17	***

R Studio Pairwise T-Tests Output: "Time spent in retail facility"

6.

time <fctr>	variable <chr>	n <dbl>	min	max	median	mean	sd	se
T1	rating	108	1	5	2	2.009	0.981	0.094
T2	rating	108	1	5	4	3.407	1.319	0.127
T3	rating	108	1	5	3	2.565	0.969	0.093

R Studio Output Summary: "Avoidance of personal contact with sales staff and other customers"

Effect	DFn	Dfd	F	p	ges
time	1,47	157.42	62.603	<5.87e-17*	0.216

R Studio ANOVA Test Output: "Avoidance of personal contact with sales staff and other customers"

.y. <chr>	group1 <int>	group2 <dbl>	n1	n2	statistic	p	p.adj	p.adj.signif
rating	t1	t2	108	108	-8.889255	1.65e-14	4.95e-14	***
rating	t1	t3	108	108	-6.012375	2.58e-08	7.74.e-08	***
rating	t2	t3	108	108	7.065954	1.69e-10	5.07e-10	***

R Studio Pairwise T-Tests Output: "Avoidance of personal contact with sales staff and other customers"

7.

time <fctr>	variable <chr>	n <dbl>	min	max	median	mean	sd	se
T1	rating	108	1	5	3	3.444	1.008	0.097
T2	rating	108	1	5	4	4.204	0.873	0.084
T3	rating	108	1	5	4	3.824	0.965	0.093

R Studio Output Summary: "Usage of online channels to search for products or services"

Appendix

Effect	DFn	Dfd	F	p	ges
time	1.88	200.73	48.837	<3.17e-17*	0.097

R Studio ANOVA Test Output: "Usage of online channels to search for products or services"

.y. <chr>	group1 <int>	group2 <dbl>	n1	n2	Statistic	p	p.adj	p.adj.signif
rating	t1	t2	108	108	-8.814552	2.43e-14	7.29e-14	***
rating	t1	t3	108	108	-5.293490	6.44e-07	1.93e-06	***
rating	t2	t3	108	108	5.293490	6.44e-07	1.93e-06	***

R Studio Pairwise T-Tests Output: "Usage of online channels to search for products or services"

8.

Product Evaluation & Purchase Block

time <fctr>	variable <chr>	n <dbl>	min	max	median	mean	sd	se
T1	rating	108	1	5	3	2.778	1.138	0.110
T2	rating	108	1	5	3	3.509	1.000	0.096
T3	rating	108	1	5	3	3.352	0.970	0.093

R Studio Output Summary: "Importance of product and service safety"

Effect	DFn	Dfd	F	p	ges
time	2	214	45.09	<4.56e-17*	0.085

R Studio ANOVA Test Output: "Importance of product and service safety"

.y. <chr>	group1 <int>	group2 <dbl>	n1	n2	Statistic	p	p.adj	p.adj.signif
rating	t1	t2	108	108	-8.420087	1.85e-13	5.55e-13	***
rating	t1	t3	108	108	-7.059988	1.74e-10	5.22e-10	***
rating	t2	t3	108	108	2.109804	3.70e-02	1.12e-01	ns

R Studio Pairwise T-Tests Output: "Importance of product and service safety"

9.

time <fctr>	variable <chr>	n <dbl>	min	max	median	mean	sd	se
T1	rating	108	1	5	3	2.926	1.100	0.106

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T2	rating	108	1	5	4	4.046	0.999	0.096
T3	rating	108	1	5	3	3.315	1.073	0.103

R Studio Output Summary: "Usage of online delivery services"

Effect	DFn	Dfd	F	p	ges
time	1.83	196.17	88.223	<1.67e-26*	0.163

R Studio ANOVA Test Output: "Usage of online delivery services"

.y. <chr>	group1 <int>	group2 <dbl>	n1	n2	Statistic	p	p.adj	p.adj.signif
rating	t1	t2	108	108	-11.619625	1.11e-20	3.33e-20	***
rating	t1	t3	108	108	-4.570388	1.31e-05	3.93e-05	***
rating	t2	t3	108	108	9.890176	9.05e-17	2.72e-16	***

R Studio Pairwise T-Tests Output: "Usage of online delivery services"

10.

time <fctr>	variable <chr>	n <dbl>	min	max	median	mean	sd	se
T1	rating	108	1	4	1	1.704	0.857	0.082
T2	rating	108	1	5	2	2.398	1.184	0.114
T3	rating	108	1	5	1	1.815	1.034	0.099

R Studio Output Summary: "Usage of store pick-up services"

Effect	DFn	Dfd	F	p	ges
time	1.74	185.7	26.812	<5.93e-10*	0.081

R Studio ANOVA Test Output: "Usage of store pick-up services"

.y. <chr>	group1 <int>	group2 <dbl>	n1	n2	Statistic	p	p.adj	p.adj.signif
rating	t1	t2	108	108	-6.036898	2.30e-08	6.90e-08	***
rating	t1	t3	108	108	-1.382286	1.70e-01	5.10e-01	ns
rating	t2	t3	108	108	5.452840	3.21e-07	9.63e-07	***

R Studio Pairwise T-Tests Output: "Usage of store pick-up services"

11.

Post-Purchase Stage

time <fctr>	variable <chr>	n <dbl>	min	max	median	mean	sd	se
T1	rating	108	1	5	3	3.278	1.008	0.097
T2	rating	108	1	5	3	2.954	1.040	0.100
T3	rating	108	1	5	3	3.343	0.944	0.090

R Studio Output Summary: "Satisfaction with healthcare services"

Effect	DFn	Dfd	F	p	ges
time	1.76	187.83	12.981	<1.47e-05*	0.028

R Studio ANOVA Test Output: "Satisfaction with healthcare services"

.y. <chr>	group1 <int>	group2 <dbl>	n1	n2	Statistic	p	p.adj	p.adj.signif
rating	t1	t2	108	108	3.3892069	9.82e-04	3.00e-03	***
rating	t1	t3	108	108	-0.9196015	3.65e-01	1.00e+00	ns
rating	t2	t3	108	108	-5.0820848	1.59e-06	4.77e-06	***

R Studio Pairwise T-Tests Output: "Satisfaction with healthcare services"

12.

time <fctr>	variable <chr>	n <dbl>	min	max	median	mean	sd	se
T1	rating	108	1	5	3	3.269	1.141	0.110
T2	rating	108	1	5	2	2.287	1.111	0.107
T3	rating	108	1	5	3	3.222	1.163	0.112

R Studio Output Summary: "Satisfaction with fitness services"

Effect	DFn	Dfd	F	p	ges
time	1.66	177.09	42.759	<5.92e-14*	0.137

R Studio ANOVA Test Output: "Satisfaction with fitness services"

.y. <chr>	group1 <int>	group2 <dbl>	n1	n2	Statistic	p	p.adj	p.adj.signif
rating	t1	t2	108	108	7.0501405	1.83e-10	5.49e-10	***
rating	t1	t3	108	108	0.5112319	6.10e-01	1.00e+00	ns

Appendix

rating	t2	t3	108	108	-7.5236046	1.75e-11	5.25e-11	***
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R Studio Pairwise T-Tests Output: "Satisfaction with fitness services"

13.

time <fctr>	variable <chr>	n <dbl>	min	max	median	mean	sd	se
T1	rating	108	1	5	4	3.565	0.868	0.083
T2	rating	108	1	5	3	2.667	1.059	0.102
T3	rating	108	1	5	4	3.583	0.855	0.082

R Studio Output Summary: "Overall shopping and purchasing satisfaction"

Effect	DFn	Dfd	F	p	ges
time	1.54	164.92	58.02	<1.17e-16*	0.175

R Studio ANOVA Test Output: "Overall shopping and purchasing satisfaction"

.y. <chr>	group1 <int>	group2 <dbl>	n1	n2	Statistic	p	p.adj	p.adj.signif
rating	t1	t2	108	108	8.0491883	1.23e-12	3.69e-12	***
rating	t1	t3	108	108	-0.2816345	7.79e-01	1.00e+00	ns
rating	t2	t3	108	108	-8.5046816	1.20e-13	3.60e-13	***

R Studio Pairwise T-Tests Output: "Satisfaction with fitness services"

Additional Block

14.

time <fctr>	variable <chr>	n <dbl>	min	max	median	mean	sd	se
T1	rating	108	1	5	3	3.000	1.032	0.099
T3	rating	108	1	5	4	3.426	0.997	0.096

R Studio Output Summary: "Importance of locality/regionalty of products and services"

.y. <chr>	group1 <int>	group2 <dbl>	n1	n2	Statistic	p	p.adj	p.adj.signif
rating	t1	t3	108	108	-6.324723	6.01e-09	6.01e-09	***

R Studio T-test Output: "Importance of locality/regionalty of products and services"

15.

Appendix

time <fctr>	variable <chr>	n <dbl>	min	max	median	mean	sd	se
T1	rating	108	1	5	3	3.194	1.036	0.100
T3	rating	108	1	5	4	3.546	1.017	0.098

R Studio Output Summary: "Importance of sustainability and social responsibility in products and services"

.y. <chr>	group1 <int>	group2 <dbl>	n1	n2	Statistic	p	p.adj	p.adj.signif
rating	t1	t3	108	108	-4.779403	5.63e-06	5.63e-06	***

R Studio T-test Output: "Importance of sustainability and social responsibility in products and services"