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Reinventing Swiss Luxury Watchmaking Retail in the Covid Era: The impact of Consumer-Facing Technologies on Offline and Online CX

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Abstract

The advent of Covid-19 pandemic has acted as the catalyst of new retails trends within Swiss luxury watch industry. Consumer-facing technologies, such as ISTs, 3D product visualization, AR, VR, Live Chat and Remote Selling techniques, have been driving the transformation of the physical stores as well as the acceleration of the digital presence, initiating Swiss luxury watch brands towards a new "consumer first" world, where "Experiential engagement" is the key. As such, it is critical for marketers and retailers comprehending the role of these technologies in influencing offline and online customer experience, reason why this research aspires to scrutinize this topic.

Specifically, the present research aims at delivering insightful contributions to luxury retail existing literature, through the development of four sections.

After briefly introducing Swiss luxury watchmaking origins and codes, the first section identifies the main players dominating this industry. Moreover, it provides an overview of Covid-19 impact on Swiss luxury watch brands' performances and of new retail strategies.

The second section examines new consumer-facing technologies' features and attributes, and their application in Swiss luxury watchmaking industry by conceptualizing IWC Schaffhausen's offline and online retail practices. Successively, the In-Store customer experience (ISCX) model is employed to investigate the effect of consumer-facing technologies on cognitive, affective and social experiences within Swiss watch brands' physical and digital stores.

An online survey has been carried out to test six hypothesis proposed on the assumption consumer-facing technologies positively influence the above-cited three experiential components, both on online and offline settings By adopting a quantitative approach, the third section interprets and discusses the obtained results, showing that physical stores benefit the most from these innovations' presence than digital stores. The analysis reveals consumer-facing technologies' ability of enhancing offline cognitive and affective experiences, whilst only online social experience, confirming the patronizing role of the physical touchpoints for developing Swiss luxury watch brands' customer experience. The section ends by exposing the possibility of managerial implications and by inviting future researches to extend this study's analysis to other variables.

Finally, in the fourth section conclusions are developed. If online consumer-facing technologies are not enough to deeply cognitively involve customers into luxury watches' craftsmanship and creating the emotional connection elicited by the products' *touch and feel* as well as by a real in-store exploration, the human contact achieved through Live Chat and Remote Selling techniques delight online users with an authentic customer-centricity, historically at core of Swiss luxury watch brands.

1. Introduction: Swiss Luxury Watchmaking and New Retail opportunities

1.1 Swiss Watchmaking: the origins

The emergence of Swiss Watchmaking is traced back to the city of Geneva, in the mid-sixteenth century, and it finds its birth in a twofold origin: the artisanal expertise of goldsmiths and silversmiths, boasting already an international renown since the Middle Ages; the entrance of protestant immigrants from France, the Huguenot refugees, whose know-how and trade networks aided the growth of Genevan watchmaking (P.-Y. Donzé 2014).

During the seventeenth and eighteenth centuries, the thriving watches' production in Geneva prompted the appearance of new specializations such as tool makers, case makers and engravers. However, the watchmakers, who ruled the *Fabrique horlogère*[1] system, attempted to preserve their control on the industry by limiting the access to master ships to Genevan bourgeois and by ceasing to lower classes less profitable professions like the fabrication and assembling of parts.

The mid-eighteenth century marked the end of the *Fabrique horlogère*, following the approval of new guild regulations enabling the opening up of some watch professions to women and the appearance of new manufacturing centers outside the city of Geneva, in the Jura Mountain. Swiss watchmaking's know-now started its diffusion and, until the end of the nineteenth century, it was organized in a *établissage* system. The *établisseur* was the mediator between manufacturers and the market and delegated tasks to a variety of subcontractors, overseeing the system's operation. After collecting the outdoors-made components, the établisseur combined them into timepieces and promoted them to export channels (P.-Y. Donzé 2014).

Unlike the English watch industry, which was driven by the needs of nautical exploration and commerce, in Switzerland, watch design advancements were primarily motivated by fashion and taste. This elevated the Swiss sector to a commanding position as watches became more affordable, and Switzerland established its dominance in the international watch market through the adoption of mass manufacturing technologies (Sinclair 2015) in the early 1900s. This hegemony lasted until the 1970s, when a structural crisis devasted the Swiss watchmaking, owing to the strengthening of the Swiss franc, the lack of competitiveness within the sector's own structure, the expansion of international rivals' activities, and the introduction of quartz and electronic wristwatches. Competitors from the United States, Japan, and Hong Kong were able to produce accurate timepieces that were far less expensive, and Swiss exports plummeted from 40% of the world market to 10% in ten years (Sinclair 2015).

[1] The "Fabrique horlogère", also known as "watch factory" or "collective factory", described the industry at Geneva, then elsewhere in Switzerland, and emphasized the presence of a strong labour division between independent workshop and small firms (P.-Y. Donzé, History of the Swiss Watch industry, from Jacques David to Nicolas Hayek - Third edition 2014).

1.1.1 The shift of Swiss watch industry to luxury

The arising competition has spurred Swiss watch industry to position towards luxury, a process begun with the streamlining its manufacturing system and scaling up its products (Theurillat and Donzé 2017), between 1980s and 1990s.

Firstly, this industrial restructuring took the shape of a high concentration of companies. The presence of watch manufacturers fell from 1,169 in 1975 to 572 in 1990 and the average number of employees grew concurrently. The majority of Swiss watch companies were acquired by large holding companies and groups, the most known being Swatch Group and Compagnie financière Richemont (hereafter: Richemont), whereas French luxury conglomerates such as LVMH Moët Hennessy Louis Vuitton SE (hereafter: LVMH) and Kering entered the watchmaking business through the merger of Swiss firms (Theurillat and Donzé 2017).

Secondly, watchmakers relocated the production of exterior components (cases, straps, and dials) in low-wage nations, like Thailand and China. The transfer abroad of whole watches' manufacturing process was discouraged by the "*Swiss Made*" statute, instituted by the Federal Government in 1971. The goal of this policy was retaining employment in Switzerland and ensuring the ancestral quality of Swiss watches. On the basis of Art.2 of this ordinance (Council, Swiss Federal 2019), companies claiming to use the "Swiss Made" must meet four requirements:

- The watch's technically development has been carried out in Switzerland[2];
- Its movements[3] is Swiss and has been cased in Switzerland;
- The final manufacturing inspection has taken place in Switzerland;
- At least 60% of its value, namely of its manufacturing costs, is generated in Switzerland.

Throughout this institutional measure, the Swiss watchmaking industry could regain the competitiveness against its rivals and above all, against the accuracy of Japanese electronic watches (P. Y. Donzé 2020). As the precise timekeeping had stopped being a competitive advantage and had become the norm, Swiss watchmaking could differentiate itself through its exclusive "Swiss Made" reputation, embodying the values of heritage, tradition and craftsmanship (Fédération de l'industrie horlogère suisse FH 2021). Swiss watchmaking's strategy of repositioning toward luxury could rely on a *"non-technological innovation*" marketing strategy (Theurillat and Donzé 2017), which enabled the increase in the added value of its timepieces.

"[2]In the case of exclusively mechanical watches, at least the mechanical construction and prototyping of the watch as a whole; in the case of watches that are not exclusively mechanical, at least the mechanical construction and prototyping of the watch as a whole, together with the conception of the printed circuit or circuits, the display and the software" (Council, Swiss Federal 2019).

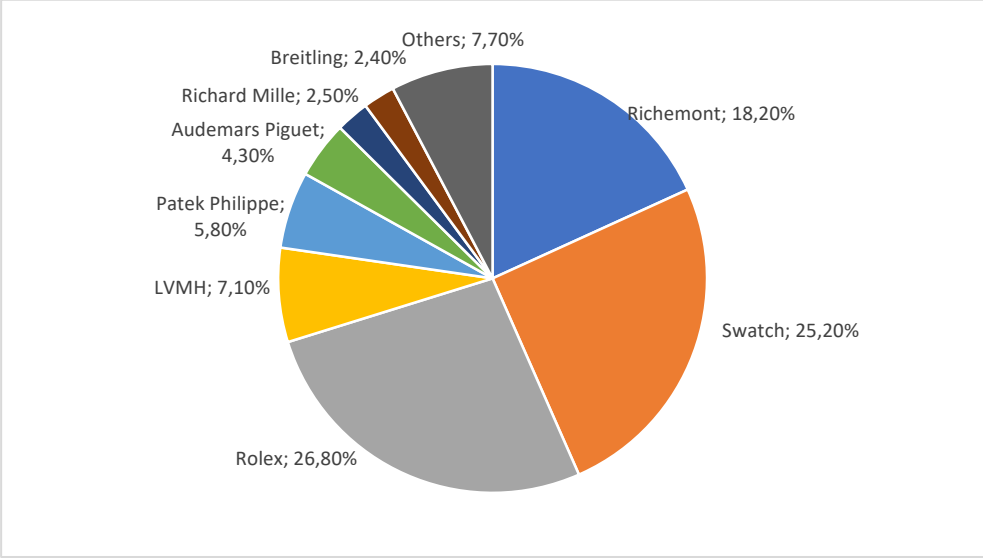
[3] A watch's movement is "*the duly-assembled organs and mechanisms of a watch, meaning the winding and hand-setting mechanism, the mainspring, the gears, the escapement and the regulating organ"* (Fondation Haute Horlogerie 2021).

Moreover, Swiss watchmaking's luxury orientation coincided with the verticalization of wholesale and retail to guarantee the quality rather than quantity of distribution, and its engagement in retailing. Finally, the rapid expansion of this sector towards luxury was contingent on the creation and growth of new markets in East Asia, in China, Honk Kong and Japan (Donzé and Fujioka 2015).

1.2 Swiss luxury watchmaking: an industry overview

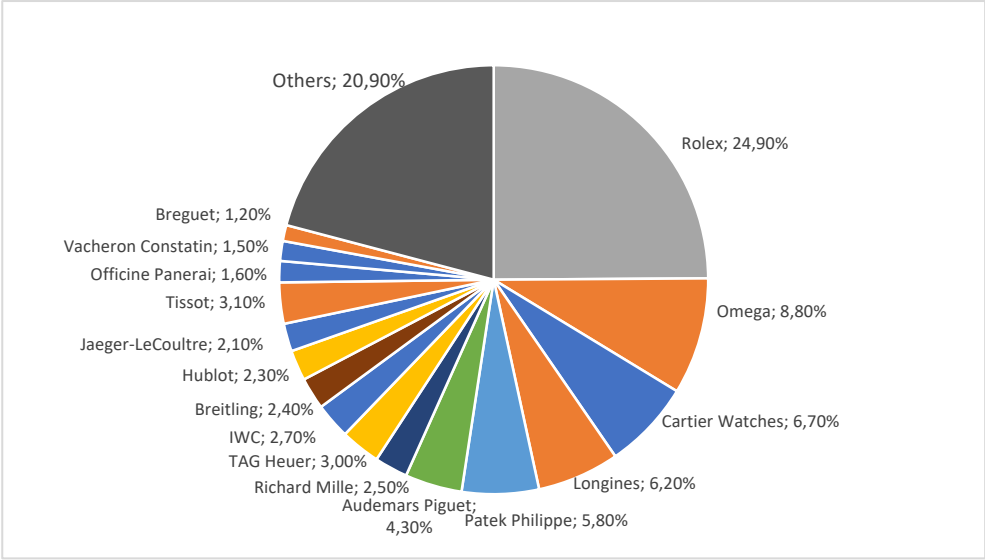
According to "*State of the Industry – Swiss Watchmaking in 2021*" (2021), the Swiss luxury watch industry is mainly led by well-known established brands of the luxury groups Rolex SA, Swatch Group, Richemont, LVMH, and by independent brands including Patek Philippe, Audemars Piguet, Richard Mille and Breitling.

Figure 1:Swiss watches retail market share in 2020 (by Group)



Source: Morgan Stanley Research, 2021

Figure 2: Swiss watches retail market share in 2020 (by brand)



Source: Morgan Stanley Research, 2021

Rolex SA

Originally founded as *"*Wilsdorf and Davis*"* by Hans Wilsdorf and Alfred Davis in London, England nowadays Rolex SA is based in Geneva, Switzerland. With its subsidiary *Montres TUDOR SA,* Rolex SA designs, manufactures, distributes and sells watches under the two brands Rolex and Tudor (Rolex 2021). With a market share of 26.8% in 2020, Rolex SA has surpassed the Swatch Group conglomerate (25.2%). As reported by Morgan Stanley (2021), Rolex SA total revenue was of about CHF 4,420 billion in wholesale value and CHF 7,956 billion in retail value, with 810,000 pieces sold in 2020. As a result, the average price of a watch is close to CHF 10,000, excluding VAT. With a market share of 24.9%, Rolex has outperformed the broader industry, reconfirming its top leader position.

Swatch Group

Based in Geneva, Switzerland, Swatch Group is a diversified multinational holding company active in the manufacture and sale of finished watches, jewelry, watch movements and components (Swatch Group 2021). With its 18 watch brands[4], Swatch is the largest watchmaking group of which Omega (8.8%), Longines (6.2%), Tissot (3.1%) and Breguet (1.2%) represent its leading luxury timepieces. Specifically, Omega's estimated production was of 500,000 watches, generating CHF 1,758 billion in wholesale revenue and CHF 2,813 billion in retail revenue, in 2020. Although the reduction in production units, Omega's average selling price of CHF 5,600 is illuminating. Omega's market share has experienced an increase of 30 basis points, succeeding in dominating 8.8 % of the market and conquering the second position in the ranking by watch brands (Morgan Stanley Research 2021).

Richemont

Richemont is a Switzerland-based luxury goods holding company whose portfolio includes 26 *Maisons*, specialized in 4 business areas: Jewellery Maisons, Specialist Watchmakers, Online Distributors, Fashion & Accessories/Others (Richemont 2021). Among its 8 watchmaking brands[5], which have totaled a market share of 18.2%, the best performer has been Cartier Watches[6], followed by IWC (2.7%), Jaeger-LeCoultre (2.1%), Officine Panerai (1.6%) and Vacheron Constantin (1.5%), in 2020. By selling over half a million pieces at an average price of CHF 4,400, Cartier Watches has been landed in a retail value of CHF 2,150 billion. Thus, in 2020 Cartier Watches has reached a market share of 6.7% , placing itself in the 3rd place in the ranking (Morgan Stanley Research 2021).

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[4] Breguet, Harry Winston, Blancpain, Glashütte, Jaquet Droz, Léon Hatot, Omega, Longines, Rado, Union Glashütte, Tissot, Bailman Swiss watches, Certina, Mido, Hamilton, Calvin Klein, Swatch and Flik Flak (Swatch Group 2021).

[5] Also known as Richemont "Specialist Watchmakers": A.Lange&Söhne, Baume&Mercier, IWC Schaffhausen, Jaeger-LeCoultre, Panerai, Piaget, Roger Dubuis and Vacheron Constantin (Richemont 2021).

[6] Cartier Watches is one of Cartier's product categories, together with high jewellery and jewellery. Thence, it is not included in the "Specialist Watchmakers" (Richemont 2021).

LVMH

Deemed as the world's leading luxury goods company (Deloitte 2020), the French group LVMH operates in six different sectors through its 75 *Maisons*: Wines & Spirits, Fashion & Leather goods, Perfumes & Cosmetics, Watches & Jewellery, Selective Retailing, and Lifestyle, Culture & Arts (LVMH 2021). Amid the 7 "Watches & Jewellery" houses[7], Tag Heuer and Hublot show a market share of 3.0 % and 2.3% respectively, out of the total result of the Watches & Jewellery category (7.1%) in 2020.

Independent luxury watch brands

As concerns the independent brands, Patek Philippe, Audemars Piguet and Richard Mille have all performed massively. Despite their belonging to the high-end luxury segment and their average prices, exceeding CHF 35,000 and even 180,000 for Richard Mille, they have succeed in reaching the top ten Swiss luxury brands 2020 (Morgan Stanley Research 2021). In particular, both Audemars Piguet and Richard Mille have seen an increase in their market share from 3.4% to 4.3% and from 1.8% to 2.5% respectively, between 2019 and 2020.

1.3 The impact of Covid-19 Pandemic on the Luxury industry

Covid-19 pandemic has dramatically hit the global economy, especially the luxury industry due to its discretionary nature (The Business of Fashion, McKinsey&Company 2021). This crisis has profoundly changed the way consumers live, shop and what they value (Bain & Company 2021), and the uncertainty about economy's future, in view of the possibility of new and upcoming lockdowns, has been seriously affecting their purchase intentions.

The global luxury industry[8] as a whole—which encloses both luxury products and experiences—has shrunk by 20% to 22% at current exchange rates, to an estimated €1 trillion and with all segments declining in real terms, returning to 2015 levels (Bain & Company 2021).

The market for personal luxury good[9], also defined as *"the core of the core of the luxury segments*" (Bain & Company 2021), has suffered from an impressive contraction for the first time since 2009, falling by 23% at current exchange rates to hit €217 billion.

As illustrated by the below chart (Bain & Company 2021), watches are the luxury product category whose performance has been most adversely affected by Covid-19 turmoil. It generated a revenue of

[7] LVMH "Watches & Jewellery" houses: Chaumet, Tiffany&Co, Tag Heuer, Zenith, Bulgari, Fred and Hublot (LVMH 2021).

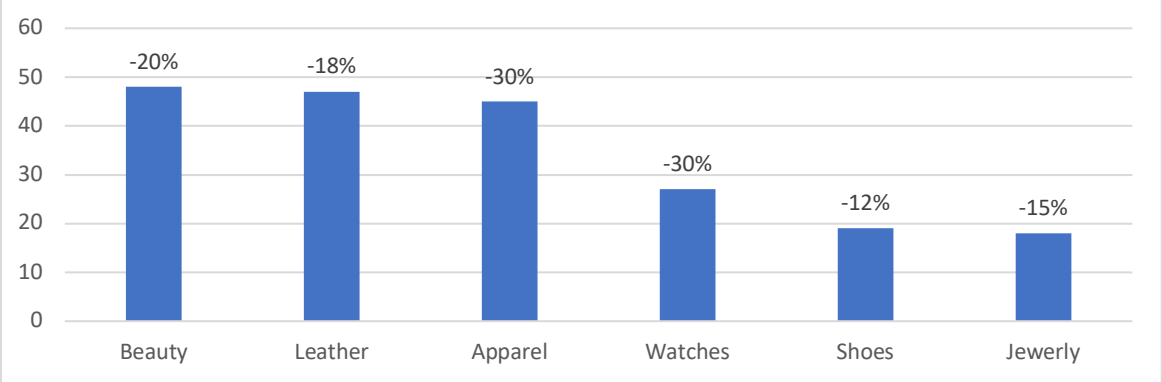
[8] The global luxury industry comprises nine segments: luxury cars, personal luxury goods, luxury hospitality, fine wines and spirits, gourmet food and fine dining, high-end furniture and housewares, fine art, private jets and yachts, and luxury cruises (Bain & Company 2021).

[9] The personal luxury good category includes: beauty, leather, apparel, watches, shoes and jewellery (Bain & Company 2021).

€27 billion in 2020, accounting for a 12% of the total market for personal luxury goods and was down 30% versus the previous year (Kering 2020). If on one side apparel purchases have decreased by the same amount as luxury timepieces, on the other side its global purchases amounted for €45 billion, representing 21% of the total personal luxury goods industry (Kering 2020).

The research also revealed that apparel continued to dominate global luxury purchases, along with beauty and leather, which featured sales for €48 billion and €47 billion and with both a market share of 22%. Nonetheless, if compared to 2019 beauty declined at 20%, whereas leather good at 18%. Shoes and jewelry were the product categories that decelerated the least. The former fell by 12% to €19 billion, the latter by 15% to €18 billion, with shares of 9% and 8% (Kering 2020).

Figure 3: Global personal luxury goods market by product category (€ billions, 2020)



Source: Bain & Company, 2021

1.3.1 Covid-19 hit on the Swiss luxury watch sector

As previously mentioned, luxury watches proved to be the personal luxury good category impacted the most by Covid-19 pandemic and, according to an analysis carried out by Deloitte (2020), this dramatic outcome is attributable to numerous factors.

Firstly, international travels' restrictions have triggered the abrupt of global tourism, which has always fueled a great portion of worldwide luxury watches' trade volume, through shopping malls and duty-free stores (Deloitte AG 2020). Indeed, in 2020, luxury timepieces purchases made by consumers on trips abroad accounted for some 30 percent of the pre-pandemic market (The Business of Fashion, McKinsey&Company 2021).

Secondly, lockdowns have had direct financial consequences on individuals' disposable income and willingness to spend, provoking the drop of domestic demand. This shift in consumers' behavior has particularly affected luxury watches since often perceived as fewer necessary purchases (Altagamma 2020). Deloitte (2020) research also shows that 29% of respondents expressed their intention of delaying their watch purchase, while 18% stated buying a timepiece is not included in their priorities' list.

Finally, many retailers fear that the number of customers visiting brick-and-mortar stores will only come back at a later stage as a consequence of mask requirements, hygiene measures and social distancing which may alter the shopping experience. If this may be viewed as a risk shared by all personal luxury good categories, it is magnified in the case of watches, whose acquisition traditionally rely on *touch and feel* sensations. As customers value this shopping ritual (Altagamma 2020), luxury watches benefit less from the e-presence than other luxury products. As such, it is not surprising that online sales represent approximately 5 percent for watch sector in 2020 (The Business of Fashion, McKinsey&Company 2021).

1.3.2 Swiss watch exports at the time of Pandemic: Threats and Opportunities

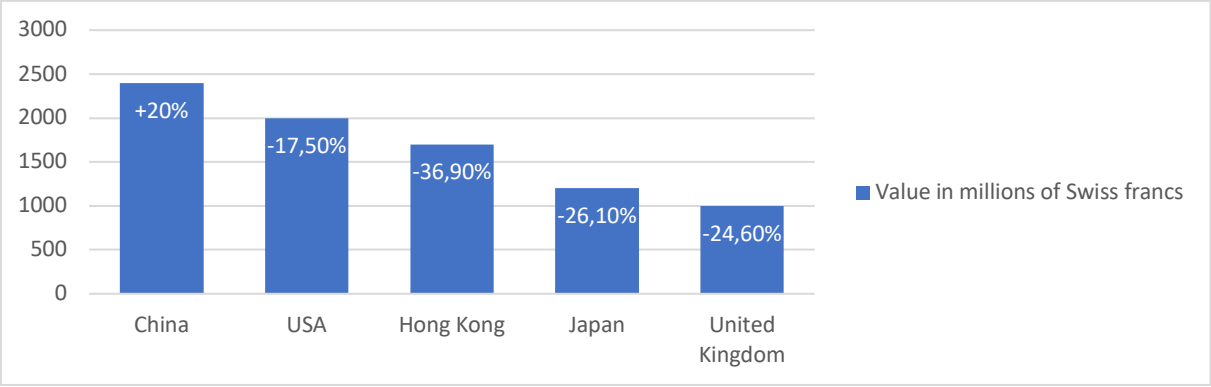
The decline in luxury watches sector's activity has reduced Swiss watch exports' value to 17 billion francs compared with 21.7 billion a year earlier, recording a cumulative decrease of 21.8% (Federation of the Swiss Watch Industry FH 2021). As stated by industry experts, this degrowth is comparable to the one registered in 2009 (-22.3%) during the financial crisis, which had cut the value of exports to their 2008 level (Federation of the Swiss Watch Industry FH 2021).

The majority of high-volume markets have been severely impacted by the effects of Covid-19:

- **Asia** accounted for 54% of Swiss watch exports by value, with a 20.2% decrease from the previous year. Specifically, Hong Kong experienced one of the worst overall results, falling to third place in the ranking of Swiss watch exports after 12 years at the top;
- **Europe** experienced a contraction of the Swiss exports of 25.2% and an overall shrinkage of 29%, in terms of market share. In particular, France (-37.9%) and Italy (-33.3.%) suffered the most, meantime United Kingdom (-24.6%) and Germany (-21.4%) figures were closer to the worldwide average;
- **America**, with a 15% share, recorded an overall fall of 20.4%. On the other hand, US (-17.5%) demonstrated a major resilience than the world as a whole.

China revelated to be an exception, becoming the world's largest market for Swiss watch industry (The New York Times 2021). The most recent figures show exports of Swiss watches to mainland China totaled 2.4 billion francs, depicting a sharp increment of 20% from 2019 (Federation of the Swiss Watch Industry FH 2021)

Figure 4: Main markets in terms of Swiss watch exports



Source: Federation of the Swiss Watch Industry FH, 2021

These positive changes in sales in Mainland China are directly correlated with travel disruptions. Historically Chinese luxury watches' purchasers have been responsible not only for growth in China and the rest of Asia, but also for a sizable portion of travel retail sales in both Europe and United States (Deloitte AG 2020), destinations where they could take advantage of lower taxes (The New York Times 2021). As tracked by at Boston Consulting Group in Shanghai, almost 70% of Chinese luxury spending used to occur in the overseas (The New York Times 2021). Consequently, global travel interruptions prompted Chinese consumers to shift their buying power within the domestic market (Bain & Company, Tmall Luxury Division 2020).

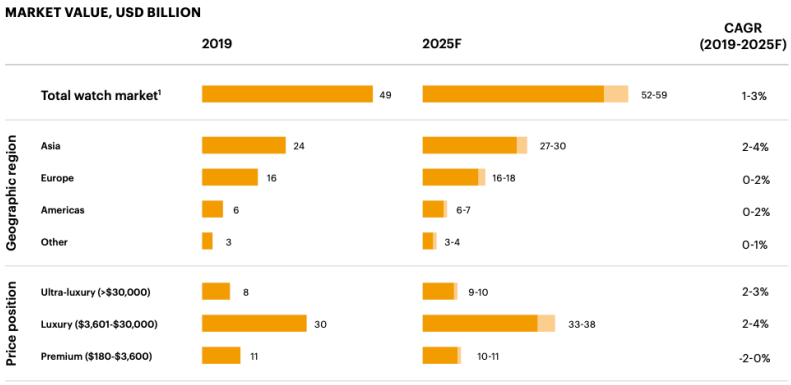
A further circumstance playing a pivotal role in Chinese demand's booming for luxury watches has been the revision of duty-free shopping allowances at Hainan[10] Free Trade Port area (Deloitte AG 2020). Following the country's lockdown at the start of the year, Chinese government has stimulated national demand by increasing the duty-free shopping limit from RMB 30,000 to RMB 100,000[11] (Bain & Company, Tmall Luxury Division 2020), which covers the purchase of an unlimited number of watches as long as the yearly total maximum is not exceeded.

Moreover, Mainland China, among Asian countries, will be the greatest driver the overall increase of the entire watch industry's retail value between 2019 and 2025. According to McKinsey (2021), the global watch market is poised to expand from 49 billion 2019 to 52-59 billion, at a CAGR 1–3%, and Asia will drive growth at a CAGR of 2-4% together with luxury and ultra-luxury categories. Besides of considering the new internal travel trends explained above, this estimation is built considering the growing wealth in the region, where the number of Chinese households with an income greater $70,000 is predicted to nearly treble (Oxford Economics 2021).

[10] Hainan is a tropical island at the Southernmost of China and is one of its most popular Chinese holiday destinations (Hall 2020).

[11] Approximately from USD400 to USD14,000 (Deloitte AG 2020).

Figure 5: The global watch market growth from 2019 to 2025



Source: McKinsey, 2021

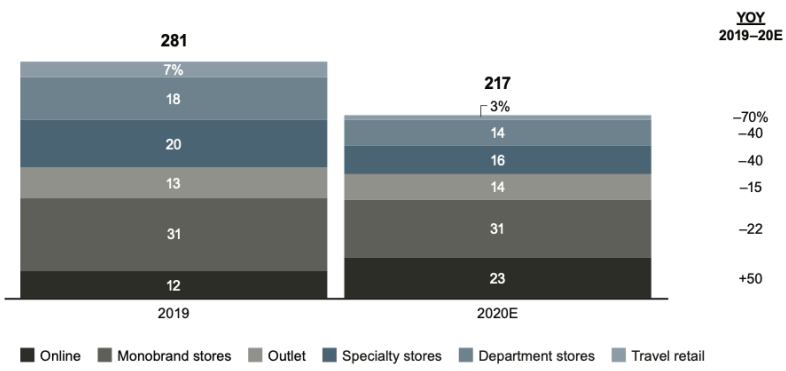
1.4 The New Era of Luxury Retail

Covid-19 pandemic, along with governments' social isolation and lockdown restrictions, has seriously challenged brick-and-mortar stores (Altagamma 2020) and has soared luxury brands to connect with their customers (Deloitte 2020), aspect that has speeded up their digital channels.

Before the crisis some luxury companies were hesitant to enter e-commerce due to their belief it could have never been aligned with consumer expectations for a high-end shopping experience (Boston Consulting Group 2020). In the pre-pandemic, in fact, e-commerce accounted for just 10% to 12 % of luxury sales worldwide.

Conversely, nowadays, with the advent of Covid-19, the distribution ecosystem has undergone a firm revolution, where 23% of share of global personal luxury good market belongs to e-commerce (Bain & Company 2021)

Figure 6: Share of global personal luxury goods market, by distribution channel and format



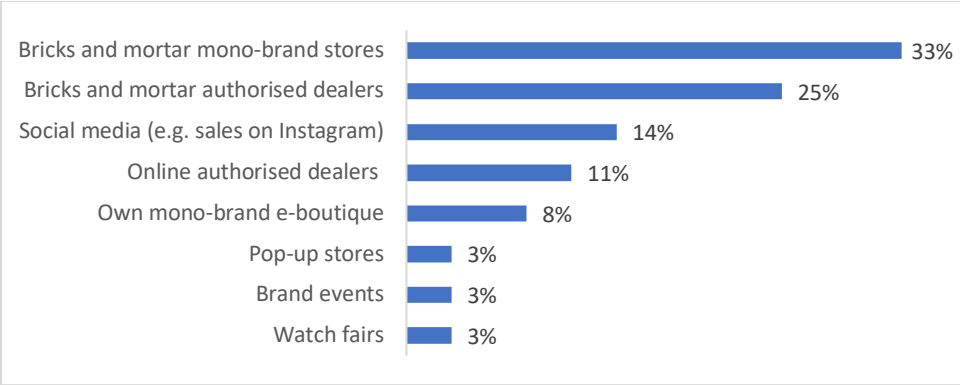
Source: Bain & Company, 2021

Besides encouraging luxury companies to boost their digital channels, Covid-19 has served as catalyst of the new concept *experiential engagement* (Altagamma 2020). Luxury brands are rolling out numerous strategies aimed at *"bringing their products and story to life"* (Deloitte AG 2020), and at elevating the customer experience by resorting to innovative consumer-facing technologies, for instance AR, VR, mixed technological features, both at physical and online retail environments. The ultimate goal would be entertaining the client through immersive experiences and establishing with him intimate connections, able to go beyond any social distancing restriction (Deloitte AG 2020), in *a seamless omnichannel* setting.

1.4.1 Swiss luxury watch retail: towards a new "consumer first" world

The run towards digitalization has been particularly disruptive for the Swiss luxury watch sector, which has historically been cautious to embrace any form of change (The Business of Fashion, McKinsey&Company 2021). "*Traditional at its core"* (Deloitte AG 2020), this industry is heavily dependent on flagship brick-and-mortars and a trusted network of retailers (The Business of Fashion, McKinsey&Company 2021). This is due to its reliance "*on the emotional connection from seeing and handling luxury timepieces"* (Deloitte AG 2020), and to its person-centered nature (Altagamma 2020). The relevance of brick-and-mortars is also confirmed by Deloitte (2020)'s survey conducted among 55 top Swiss watch executives, whose 71% believe physical point of sales will preserve their dominance.

Figure 7: Which sales channel do you think will be the most important in the next years?



Source: Deloitte, 2021

However, Covid-19 has spurred Swiss luxury watches to make digitalization a mandatory prerequisite in their retail experience and has driven them towards a more dynamic omnichannel strategy, transcending the perfect integration between offline and online channels. It is in this framework that Swiss luxury watch companies' retail strategies have encountered a notable evolution in technology terms, with the aspiration of elevating customer experience, both at the virtual and physical level.

1.5 Gap in the literature and research questions

Existing luxury retail literature shows a great interest towards a customer-based approach and, according to my knowledge, its main area of examination concerns the sensorial aspect at both virtual and physical point of sales. At online level, web design has been largely discussed, and it refers to all design elements that contribute to the overall appearance of a web site, including colour, image, layout, fonts, and background music, and it positively influences the purchase intention (Kim, Choi and Lee 2015), (Beuckels and Hudders 2016). At offline level, sensorial components embody the elements of sight, hearing, smell and touch correlated with in-store atmospherics aspects (Roggeveen, Grewal and Schweiger 2019), meaning external variables (e.g. building or windows), general interior variables (e.g. lighting, music, or scents), layout and design variables (e.g. furniture), decoration variables (e.g. pictures) and human variables (e.g. employees) (Bethan and Blazquez Cano 2019).

However, a considerable amount of non-luxury related trade research gives prominence to customer experience, defined as a complex and multi-layered concept (Bustamante and Rubio 2017), deriving from the coexistence of structured dimensions. Relevance is attributed to customer experience in retail context as featuring internal (cognitive, affective and physical) and contextual (social) responses, or components, evoked by in-store stimuli.

Furthermore, most recent retail works explore the emergence of customer-facing technological innovations, such as In-Store Technologies (ISTs), 3D product visualization, AI powered technologies, meaning Augmented reality (AR), Virtual reality (VR), and further digital advancements, applied in both physical and online retailing. Specifically, authors identify their role in influencing consumers' purchase intention and in enhancing the selling environment and shopping experience (Bonetti, Warnaby and Quinn 2018).

In this regard, this research aims at providing further contributions to customer experience related literature, by scrutinizing the impact of these new technologies on In-Store customer experience (ISCX) dimensions proposed by Bustamante and Rubio (2017), within the Swiss luxury watch industry.

The primary intended contribution of this study is an explanation of how Covid-19 has accelerated the new retail trends within the Swiss luxury watchmaking industry, unexplored domain of research being a nascent phenomenon. While a notable amount of luxury retail research focus on offline and online retail setting in the apparel and leather goods industry (Beuckels and Hudders 2016) (Kim, Choi and Lee 2015) (Holmqvist, Wirtz and Fritze 2020), there is still a lack of academic literature exploring new retail environments for hard luxury, particularly for Swiss luxury watch companies. The description of the new retail trends is developed via the lenses of the Swiss luxury watch brand IWC Schaffhausen. The reason of this choice lies at IWC Schaffhausen pioneering attitude of integrating digital technologies which, combined with in-store and online themed environments, empower people to deeply interact with the brand (IWC Schaffhausen Public Relations 2021).

Secondarily, this research expands the analysis of ISCX dimensions, currently only focusing on physical retail environments, to online channels. Furthermore, it evaluates the impact of the new consumer-facing technologies on these experiential dimensions. In the meantime, this work provides the ISCX and the application of these technologies with a totally new context, that of Swiss luxury watch industry.

Hence, the ultimate goal of this research is defining whether it is the offline or online channel benefiting most from the introduction of these new technologies by Swiss luxury watch brands, through a customer experiential perspective.

The research questions guiding the efforts of this work are:

RQ1. How has Covid-19 shifted offline and online retails strategies of Swiss luxury watch brands?

RQ2. To what extent will the new retail, hence in-store and online technologies, influence consumers' experiential dimensions within the Swiss luxury watch industry, which has always been traditional at its core?

RQ3. Will online or offline retail setting benefit most from the diffusion of these new technologies?

2. Literature Review and Hypothesis Development

This work attempts to fill the earlier mentioned gaps of the existing luxury retail literature, and its main objective is analyzing the impact of the new consumer-facing technologies on customer experience in a retailing context, within the Swiss luxury watch industry.

Firstly, this study intends to provide an examination of consumer-facing technologies' attributes and roles, such as ISTs, 3D product visualization, AI-powered technologies, and their application in both offline and online setting.

Secondly, an exploration of Swiss luxury watch new retail aims at integrating the above discussed technologies to both physical and digital shopping environments within this luxury sector. Specifically, this description is developed by conceptualizing the consumer-facing technologies adopted by IWC Schaffhausen, whose attitude in embracing new innovations makes it a technological pioneer within the Swiss luxury watch industry, traditional at its essence.

Thirdly, while scrutinizing these technologies' effect on customer experience in online and offline retail, this study employs the In-Store customer experience (ISCX) model, advanced by Bustamante and Rubio (2017). However, this work aspires at updating their findings for nowadays digital era, by expanding their ISCX experiential components' investigation to online level and by considering the presence of these innovative technologies.

Finally, whilst discussing the influence of these technologies on ISCX experiential components within Swiss watch brands' physical and digital stores, six hypothesis are proposed.

2.1 Consumer-facing technologies in offline and online retail

The recent years have seen the increasing adoption of consumer-facing advanced technologies by brands in both physical and digital stores (Bonetti, Warnaby and Quinn 2018), to improve store atmospherics and environment and to enhance shopping experience. The attribute "consumer-facing" refers to technologies and devices directly experienced by the client, in offline and online retail setting (Bonetti, Warnaby and Quinn 2018). In this regard, Fuentes, et al. (2017) deem consumers as *"reactive actor"* and *"active participant"*, since their technologies' usage contributes to the reconfiguration of retail setting.

Amongst In-Store Technologies (ISTs) (Alexander and Kent 2020), touch-screen displays and QR code act as virtual catalogues through which consumers are able to deep dive into branded content (Bethan and Blazquez Cano 2019), whereas tablets support employees in providing client with product's information.

However, deeper offline and online brand-consumer interactions are reachable via Artificial Intelligence (AI) powered technologies or 3D virtual model technologies, such as Augmented Reality (hereafter,

AR), Virtual Reality (hereafter, VR) (Hoyer, et al. 2020), automated chat bot and virtual assistants. Nowadays' customers expect satisfying experiences alongside the products and services they are looking for, and deeply appreciate enjoyable and memorable moments delivered by companies striving to engage them in a personalized manner (Farah, Ramadan and Dana 2019). Consequently, it is in this landscape of changes in consumers' behaviours and expectations that AI technologies have been gaining importance and occupying a prominent position in retail setting.

AR: definition and application in offline and online setting

AR is defined as a technique "*combining real and computer-generated digital information into the user's view of the physical world in such a way they appear as one environment*" (Bonetti, Warnaby and Quinn 2018). This real-time mutual alignment between the physical and virtual worlds (Huang and Liao 2014) is achievable throughout a virtual layer overlaying pictures, textual information, videos, or other virtual components on top of the user's viewing of the real-life environment. Generally, AR gathers real-world data via a digital camera integrated into a webcam or smartphones, wearables, fixed interactive screens or projectors, permitting the simultaneous presence of physical (user's body part) and virtual items (target product) on a user's video screen. As stated by Yim, et al. (2017): *"The unique media features of AR are threefold. It combines real and virtual, is interactive in real time, and is registered in 3D"*.

In retail, AR favors the enrichment of products, consumers, or retail environments with virtual elements in real time (Watson, Bethan and Salavati 2018). Typical AR solutions entails virtual try-on on smart devices, simulating the appearance of product on consumers' body (Bonetti, Warnaby and Quinn 2018). Furthermore, AR ensures the projections of infographics and videos aiming at recreating the product's tangibility on physical environment and/or at enhancing brand' physical store retail setting atmosphere through infographics.

VR: definition and application in offline and online setting

The term "VR" embraces a several number of definitions across a broad range of academic disciplines, of which general consensus agrees in the fact that VR distinguishes itself from other media through its potentiality of generating a sense of presence in the digital environment (Kang, Shin and Ponto 2019). In marketing literature, VR indicates both interactive 3D products displayed on a desktop or smartphone screen and more immersive devices such head-mounted displays, HMDs, or smartphones connected to mobile VR headsets. Following Kang, et al. (2019) conceptualization, these two VR typologies are definable as 3D Web and 3D VR respectively.

In 3D Web, VR is intended as the 360° visualization of 3D interactive objects, where icons, images, fonts, and videos generate visual stimuli, modifiable in terms of resolution, colour, depth, size, and location. 3D objects are built in digital settings, simulating for instance a virtual boutique, where it is possible to acquire: 3D larger views, meaning super close-up, zoom in/out and enlargement; 3D

interactive views, views from every angle as consumers drag their mouse (Petit, Velasco and Spence 2018).

In 3D VR, "*VR is the representation of physical objects and spaces through high-definition digital images that allow individuals to be immersed in a fully digital environment simply by wearing a headset"* (Pizzi, Vannucci and Aiello 2019). Whereas AR merges the virtual and real worlds (Huang and Liao 2014) VR totally mimics the environment, obliterating the real world. Users of a VR HMDs may interact in real time and physically move inside the virtual world, generally via head motions, but also via limb motion tracking (Hoyer, et al. 2020). VR HMDs' users benefit from product visualization features and view acquisitions as 3D Web.

Hollebeek, et al. (2020) classify VR according to four different formats: VR-based gamification, VR-based shopping, VR video and VR-based events. Nonetheless, for this research purpose, only VR-based gamification and VR-based shopping require an exploratory definition being the VR formats mostly adopted by brands to enrich their offline and online store environment and shopping experience.

VR-based gamification is "*a process of enhancing an [offering] with affordances for gameful experiences [through] mastery, autonomy, flow, and suspense ...to support value creation*" (Huotari and Hamari 2016). Gamification involves: rules-based artificial conflict with quantifiable results (e.g., virtual sports); serious games-mental contests played with a computer that use entertainment to advance training, education, or strategic communication goals; promotion. In retail setting, gamification acts a powerful communication tool directed at entertaining and immerging customers into brands' universe and codes, by leveraging on their emotional involvement.

VR-based shopping designates the application of VR HDM (Head Mounted Displays) solutions to retailing setting, with the objective of mimicking the real physical store, by displaying products in electronic catalogues and offering customer support (Hollebeek, et al. 2020), in order to enhance the value of the shopping experience.

Automated chat bot and Virtual assistants

Powered by AI, chat bot and virtual assistants can help customers in selecting among options, advising them, and customizing information, even predicting preferences by leveraging on collected customer data (Hoyer, et al. 2020).

Further digital innovations envisage real-time customer-employee relationship through Live Chat and Remote Selling techniques. The former supports employees in addressing customers' needs by replying in real time to their questions. The most advanced Live Chat matches shoppers to the nearest in-store via AI taxonomy, and sales assistants lively share photos and videos. Remote Selling consists of personalized video shopping sessions, taking place directly from the store or from a dedicated brand area.

2.2 How consumer-facing technologies have led to a new level of watch retail

As anticipated in the previous chapter, Covid-19 has unleashed the revolution of Swiss luxury watch retail, both at offline and online level. Since its outbreak, the pandemic has been leading to the redefinition of the physical stores and to the acceleration of the digital presence, initiating Swiss luxury watch brands' path towards a "new consumers first" world.

In this context of social distancing, to give customers a convincing reason for patronising the brick-and-mortar channel (Bethan and Blazquez Cano 2019), practices of experiential retail are widespread, mainly trained by the implementation of consumer-facing technologies.

Moreover, Swiss luxury watch brands, whose primary revenue stream has always been the physical retail, have had no choice but to trust online innovation to meet consumers' demand for increasingly sophisticated interactions in digital channels (The Business of Fashion, McKinsey&Company 2021), whereas finding persuasive ways to integrate the human touch.

2.2.1 Digital innovations at Swiss luxury watches' physical stores

Brick-and-mortar stores continue to play a critical role in the retail strategy of personal luxury good companies, particularly of those operating in the Swiss luxury watch sector. In fact, Swiss luxury timepieces brands' customer relationship and trust are built on the emotions they are able to elicit through touch and feel of their products.

In this era of social distancing, the function of luxury watches' physical store, as well as their unique point of contact with clients, has undergone a real transformation, lying on their ambition of creating ever-closer connections with their clients. Indeed, brick-and-mortars are no longer treated only as market places (Chen 2020) rather a space for a holistic experience (The Business of Fashion, McKinsey&Company 2021) where customers are able to fully appreciate brand's values and heritage, and to be constantly inspired (Altagamma 2020).

The modern luxury watch store acts as an entertainment location, delivering consumers immersive and sensory journeys (The Business of Fashion, McKinsey&Company 2021). The new retail is centered on arousing curiosity and amazement through ongoing involvement in order to provide clients with experiences honouring the superior quality of the products (Altagamma 2020), via the reliance on innovative technologies.

In this regard, concrete evidences of the new role of the physical store come from the Swiss luxury watch brand IWC Schaffhausen (IWC Schaffhausen 2021). In fact, by exploring IWC in-store digital innovations, this research is able to provide with a detailed overview of new technologies' application within Swiss luxury watch industry.

IWC's flagship store in Zurich celebrates one of the brand's territories[12], motor racing, by bringing together IWC's craftmanship and digital transformation (IWC Schaffhausen Press Relations 2020), throughout:

- ***Interactive shop windows***: through the QR Code scan, the client acquires complete control of both displayed watches and of the video content transmitted on the window.
- ***Open and glass-free sensation presentation cases*****,** enabling customers to live the *touch and feel* product experience. These exhibition cases are accompanied by ***digital touch-screens*** unveiling products' specifications and inspecting differences between the watches via a comparison functionality. The display also shows video content related to the watches on the display and IWC social media feed.
- ***Take away experience via smartphone*** via the QR codes inside the boutique.
- ***Interactive touch-screen book, history and watch wall***. Through AR-based technologies, the client immerges himself into brand's origins, founders and engineering backgrounds, thanks to animations, enriched with video and audio sequences.
- ***Virtual Reality gaming***: visitors are invited to get on the IWC Racing Mercedes and test the drive by wearing a pair of headsets. Once having chosen a virtual in-game IWC watch, a lifting platform takes them and their car from the boutique, via an underground tunnel system, to a Virtual Reality driving experience over a mountain track in the Swiss Alps.
- ***On-site watchmaker with cyberloupe streaming capability*****:** a trained watchmaker, at disposal for watch repairs and maintenance, wears a pair of AR headsets integrated with micro video camera projecting what he is seeing into a screen or video link format. This allows clients, either at home or in boutique, to observe the minute details of watches' movements from the viewpoint of the watchmaker.
- Display transmitting ***real time videos from the manufacturing center***: the client assists at all the phases of watches' production process by selecting different camera angles and perspectives.
- ***In-store digital shop the look*** feature, in collaboration with Mr. Porter[13] and Net-a-Porter[14]. Customers access a special assortment of apparel and accessories to complete their style.
- ***Mobile touch-screen displays,*** used by sales assistant to visually accompany their storytelling about IWC brand and watches' craftmanship. In addition, through these displays clients are able to take a glimpse on products not currently available at the physical store, hence on their technical features and characteristics.

[12] Aviation, navigation and motor racing represent IWC territories, through which the brand magnifies the connection between mankind and machine (IWC Schaffhausen 2021).

[13] Mr Porter is an online luxury multi-brand platform for men's style (Mr Porter 2021).

[14] Net-a-Porter is an online luxury multi-brand platform for women's style (Net-a-Porter 2021).

2.2.2 Digital innovations on Swiss luxury watches' e-commerce

To make online customer experience as involving, entertaining and customer-centric as the one at physical store, Swiss luxury watch brands have been heavily investing in the following consumer-facing technologies:

- ***Virtual try-on***, leveraging on *Augmented Reality* (The Business of Fashion, McKinsey&Company 2021). IWC Schaffhausen has launched a Smartphone App, whose main feature is a virtual watch try-on through which customers are able to virtually try IWC's 2021 novelties by pointing their camera at their wrist. The virtual try-on gives customers a tangible perception of the watch and the chance of comparing different diameters (IWC Schaffhausen Public Relations 2021).
- ***Augmented Reality technology,*** for instance the one adopted by IWC Schaffhausen to reveal its Portugieser 2020 collection[15]. This experience ensures customers to appreciate the volumetric and aesthetic features of the watches, by virtually rotating and zooming it (Stanic 2020).
- ***360° rotation of 3D product*****,** enabling users to inspect every watch detail from the back to the front, with zoom-in functionality on its mechanisms.
- ***Virtual Boutique experience.*** Accessible by anyone through a smartphones or computer, IWC virtual boutique aspires to replicate the brand's physical store in Singapore (Cna luxury 2021). Visitors are offered a 360-degree walk-through it, including the opportunity of closing-up views of timepieces and of booking a ***virtual meeting*** with a client advisor in private web conference and ***lively chatting*** with him (Ho 2020).
- ***360° Experience***: IWC allows clients to discover the new Portugieser models by virtually getting on and exploring a sail board, intending to recall the story of this watch model as well as one of the territories belonging to the brand's universe (IWC Schaffhausen 2021).
- ***Virtual Selling appointments.*** The store staff recreates the in-store shopping personal experience by delighting clients with a private service via mobile or computer devices. This initiative blends human interaction with the digital shopping experience (The Business of Fashion, McKinsey & Company 2021).
- ***Virtual tours,*** like the virtual visit at IWC flagship store in Zurich, offered to anyone surfing IWC own mono-brand e-commerce.

Evidence suggests not all consumer-facing technologies have been adopted by the Swiss luxury watch industry, which indeed has not yet implemented VR-based shopping and virtual assistants and chatbot automation.

[15] Portugieser, together with Pilot, Portofino, Da Vinci, Ingenieur, Aquatimer constitutes the watch collections belonging to IWC's brand universe (IWC Schaffhausen 2021).

2.3 Customer Experience: from a general conceptualization to In-Store customer experience (ISCX)

Marketing authors have been largely discussing the concept of customer experience and its management by pursuing two different approaches (Hoyer, et al. 2020). The first approach conceptualizes customer experience as a customer journey with the firm, delineated by the pre-transaction, transaction and post-transaction stages (Lemon and Verhoef 2016). During these phases, customers interact with several touchpoints, which traditionally have included the product and its design, identity elements, packaging, communication (Hoyer, et al. 2020), commercial channels and environments such as retail, tradeshows, events. Digital and technological revolutions have unleashed the proliferation of additional touchpoints and communication and retail channels: social media, web-sites, e-commerce and mobile platforms (Hoyer, et al. 2020).

However, for the purpose of this research, prominence is attributed to the second approach of customer experience, focusing on the internal and subjective experiences, evoked by the above-cited touchpoints. According to Schmitt (1999), experiences are triggered by specific stimuli, which are induced and not self-generated, and have a reason and purpose. Specifically, Schmitt's SEM Framework[16] conceives customer experience as *"cognitions, feelings, sensations, and social and physical responses triggered by an experience provider"* (Bustamante and Rubio 2017). Consequently, experiences are not internal assessments or affective states of the subject, rather states occurring in response to a specific stimulus. Goode, et al. (2010) define the experience's components as thoughts, emotions, behaviours, and evaluations occurring during or in response to a stimulus. Following these theoretical conceptualizations, experience in the retail environment is interpreted as the result of interaction between a subject, the consumer, and an object, the experience provider, as well as of the act of co-creation between the two. Thus, customer experience develops when a customer relates with product or the retailer's physical environment, including its employees, policies, and procedures.

In the retail landscape, Verhoef et al. (2009) design a theoretical model of retail customer experience, deeming it as *"an holistic construct that encompasses the customer's cognitive, affective, social, and physical responses to the retail context*" (Bustamante and Rubio 2017). Moreover, they assert that retail customer experience is shaped by two variables: internal, namely service interface, retail environment, assortment, pricing, and store brand; external variables, thus the influence of third parties, reason for buying, situational factors (Bustamante and Rubio 2017).

[16] SEM, is the acronym of "Strategic Experiential Module" which includes the five different experiences that marketers can create for customers: Sensory experiences (SENSE); Affective experiences (FEEL); Creative cognitive experiences (THINK); Physical experiences, Behaviors and lifestyles (ACT); and Social-identity experiences that result from relating to a reference group or culture (RELATE) (Schmitt 1999).

Along with Schmitt (1999) and Verhoef et al. (2009), Bustamante and Rubio (2017) study conceived the in-store customer experience model, ISCX, as *"a subjective internal response to and interaction with the physical retail environment"*. In a retail setting, customers do not only perceive and understand stimuli, but also respond to them via internal cognitive, emotional, and physical processes, while also interacting with other service encounter actors.

2.3.1 Components of ISCX

The ISCX framework proposed by Bustamante and Rubio (2017) identifies customer experience as a *"holistic construct that includes the customer's internal responses to the service stimuli (cognitive, affective, and physical) and the customer's social interaction with other actors involved in the service encounter"*.

Cognitive Experience

Cognition is defined as *"mental activity as reflected in knowledge, beliefs or thoughts that someone has about some aspect of their world*" (Martínez-Navarro, et al. 2018). Therefore, it indicates individuals' capacity of processing information obtained through perception, acquired knowledge, and subjective qualities. Individuals' cognitions of objects are learned, and if the stimulus contains sufficient persuasive content, they can develop strong, permanent attitudes toward the object. Many authors stress that cognition constitutes the initial state of customer experience since it primarily interprets knowledge, and then it is followed by affective reactions.

When shifting the concept of cognition to retail setting, it results to not be only relatable to classify, to analyse and to reason knowledge, rather it "*emerges from the mental responses to stimuli in the environment that engage customers creatively with brands and stores"*, as revealed by Schmitt (1999). These responses can involve, for instance, positive thoughts, ideas, or memories, to which marketers appeal through surprise, intrigue, and provocation (Bustamante and Rubio 2017). The ultimate objective is awaken customer's creative thinking about the information acquired in the shopping context. Creative thinking enables *"customers' fluidity of associations and ideas and absorbs them completely during the shopping or consumption situation"* (Bustamante and Rubio 2017). Hence, cognition is the outcome of process transforming individual interaction with external environment, which includes products, services and retail ambience, into thoughts.

As such, the cognitive component of ISCX consists of marketing stimuli's ability to involve customers into products and retail atmosphere, for instance to: make consumers think and reflect; teach consumers interesting things; arouse curiosity and creativity; inspire and interest consumers; bring interesting ideas to mind.

Affective Experience

Affection is delineated as "*valenced feeling state"* , composed by mood and emotions. However, in customer experience literature, relevance is given to emotions as they *"are associated with an object that stimulates them and are more intense, whereas moods are not generally associated with an object that stimulates them and are lower in intensity"* (Bustamante and Rubio 2017). Hence, emotions result from cognitive evaluations of events and thoughts.

Emotions contribute to the creation of affective experiences, described as attraction or repulsion's versus an event, object, or situation. Since marketing stimuli may elicit emotional responses in customers, affective experience is included in ISCX, and in turn, emotions generate affective experiences capable of influencing customer behaviours toward the brand/store evoking them.

Thus, the affective component of ISCX is correlated to marketing stimuli making clients happy, contented, optimistic, hopeful, enthusiastic, thrilled, surprise, amazed, astonished.

Social Experience

Retail environments are social contexts allowing for the experience co-creation with other people. Stores are considered as places of human interaction, where individuals enjoy relating and communicating with other shoppers and sales assistants. This retail landscape's feature is designated as "social experience" which is built on the intensity and quality of the connection between the individual "self" and others (Bustamante and Rubio 2017).

In the context of ISCX, the social component is represented by the relationship the consumer establishes with the retail environment, envisioned as social system favoring a dual interaction: customer-employee and customer-customer. The former ranges from *"giving an opinion/ receiving advice to customer-employee engagement through interaction",* whilst the latter from *"giving/receiving advice/opinions to customer-customer engagement through interaction."* (Bustamante and Rubio 2017).

Physical Experience

ISCX's physical component refers to customer's physiological responses while interacting with his or her environment. These responses are classifiable as either a condition of well-being/comfort or a deficit of well-being/comfort. Comfort is a physiological state of physical harmony between an individual and his or her surroundings, and is the subjective sense of well-being and pleasure in reaction to his or her environment. In this perspective, discomfort involves the opposite state, that of ill-being when relating with the external setting. The physical experience is fostered by the store atmosphere, and in the meantime, it may affect the customer's emotions and thoughts of the environment and of other people (Bustamante and Rubio 2017).

2.4 The impact of consumer-facing technologies on ISCX components in Swiss luxury watch brands offline and online retail

As previously posited, brands have been pursuing the integration of innovative consumer-facing technologies into their retail channels to generate immersive customer experience and amplify customer satisfaction. Pantano (2015) argues these technologies contribute to the generation of new marketing experiences, and Parise, et al. (2016) emphasize the relevance of both in-store and online digital stimuli in influencing customer behaviour and in leading to positive attitudes such as retention, engagement and purchases. Following this perspective, Hoyer at al. (2020) highlight the notion of experiential value, resulting from technologies' capability of shaping interactions in a customer-centric way.

Prior to Covid-19, luxury firms showed a certain reluctance towards the adoption of digitalization, deemed as an obstacle to their seeking to maintain their brand image and identity, to sustain an intimate link with their customers and to preserve an aura of scarcity and exclusivity (Baker, et al. 2017). This was especially true for Swiss luxury watch brands, which have consistently shied away from digital advancements, fearing the jeopardization of their heritage, rooted in centuries old- know-how, history and tradition. Furthermore, watch brands' customer relationship has always been based on the concept of person-centricity, delineating both the intimate and emotional brand connection perceived by the client from touching and feeling the timepiece as well as the personalized shopping experience traditionally featuring this sector.

Nonetheless, social distancing measures have resulted in a significant shrinkage for not yet technology-involved companies which have been working hard to ensure the client experience is seamless nurtured both in-store and online, since the pandemic inception. It this in this context that technology has proven to be an asset for experiential retailing, particularly for Swiss luxury watch companies aspiring to retain and strengthen that connection by generating authentic customized experiences through the adoption of new consumer-facing technologies.

Ascertained the importance of experience in the Swiss luxury industry, it is critical for marketers and for retail managers comprehending customer behavior in relation to the brands' adoption of new consumer facing-technologies for offline and online digital engagement.

In this regard, the next sections of this research focus on the impact of these technologies on the experiential dimension. As previously examined, Bustamante and Rubio (2017) identify in-store customer experience as the outcome of five experiential components, namely the cognitive experience, the affective experience, the social experience comprising the dual interaction customer-customer and customer-employee, and the physical experience. However, their study is limited to the analysis of customer experience dimensions as being influenced by stimuli belonging to physical environment, devoid of any kind of technological presence.

As such, this work intends to update Bustamante and Rubio (2017) findings for nowadays digital era, whose advancements have been event more encouraged following Covid-19 pandemic outbreak. This research aims at bringing the experiential components' investigation at online level, therefore at the circumstance in which customers choose to carry out their shopping experience at brands' e-commerce instead at the physical store. As a result, this work will widen Bustamante and Rubio (2017) scope by including both brick-and-mortar and e-commerce points of sales in its analysis. In turn, the environment of these two retail settings becomes the stage of the new consumer-facing technologies from the display and 360° rotation of 3D products to AR, VR and further mixed digital features.

In this perspective shift, Bustamante and Rubio (2017) experiential components consist of marketing stimuli evoked by consumer-facing technologies applied by brands in online and offline stores. Nevertheless, the current pandemic context leads this study to exclude customer-customer interaction, meaning one of social experience's level of relationship, and physical experience, from the analysis. Social distancing restrictions, which reduce the number of customers entering at the store, and hygiene measures, such as mask requirements, drastically lessen individuals' chance and willingness to socialize with other shoppers and may affect a priori their physical comfort and well-being (Klaus and Manthiou 2020).

2.4.1 Consumer-facing technologies and the cognitive experience in Swiss luxury watch brands' offline and online retail

As understood from Bustamante and Rubio (2017), in the shopping context, cognition encompasses customer thinking involvement with products, services and retail environment. For instance, cognitive experience is obtained when stimuli in retail context encourage consumers to think and reflect, to learn, to make them curious and creative.

The main features of consumer facing technologies, such as 3D product visualization enriched by 360° view, and 3D virtual models, namely AR, VR, are represented by *interactivity* and *vividness*. Image and video interactivity is able to stimulate cognitive mental activity by offering users an innovative system of presenting products, enhancing their attributes and features and mimicking a real-world product experience within both the virtual and mediated environment[17] (Beuckels and Hudders 2016). It enables customers to manipulate the product's features, its background, the environment where it is exposed, its distance viewing and its rotation (Beuckels and Hudders 2016). Whilst investigating the concept of interactivity, authors stress the needed congruity of three factors: speed, referring to how quickly the content may be modified in the virtual and mediated environments; mapping, namely the degree to which the control employed in the mediated environment is analogous to the one applied in the real world;

[17] The virtual environment indicates the pure digital retail setting generated by VR solutions, whereas the mediated environment consists of the superimposition of virtual objects on users' real surrounding throughout AR technology (Yim, Chu and Sauer 2017).

range, indicating the extent to which a content may be changed in the virtual and mediated environments (Yim, Chu and Sauer 2017).

On the other hand, vividness is recognized as the quality of product presentation, and following this perspective, *"more vivid portrayal of products is more likely to stimulate consumers' cognitive elaboration processes"* (Yim, Chu and Sauer 2017). Authors interpret vividness as the ability of consumer-facing technologies of generating "*realness, richness and realism*" (Yim, Chu and Sauer 2017) while displaying products, either on a virtual or mediated context. From a technological perspective, vividness is acknowledged to be enhanced by *"depth"*, which is the quality of the images and information gathered by and *"breadth"*, therefore the sensorial aspects produced by technology (Yim, Chu and Sauer 2017).

In the context of online shopping, consumers proactively participate in message-information processing and gather product information via *"visual examination of realistically displayed virtual products (e.g., shape, color, functions)"* throughout interactivity and vividness. In this sense, consumer-facing technologies deliver clients direct or close-to-direct product experiences, making them perceive a high level of knowledge and learning, so defined "*perceived informativeness"* (Kang, Shin and Ponto 2019). Specifically, AR superimposes computer-generated elements on real-life environments, and its augmented interactivity provides users with a virtual control, through which they are able to perform natural movements to adjust it, and with an environmental embedding, projecting the product on a personally relevant context such as the consumer's body or surroundings (Plotkina and Saurel 2019). AR virtual try-on solutions suggest the client about the size and the wearability of a product, while AR-based image projection on a physical surface helps customers developing an idea about the sense for the volumetric and aesthetic, enriched by enlargement and rotating functionalities. Additionally, users' informativeness is also reached via VR, which is intended as 3D items visualization on brands' e-commerce and interactive exploration in virtual setting like Virtual Boutique Experience, as well as a more immersive experience offered by HDM devices.

Thence, users' perceived informativeness and quality about the product or the simulated like-real retail environment may be regarded as the outcome of interactivity and vividness capability of compensating the loss of tactile and visual sensations.

Moreover, innovative technologies influence cognitive experience by assisting customer's mental imagery abilities and reducing the mental effort involved in creative activity (Jessen, et al. 2020). Accordingly, decision-making involving these technologies is not dependent on an individual's mental abilities but rather on the intrinsic features of technology. Delegating a great amount of information processing to digital solutions, consumers are able to minimize their mental effort and consequently, their capacity for creative thought increases (Jessen, et al. 2020).

The above illustrated technologies' characteristics lead to an evident cognitive involvement in the online retail setting, known as *flow* state (Kang, Shin and Ponto 2019). The flow is where users acquire a sense of psychological immersion in the digital experience, and this condition is pivotal for ensuing the reach of an experience being as authentic, person-centered and human as the one at the physical store.

Online users can appreciate craftmanship's details and experience the touch and feel sensation of Swiss luxury watches through consumer facing-technologies, whose innovative features enable them to learn about the watches and real in-store environment, and therefore to creatively think and reflect. These advanced technologies drive individuals to a flow state, hence to a cognitive involvement and engagement into brands' product and retail information, where the typical luxury watch in-store customer-centricity is achieved.

In the light of the discussion above, it is reasonable to think that:

H1a: Consumer-facing technologies positively influence the cognitive experience in Swiss luxury watches' online setting.

In the online environments, consumer-facing technologies' application aim at both magnifying product presentations to help consumers to make an estimation about its tactile and visual quality and, at some extent, at recreating the in-door atmosphere of brands' physical stores.

As deductible, in the offline setting, the above discussed 3D virtual model technologies' features mainly play the role of enriching the in-store atmosphere and values' storytelling rather than of providing product information. For instance, AR infographics on interactive walls and the gamification experience with VR HDMs' awake customers' creativity and interest.

Additionally, interactive digital touch screens showcasing 3D product visualization and QR code elevate customers' in-store tactile and visual product experience. Indeed, these technologies ensure shoppers the chance of gathering of further details about products' attributes and characteristics.

According to Pantano (2015), interactive digital and animated store-windows elicit consumers' curiosity about the brand, resulting in encouraging customers to enter the store.

Hence, the coexistence of both physical and digital experiences greatly stimulate clients' cognitive immersion which is, in this case, attributable to the combination of *"the [physical] experience of the object/environment with [its] relative information connected to various sources"*.

In the context of Swiss luxury watch brands' physical store, innovative consumer-facing technologies may allow customers thinking to be fully involved with timepieces' craftmanship, as being able to live the touch and feel experience whereas learning further information, and may help brands in bringing its stories to life through a visual narration of its codes.

Thus, it is expectable that:

H1b: Consumer-facing technologies positively influence the cognitive experience in Swiss luxury watches' offline setting.

2.4.2 Consumer-facing technologies and the affective experience in Swiss luxury watch brands' offline and online retail

According to ISCX model proposed by Bustamante and Rubio (2017), the affective experience refers to customers' emotions evoked by external stimuli originating from the products, services and environment in a retail context.

In both offline and online setting, consumer-facing technologies generate a "*perceived playfulness*" stimulus, able to transform shopping activity into a positive and joyful experience (Kang, Shin and Ponto 2019) (Plotkina and Saurel 2019).

Amid authors, it is largely recognized the correlation between enjoyment and interactivity and vividness. Yim, et al. (2017) notice that interactive technologies providing more vivid product representations are associated with a more positive affective emotional experience, in the online setting. Indeed, the realism of the 3D items visualization, the sense of control given by the interactivity and the high quality presentation allow customers to thrive the enrichment of their imagination, enabling customer thinking involvement. In turn, this latter ensues a high perceived informativeness and product quality, leading to a range of pleasant emotional experiences (Yim, Chu and Sauer 2017).

These positive affective evaluations result to be even amplified by experiencing the thrill of discovering like-real products and environments (Yim, Chu and Sauer 2017).

Furthermore, in both offline and online retail, enjoyment and fun arouse from the use itself of consumer-facing technologies, whose handling consent customers to directly control and personalize the interaction with the brand's products and environment. In this regard, several researchers found out the existence of an analogy between positive emotions elicited by consumer-facing technologies and the ones typically triggered by computer-generated games. Enjoyable elements of VR are well-documented by Kang, et al. (2019), whose studies highlight the sense of pleasure individuals feel when immersed in virtual dimensions, enabling them to briefly disconnect from the real world. In addition, Javornik (2016) shows that AR-based technologies, such as virtual try-on and graphics' projection, add a higher level of hedonism to the purchase experience than conventional 2D visualizations.

Javornik (2016) also asserts the great impact of virtual and augmented reality experiences on consumer playfulness when applied for narration and storytelling purposes.

In the context of Swiss luxury watch brands' online settings, consumer-facing technologies, such as 3D product visualization and both 3D virtual models, meaning AR and VR, may empower consumers to reach a connection with the brand/timepiece as emotional and intimate as the one traditionally

experienced through the real touch and feel sensation at the physical store. The perceived informativeness about product quality and craftsmanship, along with the sense of control exerted over the product in a personalized and direct way, place the client at the very center of shopping experience, awaking positive emotions in him. Thus, positive affective experience may arise from customers' perceived realism of both products' presentation and brand connection.

In Swiss luxury watch brands' offline settings, consumer-facing technologies providing craftsmanship and quality's details, like interactive displays and QR code scans, may enhance the positive attitude already generated by the real visual and tactile sensation. Here again, the chance of directly and independently interacting with watches' complications and characteristics via digital tools would increase the feeling of enjoyment. The compresence of these two circumstances may outcome in a further strengthened emotional connection.

Moreover, innovative 3D virtual model technologies would favor the enrichment of the retail setting itself; specifically, in online retail, they would ensure consumers immersion into a like-real physical boutique, whereas, in offline retail, they would rather have the purpose of making the store a place of entertainment.

Hence, this work proposes to test the following hypothesis:

H2a: Consumer-facing technologies positively influence the affective experience in Swiss luxury watches' online setting.

H2b: Consumer-facing technologies positively influence the affective experience in Swiss luxury watches' offline setting.

2.4.3 Consumer-facing technologies and the social experience in Swiss luxury watch brands' offline and online retail

As argued by Bustamante and Rubio (2017) the social experience dimension is grounded in the opportunity of relationship emerging between the individual and other people present in the retail environment. Specifically, the social component characterising the shopping context is classifiable according to two different kind of relations: customer-customer and customer-employee. Nonetheless, as mentioned above, this work does not scrutinize the effect of consumer-facing technologies on customer-customer interaction due to Covid-19 pandemic in-store social limitations.

Consumer-facing technologies such as Live Chat and Remote Selling allow users to experience social interaction in an online environment. Live Chat and Remote selling entail the presence of a real person and located remotely, available for immediate service to the customer. The main difference between these two technologies relies on the modality through which the interaction happens. As the name itself suggests, Live Chat consists of chat conversations between the customer and the employee, where AI powered taxonomy connects the client with the nearest in-store sales assistant, who shares suggestions

and products' images and video. The Remote Selling involves a personalized video-call taking place at the brand's boutique or in a dedicated area, giving the client the impression of being at the physical boutique, and therefore a richer immersion and engagement (Parise, Guinan and Kafka 2016). These two means of social experience are suitable for users who aspire to not renounce a human contact although the physical distance.

Several authors recognize the critical role played by consumer facing-technologies in facilitating customer-employee contact in the offline setting (Wirtz, et al. 2018). Particularly, tablets aid the sales assistant in offering higher-quality advice while navigating the boutique, by bridging the physical and digital worlds (Holmqvist, Wirtz and Fritze 2020). Moreover, these technological tools improve face-to-face customer-employee interaction in two ways: they support employees in rapidly identifying both products' attributes and their in-store availability; they permit consumers to register their personal information for engagement purposes, allowing for more customized interaction and for delivering more targeted recommendations to the client (Holmqvist, Wirtz and Fritze 2020).

In Swiss luxury watch brands' online setting, the human trait featuring Live Chat and Remote Selling technologies contribute to recreate the traditional in-store service experience, delighting users of the same person-centricity as the one at the physical store.

In Swiss luxury watch brands' physical stores, consumer-facing technologies does not act as a principal interaction medium between the customer and the employee, rather it strengthens their relationship and enriches the touch and feel ritual through the opportunity of gathering further watches' information.

Thence, in view of the discussion above, it is fair to believe:

H3a: Consumer-facing technologies positively influence the social experience in Swiss luxury watches' online setting.

H3b: Consumer-facing technologies positively influence the social experience in Swiss luxury watches' offline setting.

3. Methodology

The present research employs a quantitative approach to test the above-proposed six hypothesis, hence to investigate whether consumer-facing advanced technologies positively influence individuals' cognitive experience, affective experience and social experience in both online (*H1a, H2a, H3a*) and offline (*H1b, H2b, H3b*) settings, within the Swiss luxury watch industry.

3.1 Research design

An online survey has been built on Qualtrics® XM and distributed through an anonymous survey link, unable to track identifying and sensitive information of respondents. This link has been diffused via social networks; specifically, it has been sent by chat conversations on Instagram and WhatsApp and shared on groups of luxury watches' enthusiasts on Facebook and LinkedIn.

The structure of the survey foresees eight blocks:

1. Introduction;
2. Introduction to scenario;
3. Scenario;
4. Cognitive Experience;
5. Affective Experience;
6. Social Experience;
7. Introduction to socio-demographic questions;
8. Socio-demographic questions.

The "*Introduction"* acknowledges respondents about the author, the academic purpose and the timing of the survey, and it specifies data conditions and treatments.

In *"Introduction to scenario"*, participants are informed about the scenario description in the upcoming block, and are suggested to read it attentively in order to completely immerse themselves in the narrative and to provide accurate responses to the questionnaire.

In the third block, a randomized scenario appears, meaning each respondent is exposed to a one out of total 4 scenarios. Two scenarios describe the environment of a Swiss luxury watch brand's offline and online retail, devoid of any kind of consumer-facing advanced technology, and defined as "Traditional physical store" and "Traditional e-commerce", respectively. Whilst, the other two scenarios illustrate exactly the opposite circumstance, hence the setting of a Swiss luxury watch brand's offline and online retail enriched by the presence of consumer-facing advanced technologies. As such, they are renamed as "Innovative physical store" and "Innovative e-commerce".

Hence, here below the description of each of the four scenarios:

The "Traditional physical store":

"Imagine you are considering purchasing a Swiss luxury watch at its ***traditional point of sale****. Once you cross the door, you are welcomed by an exquisite architectural design made of noble materials and warm tones, whose essentiality in lines contribute to the creation of a superior atmosphere.*

Divided into collections and models, the timepieces are displayed in glass exhibition cases integrated with an internal lightning aiming at enhancing each detail of their craftsmanship.

If you are interested in touching and feeling a watch, a sales person is there to assist you and invites you to take a seat and enjoy the experience pleasantly. While trying on the watch, you become the spectator of an immersive storytelling, in which the employee explains the products' complication as well as the brand's heritage and history. An in-house watchmaker is always ready to support you in technical matters.

As you walk through the boutique, every corner and themed object reveals more about the brand's values, until you reach the lounge area, where you may relax, converse and read watchmaking literature, while sipping on hot or cold beverages".

The "Traditional e-commerce":

"Imagine you are considering purchasing a Swiss luxury watch from its ***traditional website****. Once you access it, you are welcomed by an elegant design, whose minimal font-style and neutral colors allowing you to breath the same sophisticated atmosphere as the one at the physical store.*

Every time you move the cursor over the timepieces, they soothingly enlarge creating the illusion of approaching a real exhibition case. An image of the latest launched watch dominates the homepage and the timepieces are shown by collection. Each timepiece is provided with technical specifications, whereas the zoom-in feature enables you to depict the watch details.

If you need a professional consultation, it is possible to reach the expert via an e-mail or call, who will guide you through the range of models.

An entire website section is dedicated to the brand's universe, made of stories and infographics, which take you on a journey through the brand's origins and watchmaking".

The “Innovative physical store”

*Consider purchasing a Swiss luxury watch at an **innovative physical store**, where the shopping experience begins even before crossing the door. The shop windows can be controlled remotely on the street via a mobile phone: a QR code enables you to switch both the displayed watches and the digital video footage of the windows!*

The collections of watches are exposed through open and glass-free exhibition cases, allowing you to interact with the timepieces. These presentation cases also include touch screen displays through which showcasing 3D product visualization, through which you can browse watches’ info and comparing timepieces using a comparison tool. Interactive touch-screen books and animated AR walls make you immerge into the brand’s universe and learn more about the history of its watches’ complications.

Sales assistants resort to a mobile touch-screen display as a tool accompanying their watches’ storytelling, and through which you are able to take a glimpse on products not currently available at the store. An on-site watchmaker wears AR headsets with built-in video-camera projecting what he sees into a screen.

Live links to the manufacturing center let you discover each phase of watches’ production. Finally, VR technology, like googles, ensure fun through gaming features!

The “Innovative e-commerce”

*Imagine you intend to purchase a Swiss luxury watch from its **innovative website**. Once you access it, you are greeted by an essential design, whose minimal font-style and pleasant tones allow you to breath the same sophisticated atmosphere as the one at the physical store.*

Each time you move the cursor over the timepieces, they soothingly enlarge creating the illusion of approaching a real exhibition case. Displayed by collection, each timepiece is provided with technical specifications and the 360° 3D rotation feature enables you to inspect each watch detail from the back to the front. By scanning the QR you are able virtually try the timepiece on your wrist, and through AR technology you can project the watch on a surface and experience its real volumetric and aesthetic. The configurator tool lets you to design your dream watch by selecting the collection, the model, the material, the bezel, the bracelet, and the dial.

The virtual boutique service makes you to live the in-store experience directly from your home: you are offered a 360-degree walk-through it from different perspectives, including the opportunity of closing-up views of timepieces and booking a virtual meeting with a client advisor via private web conference. If you need a professional consultation, it is possible to reach an expert via live-chat or write to an automated chat box, and you will be guided through the range of models.

VR technology immerses you totally in virtual themed and playful environments where you can discover the latest collection.

The description of the innovative scenarios have been mainly inspired to actual IWC physical and digital store. However, the choice of omitting the brand relies on this study's intention to not influence participants' answers. For instance, a IWC passionate would have assigned high scores a priori to three experiential components, whereas an IWC's competitor enthusiast, or simple individual not liking the brand, would have negatively rated the scenario-related items.

The fourth, the fifth and the sixth blocks include the questionnaire the respondents have been asked to fill after reading the scenario. It is based on Bustamante and Rubio (2017)'s ISCX scale, of which some components and items has been omitted and readapted to be compatible with and relevant to the purpose of this study. Indeed, these authors' primary scale encompasses five components: "cognitive experience", "affective experience", "social experience with customers", "social experience with employees", "physical experience". As already mentioned in the second chapter, both "social experience with customer" and "physical experience" have been excluded from this analysis for the following reasons:

- In this current pandemic context, social distancing restrictions reduce the number of customers entering at the store, therefore it would have not been credible building a scenario citing the chance of socializing with other shoppers.
- The physical experience refers to customer's physiological responses while interacting with his or her environment. These responses are classifiable as either a condition of well-being/comfort or a deficit of well-being/comfort. Consequently, since this survey's participants have not been asked to visit a real physical store, it would not have been possible depicting their physical state. Moreover, in case this study had evaluated this component, it should have presumably proposed a realistic description of nowadays' brick-and-mortar environment, requiring Covid-19 hygiene measures and mask requirements, which would have affected a priori, even "imaginarily" their physical comfort.

As such, the cognitive experience has been the first component to be assessed in relation to the scenario description. The statement "*The environment described above..."* has been used to introduce the 7 items measuring this experience: *"makes me think and reflect about watches' quality and craftsmanship"; "teaches me interesting things regarding the brand values and the retail atmosphere"; "awakens my curiosity"; "awakens my sense of creativity"; "brings interesting ideas to mind"; "inspires me";" interests me"*.

The affective experience has addressed the second component that participants have been requested to evaluate. The heading *"The environment above described, makes me feel"* has constituted the initial part

of the 6 items employed to analysed it, namely *"contented"; "happy"; "enthusiastic"; "thrilled"; "surprised"; "amazed"*.

The social experience has entailed the third component to be examined, through the assertion *"considering the level of social interaction you can have through this environment"*, related to these following 4 items: *"I would like to receive an advice from the employees of this Swiss luxury watch brand"; "I would like to ask the opinions of the employees of this Swiss luxury watch brand"; "I would like share my opinions with the employees of this Swiss luxury watch brand"; "I would like to interact with the employees of this Swiss luxury watch brand"*.

Furthermore, respondents have answered to 4 socio-demographic questions concerning the gender, the age range, the current employment status and the nationality.

Finally, 3 questions have been built to test participants' interest in luxury watches. Through the first question, they have been asked to evaluate their relation with luxury watches by selecting among "not interested", "interested", "passionate". The second one aimed at finding out about their luxury watches' ownership, whereas the last one their intention to purchase a luxury watch in the near future.

3.2 Questionnaire, sample, and measures

Although respondents have been randomly assigned a different scenario, they have answered to 23 identical closed-ended questions. As such, it has been feasible to examine objectively how the presence of consumer facing advanced technologies may influence the three experiential components, hence the cognitive, the affective and the social experience at a physical or digital store of a Swiss luxury watch brand.

In addition, a timing function has been implemented to the questionnaire's "scenario" block, ensuring participants could leave this page and access the scenario-related questions, once a minimum of 30 seconds was elapsed. The introduction of this feature aimed at assuring that respondents have had sufficient time to focus on the reading and that they have been properly prepared to provide as transparent and fair responses as possible.

The questionnaire has been delivered to a total number of 387 individuals, whose 204 have fully completed and submitted it. To allow the reach of a large audience and, therefore, to obtain heterogeneous insights, the survey has been conducted in English, recurring to a simple and straightforward vocabulary. However, as tracked by the data and analysis report generated by Qualtrics® XM those 183 individuals who did not fill the questionnaire, interrupted their path at the scenario page. Two interpretations to this attitude can be given: respondents may have been discouraged either by the mandatory timing or by the language, of which simplicity may not have compensated the specificity of the topic itself.

This survey has resorted to two different measurement tools to evaluate respondents' answers:

- To measure the scenario-related questions, therefore the items of the cognitive, affective and social experience, respondents could express a score from 1 to 7 in Likert scale, where 1 standing for "totally disagree" and 7 for "totally agree". The main advantage of the Likert rating scale is its ability to clearly and quickly discern the answers and code them on a scale of values, allowing for a fast analysis (Qualtrics XM 2021). Moreover, this research has opted for 7 than 5 levels of investigation to receive feedbacks from a great level of depth.
- As previously mentioned, to analyse those questions aimed at investigating respondents' socio-demographics info and their relationship with luxury watches, some nominal measures have been adopted.

3.3 Results obtained

To analyse and to interpret both scenario-related and socio-demographics responses, the relative results have been exported from Qualtrics XM to IBM SPSS Statics platform.

3.3.1 Results of participants' socio-demographics and relation with luxury watches

Firstly, descriptive statistics have been calculated to measure the outputs from socio-demographics questions and respondents' relation with luxury watches.

As emerging from the socio-demographic answers, the present questionnaire has been correctly filled and submitted by 101 males, 100 female, 1 binary/third genders and 2 unknown genders.

Secondly, the most popular age range has resulted to be "9-24" (Gen-Z) including 91 respondents, followed by "25-40" (Millennials) counting 67 individuals, and by "41-56" (Gen Y) and "more than 56" (Boomers and Baby Boomers), with 39 and 7 components, respectively.

Thirdly, 64,2% of participants are currently enrolled to school and/or university, whereas 31,4% employed, succeeded by the remaining percentages representing retired and unemployed people.

A sharp Italian majority is more than evident, and it constitutes 79,9% of respondents, whilst the minor percentages belong to French (5,9%), Swiss (4,9%), German (3,9%), Other (2,5%), Spanish (1,5%) and English (1,5%) nationalities.

From the question scrutinizing the relation with luxury watches, it is noticeable that most of respondents show a positive attitude towards this personal luxury goods' category. Indeed, 52,9% has indicated to be interested, whereas the remaining proportion it is equally divided into not interested (23,5%) and passionate (23,5%). Moreover, if on one side the number of individuals owning a luxury watch (46,6%) is extremely closed to the ones who are not (53,4%), on the other side the number of respondents intentioned to purchase a luxury watch in the near future (66,3%) is nearly double respect to the ones who are not (33,3%).

3.3.2 Questionnaire analysis

To analyse the result from the questionnaire, and so to verify whether the presence of consumer-facing advanced technologies positively influence the cognitive, the affective and social experiences in both online and offline Swiss luxury watches retail setting, this three-stages procedure has been followed:

1. Reliability analysis;
2. Calculation of the means;
3. Independent-Sample T test.

Reliability analysis

This analysis has been carried out to verify if the scales consistently reflect the construct they are measuring. For each scale, namely the cognitive experience, the affective experience and social experience, the Cronbach alpha (α) has been analysed to assess their reliability and its positive values can range from 0 to 1. The scale is considerable; acceptable if $\alpha > 0,6$; good if $0,8 < \alpha < 0,8$; very good if $0,8 < \alpha < 0,9$; excellent if $0,9 < \alpha < 1$.

The cognitive experience has been the first scale to be evaluated; its Cronbach alpha has resulted to be "excellent", no one of the 7 items has been deleted to improve its reliability. Thus, this scale is definable as highly reliable.

Figure 8: Cronbach alpha for Cognitive experience

Statistiche di affidabilità

Alpha di Cronbach	N. di elementi
,908	7

Statistiche elemento-totale

	Media scala se viene eliminato l'elemento	Varianza scala se viene eliminato l'elemento	Correlazione elemento-totale corretta	Alpha di Cronbach se viene eliminato l'elemento
Make me think and reflect about watches quality and craftsmanship	32,41	49,779	,688	,899
Teach me interesting things regarding the brand values and the retail atmosphere	32,33	50,844	,695	,898
Awaken my curiosity	32,14	50,950	,733	,894
Awaken my sense of creativity	32,66	50,148	,692	,898
Bring interesting ideas to mind	32,59	49,661	,745	,892
Inspire me	32,36	49,917	,768	,890
Interest me	32,03	50,260	,757	,891

Source: Output SPSS

Also for the affective experience the Cronbach alpha has proven to be "excellent", no one of the 6 items has been removed to increase its reliability. Thence, this scale is deemed as highly reliable.

Figure 9: Cronbach alpha for Affective experience

Statistiche di affidabilità

Alpha di Cronbach	N. di elementi
,909	6

Statistiche elemento-totale

	Media scala se viene eliminato l'elemento	Varianza scala se viene eliminato l'elemento	Correlazione elemento-totale corretta	Alpha di Cronbach se viene eliminato l'elemento
Contented	25,39	39,225	,802	,884
Happy	25,43	39,556	,786	,887
Enthusiastic	25,13	39,826	,785	,887
Thrilled	25,67	38,724	,690	,903
Surprised	25,45	40,180	,683	,902
Amazed	25,19	40,596	,756	,891

Source: Output SPSS

Finally, the Cronbach alpha for the social experience has demonstrated to be "very good", and no one of the 4 items has been eliminated to optimise its reliability. Here as well, the scale is identifiable as reliable.

Figure 10: Cronbach alpha for Social experience

Statistiche di affidabilità

Alpha di Cronbach	N. di elementi
,894	4

Statistiche elemento-totale

	Media scala se viene eliminato l'elemento	Varianza scala se viene eliminato l'elemento	Correlazione elemento-totale corretta	Alpha di Cronbach se viene eliminato l'elemento
I would like to receive advice from the employees of this Swiss luxury brand	15,47	18,457	,732	,876
I would like to ask the opinions of the employees of this Swiss luxury brand	15,62	18,267	,789	,855
I would like to share my opinions with the employees of this Swiss luxury brand	15,74	18,639	,744	,871
I would like to interact with the employees of this Swiss luxury brand	15,40	18,232	,797	,852

Source: Output SPSS

Calculation of the means and Independent-Sample T test

The second stage of the analysis consists of the means' calculation of the responses of the cognitive experience, affective experience and social experience components in relation to the conditions "traditional e-commerce", "innovative e-commerce", "traditional physical store", "innovative physical store".

Since each respondent has read a unique condition, an Independent-Sample T test has been developed. Throughout this test, this study is able to compare the means of respondents' answers within two variables, traditional e-commerce/innovative e-commerce or traditional physical store or innovative physical store, for each component (cognitive experience, affective experience, social experience).

Specifically, six components have be tested: the cognitive experience, affective experience social experience in both online and physical setting. Through the "traditional" and "innovative" conditions, this research will be able to investigate if the results for a component will be higher with or without the presence of consumer-facing technologies, in an online and offline setting. Successively, Independent-Sample T test verifies the validity of these results for the entire population by resorting the *p value* as a measure. Indeed, if $p < 0,05$ the condition is statically significant and extendible to the entire population, whereas if $p > 0,05$ the condition is not statistically significant and so not extendible to the entire population.

Independent-Sample T test applied to the total sample of respondents

As concerns the "cognitive experience" in online setting, it appears to be higher when consumer-facing technologies are present. Indeed, the innovative e-commerce shows a greater mean than the traditional e-commerce (5,39 > 5,26). Nonetheless, $p=0,616$, therefore this difference in means **is not statistically significant to confirm** ***H1a****: Consumer-facing technologies positively influence the cognitive experience in Swiss luxury watches' online setting.* (Fig.11)

Figure 11: Mean calculation and Independent-Sample T test for Cognitive experience in online setting

Test t COGNITIVE EXPERIENCE ONLINE

Statistiche gruppo

	CONDIZIONE	N	Media	Deviazione std.	Media errore standard
cogn.exp._mean	Traditional e-commerce	47	5,2675	1,12036	,16342
	Innovative e-commerce	54	5,3915	1,32950	,18092

Test campioni indipendenti

		Test di Levene per l'eguaglianza delle varianze		Test t per l'eguaglianza delle medie						
									Intervallo di confidenza della differenza di 95%	
		F	Sign.	t	gl	Sign. (a due code)	Differenza della media	Differenza errore standard	Inferiore	Superiore
cogn.exp._mean	Varianze uguali presunte	,480	,490	-,503	99	,616	-,12406	,24671	-,61359	,36547
	Varianze uguali non presunte			-,509	98,906	,612	-,12406	,24380	-,60782	,35970

Source: Output SPSS

In the context of a physical store, the "cognitive experience" seems to be positively influenced by the presence of consumer-facing technologies: the innovative store features a sharply higher mean that the traditional store (5,71 >5,18). This is further confirmed by the *p values,* which equals to 0,015. Thus, the difference in means **is statistically significant to confirm *H1b***: *Consumer-facing technologies positively influence the cognitive experience in Swiss luxury watches' offline setting.* (Fig.12)

Figure 12: Mean calculation and Independent-Sample T test for Cognitive experience in physical setting

Test t COGNITIVE EXPERIENCE PHYSICAL

Statistiche gruppo

	CONDIZIONE	N	Media	Deviazione std.	Media errore standard
cogn.exp._mean	Traditional physical store	51	5,1849	1,08883	,15247
	Innovative physical store	52	5,7143	1,08391	,15031

Test campioni indipendenti

		Test di Levene per l'eguaglianza delle varianze		Test t per l'eguaglianza delle medie						
									Intervallo di confidenza della differenza di 95%	
		F	Sign.	t	gl	Sign. (a due code)	Differenza della media	Differenza errore standard	Inferiore	Superiore
cogn.exp._mean	Varianze uguali presunte	,072	,790	-2,473	101	,015	-,52941	,21409	-,95411	-,10471
	Varianze uguali non presunte			-2,473	100,941	,015	-,52941	,21410	-,95414	-,10469

Source: Output SPSS

Regarding the affective experience, the means' comparison suggests this component is higher when consumer-facing technologies are adopted, in both online and physical setting. Nevertheless, their *p values,* are 0,226 and 0,151, respectively, leading to the conclusion that their means' difference **is not statically significant to confirm both *H2a***: *Consumer-facing technologies positively influence the affective experience in Swiss luxury watches' online setting,* **and *H2b***: *Consumer-facing technologies positively influence the affective experience in Swiss luxury watches' offline setting* (Fig.13 and Fig.14).

Figure 13: Mean calculation and Independent-Sample T test for Affective experience in online setting

Test t AFFECTIVE EXP. ONLINE

Statistiche gruppo

	CONDIZIONE	N	Media	Deviazione std.	Media errore standard
AFF.exp._mean	Traditional e-commerce	47	4,7837	1,14573	,16712
	Innovative e-commerce	54	5,1049	1,45955	,19862

Test campioni indipendenti

		Test di Levene per l'eguaglianza delle varianze		Test t per l'eguaglianza delle medie						
									Intervallo di confidenza della differenza di 95%	
		F	Sign.	t	gl	Sign. (a due code)	Differenza della media	Differenza errore standard	Inferiore	Superiore
AFF.exp._mean	Varianze uguali presunte	4,262	,042	-1,217	99	,226	-,32125	,26393	-,84494	,20244
	Varianze uguali non presunte			-1,238	98,010	,219	-,32125	,25958	-,83637	,19387

Source: Output SPSS

Figure 14: Mean calculation and Independent-Sample T test for Affective experience in physical setting

Test t AFFECTIVE EXPERIENCE PHYSICAL

Statistiche gruppo

	CONDIZIONE	N	Media	Deviazione std.	Media errore standard
AFF.exp._mean	Traditional physical store	51	5,0261	1,14716	,16063
	Innovative physical store	52	5,3558	1,16411	,16143

Test campioni indipendenti

		Test di Levene per l'eguaglianza delle varianze		Test t per l'eguaglianza delle medie						
									Intervallo di confidenza della differenza di 95%	
		F	Sign.	t	gl	Sign. (a due code)	Differenza della media	Differenza errore standard	Inferiore	Superiore
AFF.exp._mean	Varianze uguali presunte	1,331	,251	-1,447	101	,151	-,32963	,22777	-,78146	,12221
	Varianze uguali non presunte			-1,447	100,998	,151	-,32963	,22774	-,78139	,12214

Source: Output SPSS

By first comparing the means, it results that individuals' social experience in online setting is higher when consumer-facing technologies exist. In effect, the mean for the innovative e-commerce (5,47) is greater than the one of traditional e-commerce (4,62), and *p value is* 0,004. Thence, this difference in means **is statistically significant to confirm the fifth hypothesis *H3a***: *Consumer-facing technologies positively influence the social experience in Swiss luxury watches' online setting* (Fig.15).

Figure 15: Mean calculation and Independent-Sample T test for Social experience in online setting

Test t SOCIAL EXP ONLINE

Statistiche gruppo

	CONDIZIONE	N	Media	Deviazione std.	Media errore standard
SOC..exp._mean	Traditional e-commerce	47	4,6277	1,29576	,18901
	Innovative e-commerce	54	5,4722	1,55229	,21124

Test campioni indipendenti

		Test di Levene per l'eguaglianza delle varianze		Test t per l'eguaglianza delle medie						
									Intervallo di confidenza della differenza di 95%	
		F	Sign.	t	gl	Sign. (a due code)	Differenza della media	Differenza errore standard	Inferiore	Superiore
SOC..exp._mean	Varianze uguali presunte	1,760	,188	-2,943	99	,004	-,84456	,28702	-1,41407	-,27505
	Varianze uguali non presunte			-2,980	98,841	,004	-,84456	,28345	-1,40701	-,28212

Source: Output SPSS

Finally, respondents' social experience within a physical context has been analysed. Although from the means' comparison the social experience demonstrates to be higher when in presence of consumer-facing technologies (5,38>5,19), *p value* equals to 0,457. As a consequence, this difference **is not statistically significant to confirm *H3b***: *Consumer-facing technologies positively influence the social experience in Swiss luxury watches' offline setting* (Fig.16).

Figure 16: Mean calculation and Independent-Sample T test for Social experience in physical setting

Test t SOC EXPERIENCE PHYSICAL

Statistiche gruppo

	CONDIZIONE	N	Media	Deviazione std.	Media errore standard
SOC..exp._mean	Traditional physical store	51	5,1912	1,23348	,17272
	Innovative physical store	52	5,3846	1,39103	,19290

Test campioni indipendenti

		Test di Levene per l'eguaglianza delle varianze		Test t per l'eguaglianza delle medie						
									Intervallo di confidenza della differenza di 95%	
		F	Sign.	t	gl	Sign. (a due code)	Differenza della media	Differenza errore standard	Inferiore	Superiore
SOC..exp._mean	Varianze uguali presunte	,334	,565	-,746	101	,457	-,19344	,25923	-,70768	,32081
	Varianze uguali non presunte			-,747	99,997	,457	-,19344	,25893	-,70714	,32027

Source: Output SPSS

By applying an Independent-Sample T test to the general sample (204 respondents) and by repeating it for each component (cognitive experience, affective experience and social experience) in online and

physical retail within the two variables traditional e-commerce/innovative e-commerce and traditional physical store/innovative physical store respectively, it is has been proven that**:**

H1b: Consumer-facing technologies positively influence the cognitive experience in Swiss luxury watches' offline setting;

*H3a: Consumer-facing technologies positively influence the social experience in Swiss luxury watches' online setting***.**

Independent-Sample T test applied to Interested/Passionate respondents and to Intentioned to purchase respondents

The same Independent-Sample T test has been replicated with two narrower samples: respondents interested/passionate in luxury watches (156 out of total 202 respondents) and intentioned to purchase a luxury watch in the near future (136 out of total 202 respondents). In this regard, this study is able to reveal if there are similarities or dissimilarities in results when treating different categories of individuals.

When Independent-Sample Test has been applied to both interested/passionate and intentioned to purchase clusters, it **confirms again *H1b* and *H3a* hypothesis** (see Appendix).

However, a third hypothesis has been verified for both of these two samples and it is related to the affective experience in a physical setting.

When analysing interested/passionate individuals' affective experience in a physical setting, the means' comparison shows this experiential component is higher when consumer-facing technologies are available (5,48> 4,96). Additionally, since *p value* corresponds to 0,59, this difference in means **is marginally statistically significant to confirm *H2b***: *Consumer-facing technologies positively influence the affective experience in Swiss luxury watches' offline setting* (Fig.17).

Figure 17: Mean calculation and Independent-Sample T test for Affective experience in physical setting, for interested/passionate respondents

Test t AFFECTIVE EXPERIENCE PHYSICAL THOSE INTERESTED, PASSIONATE

Statistiche gruppo

	CONDIZIONE	N	Media	Deviazione std.	Media errore standard
AFF.exp._mean	Traditional physical store	38	4,9693	1,19109	,19322
	Innovative physical store	42	5,4881	1,22386	,18885

Test campioni indipendenti

		Test di Levene per l'eguaglianza delle varianze		Test t per l'eguaglianza delle medie						
									Intervallo di confidenza della differenza di 95%	
		F	Sign.	t	gl	Sign. (a due code)	Differenza della media	Differenza errore standard	Inferiore	Superiore
AFF.exp._mean	Varianze uguali presunte	1,338	,251	-1,918	78	,059	-,51880	,27055	-1,05742	,01983
	Varianze uguali non presunte			-1,920	77,572	,059	-,51880	,27018	-1,05673	,01913

Source: Output SPSS

Again, while examining the affective experience in a physical setting for participants intentioned to purchase a luxury watch in the near future, their experiential component is greater in presence of consumer-facing technologies. This has been suggested by the higher mean of the innovative physical store (5,56) than the one of the traditional physical store (5,02). Moreover, as *p value* is 0,64, this difference in means **is marginally statistically significant to confirm *H2b***: *Consumer-facing technologies positively influence the affective experience in Swiss luxury watches' offline setting* (Fig.18).

Figure 18: Mean calculation and Independent-Sample T test for Affective experience in physical setting, for respondents intentioned to purchase a luxury watches in the near future

Test t PURCH. INT. AFFECT. EXPER. PHYSICAL

Statistiche gruppo

	CONDIZIONE	N	Media	Deviazione std.	Media errore standard
AFF.exp._mean	Traditional physical store	37	5,0270	1,20730	,19848
	Innovative physical store	34	5,5686	1,21655	,20864

Test campioni indipendenti

		Test di Levene per l'eguaglianza delle varianze		Test t per l'eguaglianza delle medie						
									Intervallo di confidenza della differenza di 95%	
		F	Sign.	t	gl	Sign. (a due code)	Differenza della media	Differenza errore standard	Inferiore	Superiore
AFF.exp._mean	Varianze uguali presunte	,653	,422	-1,881	69	,064	-,54160	,28787	-1,11589	,03268
	Varianze uguali non presunte			-1,881	68,403	,064	-,54160	,28796	-1,11616	,03296

Source: Output SPSS

3.4 Discussion of results

The present study has carried out an Independent-Sample T test to verify if participants' cognitive experience, affective experience and social experience have been influenced by the presence of consumer-facing technologies, in both online and offline retail of Swiss luxury watch brands. Hence, the goal of this analysis is defining in which shopping context these technologies improve customer experience the most. In other words, whether it is the brick-and-mortar channel or digital channel to mainly benefit from the introduction of these technologies. Indeed, it is reasonable asserting that the greatest the experiential components and, so the customer experience, the highest the consumer's satisfaction and willingness to come back to that physical or digital point of sales.

By observing the results deriving from the analysis of the cognitive, affective and social components in online and offline setting and with/without consumer-facing technologies, H1b and H3a have been confirmed. This is true when considering the total number of participants as well as when narrowing the sample to interested/passionate individuals and to individuals intentioned to purchase a luxury watch in the near future.

Firstly, as emerged from the analysis, the verification of H1b primarily derives from respondents' preference for innovative rather than traditional physical store. This outcome confirms the reported above engagement theories (Altagamma 2020), according to which customers expect to be constantly inspired while visiting a store, nowadays deemed as an engagement place, delivering them immersive journeys (The Business of Fashion, McKinsey&Company 2021).

Moreover, the rejection of H1a and the confirmation of H1b represent a clear evidence of the pivotal role of brick-and-mortar stores for Swiss luxury watch brands. Although consumer-facing advanced technology's features, such as vividness and interactivity, may help consumers to grasp significant information about watches' quality and craftmanship, an online cognitive involvement would not be as high and deep as the one the physical store. In the real context, respondents' cognitive experience proves to be stronger thanks to the chance of seeing, touching and feeling the watch, and these sensorial sensations are able to give more information than the one provided by technologies, through which consumers have to leverage their imagination. Therefore, in the physical setting, shoppers cognitive experience may be awaked by both physical stimuli, generated by their real in-store presence and the chance of inspect with their own eyes craftmanship's details and to try the products, and by digital stimuli which further elevate consumers' cognitive experience by providing more information and enriching the retail setting itself.

Secondly, the confirmation of H3a stems from interviews' preference for innovative e-commerce over traditional e-commerce. Here again, this result further supports today's luxury-related findings outlining consumers' demand for increasingly sophisticated and customised interactions in digital channels (The Business of Fashion, McKinsey&Company 2021).

In addition, the denial of H3b and the verification of H3a highlight the relevance of human contact within both online and offline channels of Swiss luxury watch brands. In fact, consumer-facing technologies positively influence online consumers' social experience as they permit the integration of the human aspect, facilitating the creation of a customer-employee relationship as intimate as the one at the physical store. If on one hand these technologies act as the principal medium for a social experience in the digital context, on the other hand, this experiential component may be satisfied without necessarily resorting to these technologies at the physical store. Consequently, the availability of these innovations is more appreciated on online than on offline level, where customer-employee exist independently from their availability.

If the confirmation of the hypothesis H1b and H3a has been contemplated among all three samples of participants, the one of H2b has only occurred while studying the findings related to interested/passionate and intentioned to purchase individuals. As such, it is reasonable assuming that respondents who are passionate and interested in watches, and therefore they have the willingness to buy them, mostly weight the affective experience, especially if this can be enhanced somehow. This is exactly what has been revealed through the analysis when consumer-facing technologies are present. As already stated, Swiss luxury timepieces brands' strength and customer relationship are built on the emotions they are able to elicit through touch and feel of their products, reason why their brick-and-mortar play a critical role in their retail strategy. Thus, physical stores benefit more from consumer-facing technologies than digital store due to their already well-established ability of awakening customers' emotions. Thence, the rejection of H2a seems to be directly correlated to the incapacity of digital sales delivering emotions as authentic as the ones at real store because of the lack of both visual and tactile sensations.

Furthermore, consumer-facing technologies unleash greater playfulness and fun emotions at the physical than the digital store as direct consequence of the earlier interpretation for H1b: a real context ensures a higher cognitive involvement, entailing a higher affective experience (H2b). Indeed, this linkage has been largely debated by Bustamante and Rubio (2017).

Finally, verified that consumer-facing technologies positively influence the cognitive and affective experiences in offline setting, while only the social experience in online setting, it is certain that Swiss luxury watch brand's physical stores benefit the most from the application of technologies than digital stores.

3.5 Managerial implications

These results pose managerial implications for marketers and retailers of Swiss luxury watch brands. The very first stage of the above analysis has identified that respondents' evaluations for cognitive, affective and social experience have been higher in the context of an innovative online and offline stores than in a traditional ones. Nevertheless, the Independent-Sample T test has demonstrated the specific capability of consumer-technologies to positively impact offline cognitive and affective experiences and online social experiences. At this point, it is fair affirming that Swiss luxury watch brand's physical stores benefit the most from the application of technologies than digital stores. If one side it is reasonable suggesting retailers to implement consumer technologies in their offline stores, on other side they should not exclude at all their application on their online channels.

As reported by the existing literature, IST, 3D product visualization, AR, VR, are relevant for enriching cognitive and affective experiences, thanks to products and quality information they are able to provide, in online and offline settings. However, according to the analysis, retailers should invest on mainly

implement these technologies offline, as the information they offer online appears to not be enough to activate neither cognitive nor affective experiences.

At the same time, the positive influence of consumer technologies on online social experience should not be ignored; as stated in the previous chapter, this component does not benefit from 3D, AR, VR features, rather on Live Chat and Remote Selling techniques aiming at creating customer-employee relationships. In this regard, Swiss luxury watches brands may consider investing on consumer-facing technologies aimed at enhancing offline cognitive and affective experiences as well as on those able to generate personalized and as in-store customer-employee relationships on digital channels.

In the instance of Swiss luxury watch brands currently not presenting any of these technologies, adopting them all at once would entail substantial costs, in terms of infrastructural and human resources. A suggestion would be prioritizing the implementation of a specific technology according to the experiential component retailers seek to enhance respect to another. For instance, would it be more effective engaging customers at the physical stores, considering the pivotal significance in terms of informativeness and emotions of this touchpoint for luxury watch brands, (Deloitte AG 2020)? Or, in light of Covid-19 social distancing and hygiene measures, which may discourage individuals visiting physical stores and prompt their demand for online human interactions (The Business of Fashion, McKinsey & Company 2021), would it be more convenient the acquisition of IT software or devices for personalized Live Chat or video, implying employees' training costs in addition to the infrastructural ones? Thus, it is vital for brands to firstly select and focus on those technologies that have the highest potential to improve their retail strategies and so customer experience, rather than getting lost down in too many simultaneous digital transformation initiatives. Thence, these companies may contemplate adopting these consumer-facing technologies in their entirety, at a later stage.

3.6 Limitations and future research

Despite the various insights emerging from this analysis, this research has some limitations which are detailed in this section.

Firstly, respondents have been asked to evaluate their cognitive, affective and social experiences after reading a scenario describing a Swiss luxury watch brand's online or offline store, enhanced or not by consumer-facing technologies. These three experiences have not been lived by consumers for real, but rather represent the outcome of their imagination awaken by a description. Therefore, it is fair assuming that this kind of experiment may have affected their scores, which may have been higher or lower if compared with a real in-store or online shopping experience. Moreover, it is also reasonable supposing that not all participants may have disposed of the adequate attention to fully immerse themselves in the narration, although this has been suggested in the survey's initial instructions. Future research might ask

participants to evaluate these experiential dimensions after visiting a real store or surfing a real e-commerce.

Secondly, it would be interesting examining other variables like the effect on consumers' moderators on the formation on the customer experience both at the physical and digital stores. For instance, for clients who have no chance but using the online channel due to time, location or other constraints, consumer-facing technologies' features may suffice to satisfy their curiosity and their desire to seek for watches' information and details. In these circumstances, it would valuable studying how these moderators would impact the three experiential components in an online setting, and if technologies would be able to acquire a certain relevance and make the online a trustable channel in terms of products' quality and wearability information as well as to simulate a real in-store atmosphere. Additionally, consumer-facing technologies may also be considered sufficient for delivering information when consumers are looking for a watch they have already seen and tried on at the brick-and-mortar store; hence, here the role of consumer facing technologies may be that of awakening a cognitive process already been activated at the real store, and which therefore may rely on memories. It would be curious le learn whether technologies would be able to enhance both cognitive and affective experiences in online setting, and not only the social one.

Thirdly, despite the questionnaire has been distributed to several individuals of different countries, this has not been sufficient to receive an equivalent number of replies from two or three nationalities to raise this research to the level of a cross-country comparison. As such, future researches could select a sizable sample of respondents whose nationalities are driving global Swiss luxury watch sales', such as Chinese and American (Deloitte 2020) (Federation of the Swiss Watch Industry FH 2021), to determine whether there are variances or similarities in their ratings of their experiences.

Finally, it would be extremely insightful extending this analysis to those nationalities, like German and English (Deloitte 2020), who do not express a sharp preference for online or offline channels and purchase a luxury watch indifferently from one of these two point of sales. In this regard, the role of consumer-facing technologies in enhancing their customer experience and driving their purchase on channel respect to another would be crucial.

4. Conclusions

Prior Covid-19, Swiss luxury watch brands have consistently shied away from digital advancements, fearing the jeopardization of their heritage, rooted in centuries old- know-how, history and tradition. Luxury watch brands' customer relationship has always been based on the concept of person-centricity, delineating both the intimate and emotional brand connection perceived by the client from touching and feeling the timepiece as well as the personalized shopping experience traditionally featuring this sector.

Nonetheless, since its outbreak, Coronavirus has been driving the transformation of Swiss luxury watch brands' retail, both at offline and online level. Innovative consumer-facing technologies have been redefining their physical stores and accelerating their digital presence, initiating Swiss luxury brands towards a new "consumer first" world, where experiential engagement is the key.

Thus, it is critical for marketers and for retail managers comprehending customer behavior in relation to the brands' adoption of new consumer facing-technologies for offline and online digital engagement. As such, the present research has focused on analyzing the effect of these technologies on customer experience, by resorting to Bustamante and Rubio (2017)'s in-store customer experience (ISCX) scale. Specifically, this approach has been adopted to investigate whether or not these innovations positively influence consumers' cognitive, affective and social experience with employees at both physical and digital stores.

As emerged from this study's analysis, consumer-advanced technologies enhance the cognitive and the affective experiences offline, whilst only the social experience online. This outcome has revealed that brick-and-mortars benefit the most from the application of these technologies than online stores and that they still preserve their traditional pivotal role in Swiss luxury watch brands' retail strategy. Online 3D products' visualization, virtual try-on, augment reality features, along with their sophisticated interactivity and vividness features, are not enough to deeply cognitively involve customers into luxury watches' craftmanship. Digital products as well as simulated in-store journey would not be able to substitute the touch and feel Swiss luxury watch and the emotional connection from seeing and handling. This is especially true for Swiss luxury watches' passionate and purchasers, who, indeed, address the relevance of in-store affective experience. However, if online consumer-facing technologies could not measure up with a real tactile and visible experience as well as a real in-store exploration, the human contact and the customized service provided by Live Chat and Remote Selling techniques delight online users with an authentic customer-centricity, historically at core of Swiss luxury watch brands.

Appendix

Survey

Introduction

Hey there! I am a student of Double Degree in Luxury and Fashion Management between Luiss Guido Carli University and SKEMA Business School and I am writing my thesis on Customer Experience within the Swiss luxury watchmaking industry.

I would kindly ask you to take a couple of minutes of your time to complete the survey.There are **no right answers** and I assure you that **your responses will be anonymous and will not be shared with anyone**.

Your contribution will be precious to me.

Thank you very much,

Bests,

Giovanna

Introduction scenarios

Now, you will be asked to read a few lines describing a scenario and to answer a few questions. Please **read carefully** to be able to totally immerse yourself in the description. **The submit button will appear after some seconds**, to give you the necessary time to read the scenario

Traditional physical store

Imagine you are considering purchasing a Swiss luxury watch at its **traditional point of sale.** Once you cross the door, you are welcomed by an exquisite architectural design made of noble materials and warm tones, whose essentiality in lines contributes to the creation of a superior atmosphere.

Divided into collections and models, the timepieces are displayed in glass exhibition cases integrated with an internal lightning aiming at enhancing each detail of their craftsmanship.

If you are interested in touching and feeling a watch, a sales person is there to assist you and invites you to take a seat and enjoy the experience pleasantly. While trying on the watch, you become the spectator of a immersive storytelling, in which the employee explains the products'

complications as well as the brand's heritage and history. An in-house watchmaker is always ready to support you in technical matters.

As you walk through the boutique, every corner and themed object reveals more about the brand's values, until you reach the lounge area, where you may relax, converse, and read watchmaking literature, while sipping on hot or cold beverages.

Traditional e-commerce

Imagine you are considering purchasing a Swiss luxury watch from its **traditional website**. Once you access it, you are welcomed by an elegant design, whose minimal font-style and neutral colours allowing you to breath the same sophisticated atmosphere as the one at the physical store.

Every time you move the cursor over the timepieces, they soothingly enlarge creating the illusion of approaching a real exhibition case. An image of the latest launched watch dominates the homepage and the timepieces are shown by collection. Each timepiece is provided with technical specifications, whereas the zoom-in feature enables you to depict the watch details.

If you need a professional consultation, it is possible to reach the expert via an e-mail or call, who will guide you through the range of models.

An entire website section is dedicated to the brand's universe, made of stories and infographics, which take you on a journey through the brand's origins and watchmaking.

Innovative physical store

Consider purchasing a Swiss luxury watch at an **innovative physical store**, where the shopping experience begins even before crossing the door. The shop interactive windows can be controlled remotely on the street via a mobile phone: a QR code enables you to switch both the displayed watches and the digital video footage of the windows!

The collections of watches are exposed through open and glass-free exhibition cases, allowing you to interact with the timepieces. These presentation cases also include touch screen displays showcasing 3D products visualisation, through which you can browse watches' info and compare them via a comparison tool. Interactive touch-screen books and animated AR walls make you immerge into the brand's universe and learn more about the history of its watches' complications.

Sales assistants resort to a mobile touch-screen display, as a tool accompanying their watches' storytelling, and through which you are able to take a glimpse on products not currently available at the store. An on-site watchmaker wears AR headsets with built-in video-camera projecting what he sees into a screen.

Live links to the manufacturing center let you discover each phase of watches' production. Finally, VR technology, like googles, ensure fun through gaming features!

Innovative e-commerce

Imagine you intend to purchase a Swiss luxury watch from its **innovative website**. Once you access it, you are greeted by an essential design, whose minimal font-style and pleasant tones allow you to breath the same sophisticated atmosphere as the one at the physical store.

Each time you move the cursor over the timepieces, they soothingly enlarge creating the illusion of approaching a real exhibition case. Displayed by collection, each timepiece is provided with technical specifications and the 360° 3D rotation feature enables you to inspect each watch detail from the back to the front. By scanning the QR code you are able virtually try the timepiece on your wrist, and through AR technology you can project the watch on a surface and experience its real volumetric and aesthetic. The configurator tool lets you to design your dream watch by selecting the collection, the model, the material, the bezel, the bracelet, and the dial.

The virtual boutique service makes you to live the in-store experience directly from your home: you are offered a 360-degree walk-through it from different perspectives, including the opportunity of closing-up views of timepieces and booking a virtual meeting with a client advisor via private web conference. If you need a professional consultation, it is possible to reach an expert employee via live-chat or write to an automated chat box, and you will be guided through the range of models.

VR technology immerses you totally in virtual themed and playful environments where you can discover the latest collection.

Cognitive Experience

Please indicate how much do you agree with the following statement, considering that 1= Totally disagree and 7= Totally agree. The environment described above:

1=Totally disagree	2	3	4	5	6	7=Totally agree

	1=Totally disagree	2	3	4	5	6	7=Totally agree
1. Make me think and reflect about watches quality and craftsmanship	○	○	○	○	○	○	○
2. Teach me interesting things regarding the brand values and the retail atmosphere	○	○	○	○	○	○	○
3. Awaken my curiosity	○	○	○	○	○	○	○
4. Awaken my sense of creativity	○	○	○	○	○	○	○
5. Bring interesting ideas to mind	○	○	○	○	○	○	○
6. Inspire me	○	○	○	○	○	○	○
7. Interest me	○	○	○	○	○	○	○

Affective Experience

Please indicate how much do you agree with the following statement, considering that 1= Totally disagree and 7= Totally agree. The environment above described, makes me feel:

	1=Totally disagree	2	3	4	5	6	Totally agree=7
8. Contented	○	○	○	○	○	○	○
9. Happy	○	○	○	○	○	○	○
10. Enthusiastic	○	○	○	○	○	○	○
11. Thrilled	○	○	○	○	○	○	○
12. Surprised	○	○	○	○	○	○	○
13. Amazed	○	○	○	○	○	○	○

Social Experience

Please indicate how much do you agree with the following statement, considering that 1= Totally disagree and 7= Totally agree. Considering the level of social interaction you can have through this environment:

	1=Totally disagree	2	3	4	5	6	7=Totally agree

	1=Totally disagree	2	3	4	5	6	7=Totally agree
14. I would like to receive advice from the employees of this Swiss luxury brand	○	○	○	○	○	○	○
15. I would like to ask the opinions of the employees of this Swiss luxury brand	○	○	○	○	○	○	○
16. I would like to share my opinions with the employees of this Swiss luxury brand	○	○	○	○	○	○	○
17. I would like to interact with the employees of this Swiss luxury brand	○	○	○	○	○	○	○

Introduction socio-demo

The questionnaire is almost finished. Please now answer a few questions about you:

Socio-demo questions

What is your gender?

- ○ Male
- ○ Female
- ○ Non-binary/third gender
- ○ Prefer not to answer

What is your age range?

- ○ 9-24
- ○ 25-40
- ○ 41-56
- ○ More than 56

What is your current employment status?

- ○ Employed
- ○ Student

- ○ Unemployed
- ○ Retired

What is your nationality?

- ○ Italian
- ○ French
- ○ Spanish
- ○ English
- ○ Swiss
- ○ German
- ○ Chinese
- ○ Japanese
- ○ American
- ○ Other

Your relation with luxury watches:

- ○ Not interested
- ○ Interested
- ○ Passionate

Are you a luxury watch owner?

- ○ Yes
- ○ No

Are you considering to purchase a luxury watch in the near future?

- ○ Yes
- ○ No

Test t COG. EXPERIENCE ONLINE THOSE INTERESTED, PASSIONATE

Statistiche gruppo

	CONDIZIONE	N	Media	Deviazione std.	Media errore standard
cogn.exp._mean	Traditional e-commerce	36	5,2262	1,16578	,19430
	Innovative e-commerce	40	5,4357	1,47753	,23362

Test campioni indipendenti

		Test di Levene per l'eguaglianza delle varianze		Test t per l'eguaglianza delle medie						
									Intervallo di confidenza della differenza di 95%	
		F	Sign.	t	gl	Sign. (a due code)	Differenza della media	Differenza errore standard	Inferiore	Superiore
cogn.exp._mean	Varianze uguali presunte	1,218	,273	-,681	74	,498	-,20952	,30765	-,82253	,40348
	Varianze uguali non presunte			-,690	72,800	,493	-,20952	,30386	-,81514	,39609

Test t COG. EXPERIENCE PHYSICAL THOSE INTERESTED, PASSIONATE

Statistiche gruppo

	CONDIZIONE	N	Media	Deviazione std.	Media errore standard
cogn.exp._mean	Traditional physical store	38	5,1880	1,17245	,19020
	Innovative physical store	42	5,8163	1,11029	,17132

Test campioni indipendenti

		Test di Levene per l'eguaglianza delle varianze		Test t per l'eguaglianza delle medie						
									Intervallo di confidenza della differenza di 95%	
		F	Sign.	t	gl	Sign. (a due code)	Differenza della media	Differenza errore standard	Inferiore	Superiore
cogn.exp._mean	Varianze uguali presunte	,025	,874	-2,461	78	,016	-,62836	,25527	-1,13657	-,12014
	Varianze uguali non presunte			-2,455	76,156	,016	-,62836	,25598	-1,13817	-,11855

Test t AFFECTIVE EXPERIENCE ONLINE THOSE INTERESTED, PASSIONATE

Statistiche gruppo

	CONDIZIONE	N	Media	Deviazione std.	Media errore standard
AFF.exp._mean	Traditional e-commerce	36	4,8380	1,09217	,18203
	Innovative e-commerce	40	5,1958	1,59142	,25162

Test campioni indipendenti

		Test di Levene per l'eguaglianza delle varianze		Test t per l'eguaglianza delle medie						
									Intervallo di confidenza della differenza di 95%	
		F	Sign.	t	gl	Sign. (a due code)	Differenza della media	Differenza errore standard	Inferiore	Superiore
AFF.exp._mean	Varianze uguali presunte	6,699	,012	-1,130	74	,262	-,35787	,31658	-,98866	,27292
	Varianze uguali non presunte			-1,152	69,340	,253	-,35787	,31056	-,97737	,26163

Test t SOC. EXPERIENCE ONLINE THOSE INTERESTED, PASSIONATE

Statistiche gruppo

	CONDIZIONE	N	Media	Deviazione std.	Media errore standard
SOC..exp._mean	Traditional e-commerce	36	4,6597	1,28056	,21343
	Innovative e-commerce	40	5,7750	1,52627	,24132

Test campioni indipendenti

		Test di Levene per l'eguaglianza delle varianze		Test t per l'eguaglianza delle medie						
									Intervallo di confidenza della differenza di 95%	
		F	Sign.	t	gl	Sign. (a due code)	Differenza della media	Differenza errore standard	Inferiore	Superiore
SOC..exp._mean	Varianze uguali presunte	,343	,560	-3,430	74	,001	-1,11528	,32516	-1,76318	-,46738
	Varianze uguali non presunte			-3,462	73,657	,001	-1,11528	,32216	-1,75725	-,47331

Test t SOC. EXPERIENCE PHYSICAL THOSE INTERESTED, PASSIONATE

Statistiche gruppo

	CONDIZIONE	N	Media	Deviazione std.	Media errore standard
SOC..exp._mean	Traditional physical store	38	5,3553	1,16774	,18943
	Innovative physical store	42	5,5298	1,42088	,21925

Test campioni indipendenti

		Test di Levene per l'eguaglianza delle varianze		Test t per l'eguaglianza delle medie						
									Intervallo di confidenza della differenza di 95%	
		F	Sign.	t	gl	Sign. (a due code)	Differenza della media	Differenza errore standard	Inferiore	Superiore
SOC..exp._mean	Varianze uguali presunte	1,325	,253	-,596	78	,553	-,17450	,29260	-,75703	,40803
	Varianze uguali non presunte			-,602	77,317	,549	-,17450	,28975	-,75142	,40243

Test t PURCH. INTENT. COGN. EXP. ONLINE

Statistiche gruppo

	CONDIZIONE	N	Media	Deviazione std.	Media errore standard
cogn.exp._mean	Traditional e-commerce	28	5,1684	1,26411	,23889
	Innovative e-commerce	37	5,6448	1,44539	,23762

Test campioni indipendenti

		Test di Levene per l'eguaglianza delle varianze		Test t per l'eguaglianza delle medie						
									Intervallo di confidenza della differenza di 95%	
		F	Sign.	t	gl	Sign. (a due code)	Differenza della media	Differenza errore standard	Inferiore	Superiore
cogn.exp._mean	Varianze uguali presunte	,064	,801	-1,388	63	,170	-,47642	,34332	-1,16249	,20965
	Varianze uguali non presunte			-1,414	61,618	,162	-,47642	,33695	-1,15005	,19721

Test t PURCH. INT. COGNIT. EXP. PHYSICAL

Statistiche gruppo

	CONDIZIONE	N	Media	Deviazione std.	Media errore standard
cogn.exp._mean	Traditional physical store	37	5,2239	1,19691	,19677
	Innovative physical store	34	5,9244	,91860	,15754

Test campioni indipendenti

		Test di Levene per l'eguaglianza delle varianze		Test t per l'eguaglianza delle medie						
									Intervallo di confidenza della differenza di 95%	
		F	Sign.	t	gl	Sign. (a due code)	Differenza della media	Differenza errore standard	Inferiore	Superiore
cogn.exp._mean	Varianze uguali presunte	1,097	,299	-2,748	69	,008	-,70043	,25488	-1,20889	-,19197
	Varianze uguali non presunte			-2,779	66,939	,007	-,70043	,25207	-1,20356	-,19730

Test t PURCH. INT. _AFFECT. EXP. ONLINE

Statistiche gruppo

	CONDIZIONE	N	Media	Deviazione std.	Media errore standard
AFF.exp._mean	Traditional e-commerce	28	4,8810	1,20087	,22694
	Innovative e-commerce	37	5,4414	1,52156	,25014

Test campioni indipendenti

		Test di Levene per l'eguaglianza delle varianze		Test t per l'eguaglianza delle medie						
									Intervallo di confidenza della differenza di 95%	
		F	Sign.	t	gl	Sign. (a due code)	Differenza della media	Differenza errore standard	Inferiore	Superiore
AFF.exp._mean	Varianze uguali presunte	1,526	,221	-1,606	63	,113	-,56049	,34897	-1,25785	,13687
	Varianze uguali non presunte			-1,659	62,865	,102	-,56049	,33775	-1,23546	,11448

Test t PURCH. INTENT. SOC. EXP. ONLINE

Statistiche gruppo

	CONDIZIONE	N	Media	Deviazione std.	Media errore standard
SOC..exp._mean	Traditional e-commerce	28	4,9107	1,20611	,22793
	Innovative e-commerce	37	5,8919	1,48317	,24383

Test campioni indipendenti

		Test di Levene per l'eguaglianza delle varianze		Test t per l'eguaglianza delle medie						
									Intervallo di confidenza della differenza di 95%	
		F	Sign.	t	gl	Sign. (a due code)	Differenza della media	Differenza errore standard	Inferiore	Superiore
SOC..exp._mean	Varianze uguali presunte	,216	,644	-2,857	63	,006	-,98118	,34349	-1,66758	-,29477
	Varianze uguali non presunte			-2,940	62,635	,005	-,98118	,33378	-1,64825	-,31410

Test t PURCH. INT. SOCIAL EXP. PHYSICAL

Statistiche gruppo

	CONDIZIONE	N	Media	Deviazione std.	Media errore standard
SOC..exp._mean	Traditional physical store	37	5,2838	1,16839	,19208
	Innovative physical store	34	5,4485	1,56280	,26802

Test campioni indipendenti

		Test di Levene per l'eguaglianza delle varianze		Test t per l'eguaglianza delle medie						
									Intervallo di confidenza della differenza di 95%	
		F	Sign.	t	gl	Sign. (a due code)	Differenza della media	Differenza errore standard	Inferiore	Superiore
SOC..exp._mean	Varianze uguali presunte	2,155	,147	-,506	69	,615	-,16475	,32577	-,81463	,48514
	Varianze uguali non presunte			-,500	60,882	,619	-,16475	,32974	-,82413	,49464

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Summary

Introduction

"Swiss Made" embodies Swiss luxury watchmaking's values of heritage, tradition, craftmanship and ancestral quality. Instituted by the Federal Government in 1971, this label can be claimed by companies only if four requirements are met:

- The watch's technically development has been carried out in Switzerland;
- Its movements is Swiss and has been cased in Switzerland;
- The final manufacturing inspection has taken place in Switzerland;
- At least 60% of its value, namely of its manufacturing costs, is generated in Switzerland.

Nowadays, Swiss luxury watchmaking sector is mainly led by well-known established brands of the luxury groups Rolex SA, Swatch Group, Richemont, LVMH, and by independent brands including Patek Philippe, Audemars Piguet, Richard Mille and Breitling.

Nonetheless, the advent of Covid-19 pandemic in 2020 has dramatically hit this industry, of which Swiss watch exports' value has experienced a decrease to 17 billion francs compared with 21.7 billion a year earlier, recording a cumulative decrease of 21.8%. According to Deloitte (2020) this dramatic outcome is attributable to numerous factors. Firstly, international travels' restrictions have triggered the abrupt of global tourism, which has always fueled a great portion of worldwide luxury watches' trade volume, through shopping malls and duty-free stores. Secondly, lockdowns have had direct financial consequences on individuals' disposable income and willingness to spend, provoking the drop of domestic demand. This shift in consumers' behavior has particularly affected luxury watches since often perceived as fewer necessary purchases.

The majority of high-volume markets have been severely impacted by Coronavirus: Asia accounted for 54% of Swiss watch exports by value, with a 20.2% decrease from the previous year; Europe experienced a contraction of the Swiss exports of 25.2% and an overall shrinkage of 29%, in terms of market share; America, with a 15% share, recorded an overall fall of 20.4%. Nonetheless, China revelated to be an exception, becoming the world's largest market for Swiss watch industry. Indeed, the most recent figures show exports of Swiss watches to mainland China totaled 2.4 billion francs, depicting a sharp increment of 20% from 2019. These positive changes in sales in Mainland China are directly correlated with travel disruptions as historically Chinese luxury watches' purchasers have been responsible for a sizable portion of travel retail sales in both Europe and United States, where they could take advantage of lower taxes. A further factor augmenting Chinese demand's booming for luxury watches has been the revision of duty-free shopping allowances at Hainan Free Trade Port area (Deloitte AG 2020).

Moreover, Covid-19 pandemic, along with governments' social isolation restrictions, has seriously challenged brick-and-mortar stores and has soared Swiss luxury watch brands to connect with their customers. Precisely, Covid-19 has served as catalyst of the new concept *experiential engagement* (Altagamma 2020): Swiss luxury watch brands are rolling out numerous strategies aimed at elevating the customer experience through innovative consumer-facing technologies at both physical and online retail environments. This run towards digitalization has been particularly disruptive for an industry as the Swiss luxury watchmaking, which has historically been cautious to embrace any form of change. "*Traditional at its core"* (Deloitte AG 2020), this sector is heavily dependent on flagship brick-and-mortars and a trusted network of retailers, due to its reliance "*on the emotional connection from seeing and handling luxury timepieces"* (Deloitte AG 2020), and to its person-centered nature.

Gap in the literature and research questions

Existing luxury retail literature shows a great interest towards a customer-based approach and, according to my knowledge, its main area of examination concerns the sensorial aspect at both virtual and physical point of sales. At online level, web design elements have been largely discussed, including colour, image, layout, fonts, and background music, contributing to the overall appearance of a web site. (Kim, Choi and Lee 2015), (Beuckels and Hudders 2016). At offline level, sensorial components embody the elements of sight, hearing, smell and touch correlated with in-store atmospherics aspects (Roggeveen, Grewal and Schweiger 2019), meaning external variables (e.g. building or windows), general interior variables (e.g. lighting, music, or scents), layout and design variables (e.g. furniture), decoration variables (e.g. pictures) and human variables (e.g. employees) (Bethan and Blazquez Cano 2019).

However, a considerable amount of non-luxury related trade research gives prominence to customer experience, defined as a complex and multi-layered concept (Bustamante and Rubio 2017), deriving from the coexistence of structured dimensions. Relevance is attributed to In-Store customer experience (ISCX) featuring internal (cognitive, affective and physical) and contextual (social) responses evoked by in-store stimuli.

Furthermore, most recent retail works explore the emergence of customer-facing technological innovations, such as In-Store technologies (ISTs), 3D product visualization, AI powered technologies, meaning Augmented reality (AR), Virtual reality (VR), and further digital advancements, applied in both physical and online retailing. Specifically, authors identify their role in influencing consumers' purchase intention and in enhancing the selling environment and shopping experience (Bonetti, Warnaby and Quinn 2018).

In this regard, this research aims at providing further contributions to customer experience related literature, by scrutinizing the impact of these new technologies on In-Store customer experience (ISCX) dimensions proposed by Bustamante and Rubio (2017), within the Swiss luxury watch industry.

The primary intended contribution of this study is an explanation of how Covid-19 has accelerated the new retail trends within the Swiss luxury watchmaking industry, unexplored domain of research being a nascent phenomenon. While a notable amount of luxury retail research focus on offline and online retail setting in the apparel and leather goods industry (Beuckels and Hudders 2016) (Kim, Choi and Lee 2015) (Holmqvist, Wirtz and Fritze 2020), there is still a lack of academic literature exploring new retail environments for hard luxury, particularly for Swiss luxury watch companies. The description of the new retail trends is conceptualized via the lenses of the Swiss luxury watch brand IWC Schaffhausen.

Secondarily, this research expands the analysis of ISCX dimensions, currently only focusing on physical retail environments, to online channels. Furthermore, it evaluates the impact of the new consumer-facing technologies on these experiential dimensions. In the meantime, this work provides the ISCX and the application of these technologies with a totally new context, that of Swiss luxury watch industry.

Hence, the ultimate goal of this research is defining whether it is the offline or online channel benefiting most from the introduction of these new technologies by Swiss luxury watch brands, through a customer experiential perspective.

The research questions guiding the efforts of this work are:

RQ1. How has Covid-19 shifted offline and online retails strategies of Swiss luxury watch brands?

RQ2. To what extent will the new retail, hence in-store and online technologies, influence consumers' experiential dimensions within the Swiss luxury watch industry, which has always been traditional at its core?

RQ3. Will online or offline retail setting benefit most from the diffusion of these new technologies?

Literature Review and Hypothesis Development

Consumer facing technologies in offline and online retail

The recent years have seen the increasing adoption of consumer-facing advanced technologies by brands in both physical and digital stores (Bonetti, Warnaby and Quinn 2018), to improve store atmospherics and environment and to enhance shopping experience. The attribute "consumer-facing" refers to technologies and devices directly experienced by the client, in offline and online retail setting (Bonetti, Warnaby and Quinn 2018).

Amongst In-Store Technologies (ISTs) (Alexander and Kent 2020), touch-screen displays and QR code act as virtual catalogues through which consumers are able to deep dive into branded content (Bethan and Blazquez Cano 2019), whereas tablets support employees in providing client with product's information.

However, deeper offline and online brand-consumer interactions are reachable via AI powered technologies or 3D virtual model technologies, such as AR, VR, and further digital innovations such as Live Chat and Remote Selling.

AR enables the real-time mutual alignment between the physical and virtual worlds (Huang and Liao 2014), throughout a virtual layer overlaying pictures, textual information and videos on top of the user's viewing of the real-life environment. Typical AR retail solutions entails virtual try-on on smart devices, simulating the appearance of product on consumers' body (Bonetti, Warnaby and Quinn 2018). AR also ensures the projections of infographics aiming at recreating the product's tangibility on physical environment and/or at enhancing brand' physical store retail setting atmosphere.

VR embraces a several number of definitions across a broad range of academic disciplines. In marketing literature, VR indicates both 3D Web and 3D VR. The former intends VR as the 360° visualization of 3D interactive objects, built in digital settings, simulating for instance a virtual boutique. In 3D VR, VR "*allow individuals to be immersed in a fully digital environment simply by wearing a headset"* (Pizzi, Vannucci and Aiello 2019).

Live Chat and Remote Selling techniques envisage real-time customer-employee relationship. The most advanced Live Chat matches shoppers to the nearest in-store via AI taxonomy, and sales assistants lively share photos and videos. Remote Selling consists of personalized video shopping sessions, taking place directly from the store or from a dedicated brand area.

A new level of watch retail

As previously anticipated, Covid-19 has unleashed the revolution of Swiss luxury watch retail, both at offline and online level. Since its outbreak, the pandemic has been leading to the redefinition of the physical stores and to the acceleration of the digital presence, initiating Swiss luxury watch brands' path towards a "new consumers first" world.

In this era of social distancing, the function of luxury watches' physical store, as well as their unique point of contact with clients, has undergone a real transformation. Brick-and-mortars are no longer treated only as market places rather a space for a holistic experience (The Business of Fashion, McKinsey&Company 2021) where customers are able to fully appreciate brand's values and heritage, and to be constantly inspired (Altagamma 2020) via the reliance on innovative technologies: interactive shop windows through QR Code scan; open glass-free presentation cases enriched by digital touch screens; interactive touch screen book and walls; VR reality gaming; on-site watchmaker with cyberloupe streaming capability; real time videos from the manufacturing center; employees' mobile touch screen displays.

As concerns the online store, Swiss luxury watch brands have been heavily investing in the following technologies to make digital customer experiences as authentic as the one at the physical store: virtual

try-on, AR technology; 360° rotation of 3D product; virtual boutique experience; 360° experience; virtual selling appointments and in-store virtual tours.

Customer Experience: from a general conceptualization to In-Store Customer Experience (ISCX)

Marketing authors have been largely discussing the concept of customer experience and its management by pursuing two different approaches (Hoyer, et al. 2020). The first approach conceptualizes customer experience as a customer journey with the firm, delineated by the pre-transaction, transaction and post-transaction stages (Lemon and Verhoef 2016). However, for the purpose of this research, prominence is attributed to the second approach of customer experience, focusing on the internal and subjective experiences, evoked by the touchpoints during the above-cites stages.

According to Schmitt (1999), experiences are triggered by specific stimuli, which are induced and not self-generated, and have a reason and purpose. Following this theoretical conceptualization, experience in the retail environment is interpreted as the result of interaction between the consumer and the store. Particularly, Bustamante and Rubio (2017) study conceived the in-store customer experience model, ISCX, as a construct entailing shoppers' cognitive, affective, social and physical experiences.

The cognitive experience of ISCX consists of marketing stimuli's ability to involve customers into products and retail atmosphere, for instance to: make consumers think and reflect; teach consumers interesting things; arouse curiosity and creativity; inspire and interest consumers; bring interesting ideas to mind.

The affective experience of ISCX is correlated to marketing stimuli making clients happy, contented, optimistic, hopeful, enthusiastic, thrilled, surprise, amazed, astonished.

The social experience is represented by the relationship the consumer establishes with the retail environment, envisioned as social system favouring a dual interaction: customer-employee and customer-customer.

The physical experience refers to customer's physiological responses while interacting with his or her environment. These responses are classifiable as either a condition of well-being/comfort or a deficit of well-being/comfort.

The impact of consumer-facing technologies on ISCX components in Swiss luxury watch brands offline and online retail

As examined before, Bustamante and Rubio (2017) identify in-store customer experience as the outcome of five experiential components, namely the cognitive, affective, social, physical experiences. Nonetheless, their model is limited to the analysis of customer experience dimensions as being influenced by stimuli belonging to physical environment, devoid of any kind of technological presence. Thence, this work intends to update Bustamante and Rubio (2017) findings for nowadays digital era, whose advancements have been event more encouraged following Covid-19 pandemic outbreak.

This research aims at bringing the experiential components' investigation at online level, therefore at the circumstance in which customers choose to carry out their shopping experience at brands' e-commerce instead at the physical store. As a result, this study will widen Bustamante and Rubio (2017) scope by including both brick-and-mortar and e-commerce points of sales in its analysis. In turn, the environment of these two retail settings becomes the stage of the new consumer-facing technologies from the display and 360° rotation of 3D products to AR, VR and further mixed digital features.

Nevertheless, the current pandemic context leads this work to exclude customer-customer interaction, meaning one of social experience's level of relationship, and physical experience, from the analysis. Social distancing restrictions, which reduce the number of customers entering at the store, and hygiene measures, such as mask requirements, drastically lessen individuals' chance and willingness to socialize with other shoppers and may affect a priori their physical comfort and well-being (Klaus and Manthiou 2020).

Consumer-facing technologies and the cognitive experience in Swiss luxury watch brands' offline and online retail

As understood from Bustamante and Rubio (2017), in the shopping context, cognition encompasses customer thinking involvement with products, services and retail environment. For instance, cognitive experience is obtained when stimuli in retail context encourage consumers to think and reflect, to learn, and to make them curious.

The main features of consumer facing technologies, such as 3D product visualization enriched by 360° view, and 3D virtual models, namely AR, VR, are represented by *interactivity* and *vividness*. Image and video interactivity is able to stimulate cognitive mental activity by offering users an innovative system of presenting products, enhancing their attributes and features and mimicking a real-world product experience within both the virtual and mediated environment (Beuckels and Hudders 2016). It enables customers to manipulate the product's features, its background, the environment where it is exposed, its distance viewing and its rotation (Beuckels and Hudders 2016). On the other hand, vividness is recognized as the quality of product presentation, and following this perspective, *"more vivid portrayal of products is more likely to stimulate consumers' cognitive elaboration processes"* (Yim, Chu and Sauer 2017).

In the context of online shopping, the interactivity and vividness of consumer-facing technologies deliver clients direct or close-to-direct product experiences, making them perceive a high level of knowledge and learning, so defined "*perceived informativeness"* (Kang, Shin and Ponto 2019). AR virtual try-on solutions suggest the client about the size and the wearability of a product, while AR-based image projection on a physical surface helps customers developing an idea about the sense for the volumetric and aesthetic, enriched by enlargement and rotating functionalities. Additionally, users' informativeness is also reached via VR, which is intended as 3D items visualization on brands' e-

commerce and interactive exploration in virtual setting like Virtual Boutique Experience, as well as a more immersive experience offered by HDM devices. Thence, users' perceived informativeness and quality about the product or the simulated like-real retail environment may be regarded as the outcome of interactivity and vividness capability of compensating the loss of tactile and visual sensations. The above illustrated technologies' characteristics lead to an evident cognitive involvement in the online retail setting, known as *flow* state (Kang, Shin and Ponto 2019), where users acquire a sense of psychological immersion in the digital experience, reaching an experience being as authentic, person-centered the one at the physical store.

Online users can appreciate craftmanship's details and experience the touch and feel sensation of Swiss luxury watches through consumer facing-technologies, whose innovative features enable them to learn about the watches and real in-store environment, and therefore to creatively think and reflect. These advanced technologies drive individuals to a flow state, hence to a cognitive involvement and engagement into brands' product and retail information, where the typical luxury watch in-store customer-centricity is achieved.

Hence, it is reasonable to think that:

H1a: Consumer-facing technologies positively influence the cognitive experience in Swiss luxury watches' online setting.

In the online environments, consumer-facing technologies' application aim at both magnifying product presentations to help consumers to make an estimation about its tactile and visual quality and, at some extent, at recreating the in-door atmosphere of brands' physical stores.

As deductible, in the offline setting, the above discussed 3D virtual model technologies' features mainly play the role of enriching the in-store atmosphere and values' storytelling rather than of providing product information. For instance, AR infographics on interactive walls and the gamification experience with VR HDMs' awake customers' creativity and interest, while interactive digital touch screens showcasing 3D product visualization and QR code elevate customers' in-store tactile and visual product experience.

In the context of Swiss luxury watch brands' physical store, innovative consumer-facing technologies may allow customers thinking to be fully involved with timepieces' craftmanship, as being able to live the touch and feel experience whereas learning further information, and may help brands in bringing its stories to life through a visual narration of its codes.

Thus, it is expectable that:

H1b: Consumer-facing technologies positively influence the cognitive experience in Swiss luxury watches' offline setting.

Consumer-facing technologies and the affective experience in Swiss luxury watch brands' offline and online retail

According to ISCX model proposed by Bustamante and Rubio (2017), the affective experience refers to customers' emotions evoked by external stimuli originating from the products, services and environment in a retail context. Amid authors, it is largely recognized the correlation between enjoyment and interactivity and vividness. Yim, et al. (2017) notice that interactive technologies providing more vivid product representations are associated with a more positive affective emotional experience, in the online setting. The realism of the 3D items visualization, the sense of control given by the interactivity and the high quality presentation allow customers to thrive the enrichment of their imagination, enabling customer thinking involvement which, in turn, leads to a range of pleasant emotional experiences (Yim, Chu and Sauer 2017).

In the context of Swiss luxury watch brands' online settings, consumer-facing technologies, such as 3D product visualization and both 3D virtual models, meaning AR and VR, may empower consumers to reach a connection with the brand/timepiece as emotional and intimate as the one traditionally experienced through the real touch and feel sensation at the physical store.

In Swiss luxury watch brands' offline settings, consumer-facing technologies providing craftsmanship and quality's details, like interactive displays and QR code scans, may enhance the positive attitude already generated by the real visual and tactile sensation. Here again, the chance of directly and independently interacting with watches' complications and characteristics via digital tools would increase the feeling of enjoyment. The compresence of these two circumstances may outcome in a further strengthened emotional connection.

Hence, this work proposes to test the following hypothesis:

H2a: Consumer-facing technologies positively influence the affective experience in Swiss luxury watches' online setting.

H2b: Consumer-facing technologies positively influence the affective experience in Swiss luxury watches' offline setting.

Consumer-facing technologies and the social experience in Swiss luxury watch brands' offline and online retail

Consumer-facing technologies such as Live Chat and Remote Selling allow users to experience social interaction with employees in an online environment. Live Chat and Remote Selling entail the presence of a real person and located remotely, available for immediate service to the customer. As the name itself suggests, Live Chat consists of chat conversations between the customer and the employee, the Remote Selling involves a personalized video-call taking place at the brand's boutique or in a dedicated area, giving the client the impression of being at the physical boutique, and therefore a richer immersion and engagement (Parise, Guinan and Kafka 2016).

Furthermore, several authors recognize the critical role played by consumer facing-technologies in facilitating customer-employee contact in the offline setting (Wirtz, et al. 2018). Particularly, tablets aid the sales assistant in offering higher-quality advice while navigating the boutique, by bridging the physical and digital worlds (Holmqvist, Wirtz and Fritze 2020).

In Swiss luxury watch brands' online setting, the human trait featuring Live Chat and Remote Selling technologies contribute to recreate the traditional in-store service experience, delighting users of the same person-centricity as the one at the physical store.

In Swiss luxury watch brands' physical stores, consumer-facing technologies does not act as a principal interaction medium between the customer and the employee, rather it strengthens their relationship and enriches the touch and feel ritual through the opportunity of gathering further watches' information.

Thence, in view of the discussion above, it is fair to believe:

H3a: Consumer-facing technologies positively influence the social experience in Swiss luxury watches' online setting.

H3b: Consumer-facing technologies positively influence the social experience in Swiss luxury watches' offline setting.

Methodology

Research design

The present research employs a quantitative approach to test the above-proposed six hypothesis, hence to investigate whether consumer-facing advanced technologies positively influence individuals' cognitive experience, affective experience and social experience in both online (*H1a, H2a, H3a*) and offline (*H1b, H2b, H3b*) settings, within the Swiss luxury watch industry.

An online survey has been built on Qualtrics® XM and distributed through an anonymous survey link, diffused via social networks; specifically, it has been sent by chat conversations on Instagram and WhatsApp and shared on groups of luxury watches' enthusiasts on Facebook and LinkedIn.

The structure of the survey foresees eight blocks:

1. Introduction;
2. Introduction to scenario;
3. Scenario;
4. Cognitive Experience;
5. Affective Experience;
6. Social Experience;
7. Introduction to socio-demographic questions;

8. Socio-demographic questions.

The "*Introduction"* acknowledges respondents about the author, the academic purpose and the timing of the survey, and it specifies data conditions and treatments.

In *"Introduction to scenario"*, participants are informed about the scenario description in the upcoming block, and are suggested to read it attentively in order to completely immerse themselves in the narrative and to provide accurate responses to the questionnaire.

In the third block, a randomized scenario appears, meaning each respondent is exposed to a one out of total 4 scenarios. Two scenarios describe the environment of a Swiss luxury watch brand's offline and online retail, devoid of any kind of consumer-facing advanced technology, and defined as "Traditional physical store" and "Traditional e-commerce", respectively. Whilst, the other two scenarios illustrate exactly the opposite circumstance, hence the setting of a Swiss luxury watch brand's offline and online retail enriched by the presence of consumer-facing advanced technologies. As such, they are renamed as "Innovative physical store" and "Innovative e-commerce".

The fourth, the fifth and the sixth blocks include the questionnaire the respondents have been asked to fill after reading the scenario. It is based on Bustamante and Rubio (2017)'s ISCX scale, of which some components and items has been omitted and readapted to be compatible with and relevant to the purpose of this study, such the social experience with employees and the physical experience.

As such, the cognitive experience has been the first component to be assessed in relation to the scenario description. The statement "*The environment described above..."* has been used to introduce the 7 items measuring this experience: *"makes me think and reflect about watches' quality and craftsmanship"; "teaches me interesting things regarding the brand values and the retail atmosphere"; "awakens my curiosity"; "awakens my sense of creativity"; "brings interesting ideas to mind"; "inspires me";" interests me"*.

The affective experience has addressed the second component that participants have been requested to evaluate. The heading *"The environment above described, makes me feel"* has constituted the initial part of the 6 items employed to analysed it, namely *"contented"; "happy"; "enthusiastic"; "thrilled"; "surprised"; "amazed"*.

The social experience has entailed the third component to be examined, through the assertion *"considering the level of social interaction you can have through this environment"*, related to these following 4 items: *"I would like to receive an advice from the employees of this Swiss luxury watch brand"; "I would like to ask the opinions of the employees of this Swiss luxury watch brand"; "I would like share my opinions with the employees of this Swiss luxury watch brand"; "I would like to interact with the employees of this Swiss luxury watch brand"*.

Furthermore, respondents have answered to 4 socio-demographic questions concerning the gender, the age range, the current employment status and the nationality.

Finally, 3 questions have been built to test participants' interest in luxury watches. Through the first question, they have been asked to evaluate their relation with luxury watches by selecting among "not interested", "interested", "passionate". The second one aimed at finding out about their luxury watches' ownership, whereas the last one their intention to purchase a luxury watch in the near future.

Questionnaire, sample, and measures

Although respondents have been randomly assigned a different scenario, they have answered to 23 identical closed-ended questions, to examine objectively how the presence of consumer facing advanced technologies may influence the three experiential components, hence the cognitive, the affective and the social experience at a physical or digital store of a Swiss luxury watch brand.

In addition, timing function has been implemented to the questionnaire's "scenario" block, ensuring participants could leave this page and access the scenario-related questions, once a minimum of 30 seconds was elapsed.

The questionnaire has been delivered to a total number of 387 individuals, whose 204 have fully completed and submitted it. To allow the reach of a large audience and of heterogeneous insights, the survey has been conducted in English, recurring to a simple and straightforward vocabulary.

This poll has resorted to two different measurement tools to evaluate respondents' answers:

- To measure the scenario-related questions, therefore the items of the cognitive, affective and social experience, respondents could express a score from 1 to 7 in Likert scale, where 1 standing for "totally disagree" and 7 for "totally agree";
- As previously mentioned, to analyse those questions aimed at investigating respondents' socio-demographics info and their relationship with luxury watches, some nominal measures have been adopted.

Socio-demographics and watches' relation's results

The present questionnaire has been correctly filled and submitted by 101 males, 100 female, 1 binary/third genders and 2 unknown genders.

Secondly, the most popular age range has resulted to be "9-24" (Gen-Z) including 91 respondents, followed by "25-40" (Millennials) counting 67 individuals, and by "41-56" (Gen Y) and "more than 56" (Boomers and Baby Boomers), with 39 and 7 components, respectively.

Thirdly, 64,2% of participants are currently enrolled to school and/or university, whereas 31,4% employed, succeeded by the remaining percentages representing retired and unemployed people.

A sharp Italian majority is more than evident, and it constitutes 79,9% of respondents, whilst the minor percentages belong to French (5,9%), Swiss (4,9%), German (3,9%), Other (2,5%), Spanish (1,5%) and English (1,5%) nationalities.

From the question scrutinizing the relation with luxury watches, 52,9% has indicated to be interested, whereas the remaining proportion it is equally divided into not interested (23,5%) and passionate (23,5%). Moreover, if on one side the number of individuals owning a luxury watch (46,6%) is extremely closed to the ones who are not (53,4%), on the other side the number of respondents intentioned to purchase a luxury watch in the near future (66,3%) is nearly double respect to the ones who are not (33,3%).

Questionnaire results

To analyse the result from the questionnaire, and so to verify whether the presence of consumer-facing advanced technologies positively influence the cognitive, the affective and social experiences in both online and offline Swiss luxury watches retail setting, this three-stages procedure has been followed:

1. Reliability analysis;
2. Calculation of the means;
3. Independent-Sample T test.

Reliability analysis

This analysis has been carried out to verify if the scales consistently reflect the construct they are measuring. For each scale, namely the cognitive experience, the affective experience and social experience, the Cronbach alpha (α) has been analysed to assess their reliability, and its positive values can range from 0 to 1.

For both cognitive and affective experiences the Cronbach alpha has resulted to be "excellent", and no one of items has been deleted to improve its reliability. Therefore, these scales are deemed as highly reliable.

The Cronbach alpha for the social experience has demonstrated to be "very good", and no one of the 4 items has been eliminated to optimise its reliability. Hence, the scale is identifiable as reliable.

Calculation of the means and Independent-Sample T test

This stage of the analysis consists of the means' calculation of the responses of the cognitive experience, affective experience and social experience components in relation to the conditions "traditional e-commerce", "innovative e-commerce", "traditional physical store", "innovative physical store". Furthermore, since each respondent has read a unique condition, an Independent-Sample T test has been developed, through which six components have been tested: the cognitive experience, affective experience social experience in both online and physical setting. Additionally, through the "traditional" and "innovative" conditions, this research will be able to investigate if the results for a component will

be higher with or without the presence of consumer-facing technologies, in an online and offline setting This test verifies the validity of these results for the entire population by resorting the *p value* as a measure. Indeed, if $p < 0,05$ the condition is statically significant and extendible to the entire population, whereas if $p > 0,05$ the condition is not statistically significant and so not extendible to the entire population.

The Independent-Sample T has been repeated twice. Firstly, among the total number of respondents, and then the sample has been narrowed to interested/passionate individuals and to individuals intentioned to purchase a luxury watch in the near future. In both cases, *H1b* and *H3a* have been confirmed.

The verification of H1b primarily derives from respondents' preference for innovative rather than traditional physical store. This outcome confirms the reported above engagement theories (Altagamma 2020), according to which customers expect to be constantly inspired while visiting a store, nowadays deemed as an engagement place, delivering them immersive journeys (The Business of Fashion, McKinsey&Company 2021). The rejection of H1a and the confirmation of H1b represent a clear evidence of the pivotal role of brick-and-mortar stores for Swiss luxury watch brands. Although consumer-facing advanced technology's features, such as vividness and interactivity, may help consumers to grasp significant information about watches' quality and craftmanship, an online cognitive involvement would not be as high and deep as the one the physical store. In the real context, respondents' cognitive experience proves to be stronger thanks to the chance of seeing, touching and feeling the watch, and these sensorial sensations are able to give more information than the one provided by technologies, through which consumers have to leverage their imagination. Therefore, in the physical setting, shoppers cognitive experience may be awaked by both physical stimuli, generated by their real in-store presence and the chance of inspect with their own eyes craftmanship's details and to try the products, and by digital stimuli which further elevate consumers' cognitive experience by providing more information and enriching the retail setting itself.

Secondly, the confirmation of H3a stems from interviews' preference for innovative e-commerce over traditional e-commerce. Here again, this result further supports today's luxury-related findings outlining consumers' demand for increasingly sophisticated and customised interactions in digital channels (The Business of Fashion, McKinsey&Company 2021). In addition, the denial of H3b and the verification of H3a highlight the relevance of human contact within both online and offline channels of Swiss luxury watch brands. In fact, consumer-facing technologies positively influence online consumers' social experience as they permit the integration of the human aspect, facilitating the creation of a customer-employee relationship as intimate as the one at the physical store.

If the confirmation of the hypothesis H1b and H3a has been contemplated among all three samples of participants, the one of H2b has only occurred while studying the findings related to interested/passionate and intentioned to purchase individuals. As such, it is reasonable assuming that

respondents who are passionate and interested in watches, and therefore they have the willingness to buy them, mostly weight the affective experience, especially if this can be enhanced somehow. This is exactly what has been revealed through the analysis when consumer-facing technologies are present. As already stated, Swiss luxury timepieces brands' strength and customer relationship are built on the emotions they are able to elicit through touch and feel of their products, reason why their brick-and-mortar play a critical role in their retail strategy. Thus, physical stores benefit more from consumer-facing technologies than digital store due to their already well-established ability of awakening customers' emotions.

Finally, verified that consumer-facing technologies positively influence the cognitive and affective experiences in offline setting, while only the social experience in online setting, it is certain that Swiss luxury watch brand's physical stores benefit the most from the application of technologies than digital stores. Consequently, it is reasonable asserting that the greatest the experiential components and, so the customer experience, the highest the consumer's satisfaction and willingness to come back to that physical or digital point of sales.