THE RENEWAL AND DEVELOPMENT OF LUXURY WATCHMAKERS AFTER QUARTZ CRISIS

57210520 TIANPEI SUN

ZEMI TITLE: LUXURY BRANDING

C.E. PROF. NAGASAWA SHINYA

D.E. PROF. SHIBUYA SATORU D.E. PROF. KIMURA TATSUYA

Author Note:

ABSTRACT

The quartz crisis of 1970s and 1980s had drastic impacts on the Swiss watch market. During this period, mechanical watch sales dropped significantly, and many companies closed their operations. However, beginning the 1980s, the Swiss market experienced rapid growth in demand, and Switzerland returned to its global dominance. This qualitative case study aimed to examine the factors that contributed to this remarkable revival. Specifically, it explored the innovation, marketing, and branding strategies employed by four Swiss watchmakers that survived the crisis, namely, Piaget, Jaeger-LeCoultre, Breguet, and Blancpain, and their impacts.

The hypothesis of this study is listed as followings:

(i) The revival of the Swiss watch market in the 1980s was influenced by the blend of technological and non-technological innovations implemented by the key surviving watchmakers – Piaget, Jaeger-LeCoultre, Breguet ,and Blancpain.

(ii) Adopting innovative strategies directly made positive impact on the performance of the key surviving Swiss watchmakers – Piaget, Jaeger-LeCoultre, Breguet, and Blancpain.

(iii) Innovation strategies which were applied during Quartz Crisis make positive influence on future trends of the key surviving watchmakers – Piaget, Jaeger-LeCoultre, Breguet, and Blancpain.

Following the thesis hypothesizes which are stated above, the research method of this thesis is a type of qualitative research using multiple data collection techniques, including document analysis and interviews. Thematic content-based analysis of primary and secondary data underscored how the watchmakers wielded technological and non-technological innovations to weather the crisis. Main findings are listed as following:

(i) Technological innovations involved the creation of new technologies and reclamation of old legacies, while non-technological innovations spotlighted the introduction of novel marketing strategies.

(ii) The synthesis of these strategic maneuvers resulted in enhancement of brand image, elevated consumer confidence, and noteworthy financial gains.

(iii) Furthermore, this study illuminates five potential trends that may shape the future of the global watch industry: customer-driven manufacturing and marketing, culture-oriented manufacturing and marketing, size reduction, increased digital marketing, and increased complexity.

These findings, therefore, serve as a fundamental basis for devising strategies to rejuvenate the post-COVID-19 watch industry. The study concludes with a recommendation for managers in the luxury watch sector to continually foster an innovative culture, prioritizing both technological and marketing innovations. The importance of designing learning organization capable of self-organizing even in the absence of crises is also highlighted.

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1. INTRODUCTION

1.1 Background

The luxury fashion industry is one of the most rapidly expanding markets worldwide. In 2022, the global luxury fashion market was valued at USD 253.11 billion, and the figure is projected to grow at a compounded annual rate of 6.7% by 2026 (Market Report World, 2022). This rapid expansion makes it an ideal target for economic or social growth and recovery, especially now that the world is grappling with the effects of the COVID-19 pandemic. Several dynamics account for the sector's exponential growth. They include the recent expansions in augmented reality, tourism and travels, inclination toward sustainable products, millennial acceptance, and population of high-net-worth individuals (Cabigiosu, 2020; Market Report World, 2022). The combination of these factors has translated into increased efficiency and consumer demand for luxurious commodities.

A significant part of this growth is linked to the luxury watch segment. Historically, watches have played critical roles in time management, and they were valuable resources before the era of smartphones and related technologies. However, over the years, the functional utility of watches has evolved considerably to include domains other than timekeeping. Today, luxury watches are expensive identity projections that serve as status symbols, especially for middle and high-income earners. As of 2018, the global market value of luxury watches was about USD 6.93 billion, and the figure is projected to be USD 9.3 billion by 2025 (Statista Research Department, 2015). The number of brands offering these watches has also grown considerably over the past decade, and the rising trend is likely to persist.

However, like other markets, the luxury watch segment has not been without shocks. Generally, the perceived value of smartwatches is rarely affected by economic uncertainties. For example, the Swiss watches are reported to have withered the 2008-09 recession, and their prices rose significantly during the period other sectors were experiencing a massive downturn (Revill, 2019). Despite the apparent resilience, the watch market is not immune to adverse internal and external developments. This

exposure was particularly evident during the quartz crisis, which had drastic impacts on many economic sectors.

The quartz crisis of the 20th century, which originated from the Swiss market, shocked the global industry and brought it to a near-collapse. In the 1950s, the third industrial (or digital) revolution was gaining momentum and causing widespread disruptions worldwide. In the luxury market, quartz crystals allowed manufactures to make comparatively cheaper watches with precise frequency standards. The devices also had improved accuracy and enriched user experiences (Twinam, 2020). In 1969, the Japan-based Seiko introduced Astron, the world's first commercial quartz watch (Twinam, 2020). The company also shifted its marketing strategy. Seiko began focusing on accuracy and precision instead of vertical integration and craftwork. Seiko presented Astron as of high-quality and of ultra-modern production (Twinam, 2020). During the 1970s, the majority of watch manufacturers in Asia replaced most of their mechanical watches with quartz equivalences. This move would produce notable disruptions that tested the industry's reliance and had long-lasting impacts on its performance.

The large-scale transition to quartz crystals marked the onset of a global watch crisis. The move caused drastic declines in the Swiss segment, which chose to continue with their traditional mechanical watches, partly due to the country's neutrality policy. From 1973 to 1980, the number of firms in the Swiss watch market fell from about 1,600 to less than 600, a decline of over 60% (Donzé, 2011). The number of persons employed by the industry also dropped by almost 70%, from 90,000 to less than 30,000 (Donzé, 2014). Before the 1980s, Swiss manufacturers accounted for nearly 95% of all mechanical watches sold worldwide (Donzé, 2011). This apparent monopoly meant that its collapse would have far-reaching consequences on all parts of the world and many economic sectors. The effects on the Swiss segment spread quickly worldwide and resulted in widespread economic downturns.

At the turn of the 1980s, Swiss manufacturers realized that change was inevitable. They needed to initiate a raft of measures to prevent the industry's collapse and propel it along a recovery path. The firm's initial strategies focused on reducing production costs and identifying ways to match the value

provided by competitors, and their impacts were evident. From 1980 to 1990, the volume of Swiss exports grew from less than 30,000 to about 50,000, although the recovery was not steady (Donzé, 2014). The number of manufacturing firms also recovered from a low of less than 600. Since then, it has witnessed a moderate increase since the crisis (Shahbandeh, 2021). The reversal was mostly due to the efforts of brilliant individuals and innovative company strategies. They contributed significantly to the revival of the Swiss market and the worldwide industry.

Generally, the significance of the quartz crisis and its effects on global markets are acknowledged in the literature. Many historical and economic scholarly works have contributed to the understanding of its genesis and propagation. Still, research on the specific strategies employed by individual firms to respond to the resulting shocks is limited. Studies that address this gap may be of vital importance. They can help in formulating reliable measures to enhance the resilience of the watch market to unpredictable developments. Consequently, the current study focuses on the specific mechanisms employed by various watch manufacturers to respond to the quartz crisis. Four Swiss firms are selected for the analysis: Piaget, Jaeger-LeCoultre, Breguet, and Blancpain. The choice of Swiss firms is primarily due to the significant roles they played during the crisis. The findings provide companies with a basis for designing reliable strategies to recover from economic shocks.

1.2 Thesis Hypothesis

The Hypothesis of this study is:

(i) The revival of the Swiss watch market in the 1980s was influenced by the blend of technological and non-technological innovations implemented by the key surviving watchmakers – Piaget, Jaeger-LeCoultre, Breguet, and Blancpain.

(ii) Adopting innovative strategies positively impacted the performance of Swiss watchmakers – Piaget, Jaeger-LeCoultre, Breguet, and Blancpain.

(iii) Innovation strategies which were applied during Quartz Crisis make positive influence on future trends of the key surviving watchmakers – Piaget, Jaeger-LeCoultre, Breguet, and Blancpain.

1.3 Research Aim and Questions

According to the previous thesis hypothesis introduction in Chapter1.2, this thesis seeks to extensively review and discuss the renewal and revitalization strategies employed by luxury watchmakers in response to the quartz crisis with a focus on Swiss firms. The study will be guided by the following research questions:

(i) What innovation, marketing, and branding strategies did Swiss watch companies use to respond to the quartz crisis?

This question directly addresses the first thesis hypothesis, seeking to identify and understand the specific strategies implemented by Swiss watch companies during the quartz crisis. The strategies and innovation uncovered through this question will provide the evidence needed to test thesis hypothesis that these innovation strategies influenced the revival of the Swiss watch market.

(ii) What effects did such strategies have on their performance and the Swiss watch market?

This question is related to the second thesis hypothesis. By examining the impact of the strategies on both the individual companies and the whole Swiss watch market, it is obvious to evaluate whether these strategies indeed had influence on the market revival in the 1980s, as stated in thesis hypothesis.

(iii) What potential trends might define the global luxury watch market in future?

This question builds upon the third hypothesis by taking the findings of the past (i.e., the successful strategies employed during the quartz crisis) and applying them to anticipate future trends in the luxury watch market. These potential trends could be defined as a

continuation of the innovative strategies that thesis hypothesis suggests were crucial for the revival of the Swiss watch market. Understanding these trends could also provide further context and justification for the significance of thesis hypothesis.

1.4 Research Significance

The luxury watch market's significance as a driver of the global luxury fashion industry cannot be understated. Its unique position as a tangible status symbol, coupled with the appreciation for craftsmanship and enduring brand heritage, fortifies its importance. Additionally, the market's resilience is largely due to the investment value of luxury watches, their dual functionality as fashion statements, and their wide-ranging appeal to diverse consumer groups. Importantly, the global demand for these timepieces and their influential trends extend to other fashion categories, further entrenching their pivotal role. Therefore, its resilience against economic shocks is a critical boost to the industry and other economic sectors that depend on it.

The ever-present possibility of unexpected developments, like those witness during World War I, the Great Depression, and the 2009-09 economic recession, underscores the importance of fortifying the world's systems. The COVID-19 pandemic may not be the last of such disasters, hence an ongoing need for better response strategies. It is hoped that the findings of the current study will provide companies and other stakeholders in the watch market a beyond with a basis for designing effective policies in this regard. As noted previously, Switzerland is selected because of its contribution to the quartz crisis. Besides, its firms bore much of the effects. Still, the lessons learned from the crisis are relevant to all countries, the global luxury market, and other industries.

1.5 Thesis Structure

The thesis is organized into five chapters.

The first chapter is introduction, which contains quartz crisis background introduction, thesis hypothesis, research aim and questions and research significance.

The second chapter is literature review, which includes Quartz crisis's genesis, Swiss watchmakers' re-emergence after Quartz crisis and the connection between Swiss watchmakers' improvement and economic shock. These contents focus on several aspects: the evolution of the luxury watches market, including notable developments, the vulnerability or resilience of the industry to global shocks, and the role of innovation and marketing strategies.

The third chapter presents a critique of the specific methods applied in this area, including their strengths and limitations. The study utilized an exploratory design and synthesized data from multiple primary and secondary sources. The sources were selected based on their relevance to the research questions. Both qualitative and quantitative research techniques were used as appropriate.

The fourth chapter presents and discusses main findings, which involve Swiss watchmakers' response strategies during Quartz crisis, impacts of the revival strategies and four watchmakers' (Piaget, Jaeger-LeCoultre, Blancpain and Breguet) potential trends in the future.

The final chapter summarizes the key findings and offers appropriate recommendations for research and practice.

2. LITERATURE REVIEW AND THESIS HYPOTHESIS

2.1 Introduction

The chapter presents a critical review of previous works whose findings are relevant to the current study. The analysis focuses on three broad areas: the genesis of the crisis, post-crisis reemergence, and the links between economic shocks and innovation. Each of the three sections helps in situating the research problem within the context of previous investigations. Overall, many scholars agree that innovation was instrumental to the revival of the watch industry after the crisis. Still, notable disagreements on the roles played by specific innovations are noteworthy. The chapter concludes with a recap of notable gaps that should be addressed to facilitate all-round learning from the quartz crisis.

2.2 The Crisis and Its Genesis

Understanding the factors leading to the quartz crisis may help appreciate the response strategies initiated by various firms in the sector. Puzzlingly, although the crisis generated significant market shocks and nearly brought the industry to a collapse, it did not attract the attention of many academic scholars. Instead, the majority of the works on its causes are based on expert views published by different non-academic entities.

2.2.1 The Rise of Japan Watchmaking and the Decline of the Swiss Market

Most of these publications focus on the quartz revolution. The quartz revolution occurred in the 1970s as Japanese firms mastered quartz technology and produced high-quality watches at relatively low costs. In less than three years, the Japanese watches had transformed the industry, primarily due to their improved precision and reduced prices (Tajeddini and Trueman, 2008). Many authors concur that the sudden influx of Japanese brands, and other related factors, were instrumental to the decline of the Swiss market (Daveau, 2019; Raffaelli, 2018). Hence, it may be reasonable to conclude that the invasion by Japanese manufacturers was a significant factor during the crisis.

2.2.2 The Internal crisis in the Swiss Watch Market

However, the previous viewpoint in Chapter 2.2.1 is debatable and has been rejected by some scholars. Notably, Donzé (2011) contends that the near-collapse of the Swiss watch industry was not linked to the influx of the Japanese market. At the time of the quartz revolution, Switzerland was already in a severe crisis (Donzé, 2011). Besides, Japan continued to manufacture mechanical watches until the last half of the 1980s. Instead, the crisis' roots are in the existing production systems in the Swiss market at the time. Although Swiss manufacturers had mastered the art of mass production, they hardly applied it to quality products. In contrast, their Japanese peers began engaging in mass production of quality watches, a development that allowed them to gain a stronghold in the market. Consequently, the decline was due to shortages in process innovation and not product innovation. Other researchers, such as Schlegelmilch et al. (2003) and Tajeddini and Trueman (2008), have also highlighted the apparent shortages in non-technological innovation in the Swiss market at the crisis' onset.

2.2.3 Structural Vulnerabilities in the Swiss Watch Market during Quartz Crisis

Although many authors have stressed the influx of Japanese watches as the leading cause of the crisis, others have highlighted problems evident within the Swiss watch market. Specifically, the industry's structure during the 1970s may explain the crisis' emergence and propagation. The Swiss watch market has maintained a relatively low concentration characterized by numerous small and medium enterprises. In the 1960s, there were 500 firms in the Swiss watch industry (Donzé, 2014). Although the figure reduced to about slightly in 1970, the two leading manufacturers, Omega and Longines, accounted for only 3% of the total exports and less than 5% of the total employees (Donzé, 2014). In such a state, the market may have been vulnerable to technological disruptions. An analysis by Twinam (2020) also suggests that the industry's highly spatial nature exposed it to economic shocks. Still, this hypothesis is not backed by any tangible evidence.

Overall, the number and sizes of similar firms operating within a market may affect competitiveness in various ways. For instance, it has been suggested that the extent of concentration may reflect an industry's innovation levels. However, the theoretical and empirical evidence in this area is inconsistent. The Schumpeterian hypothesis predicts a positive relationship between concentration and innovation levels. According to this view, large companies in concentrated markets have the incentive (to maintain dominance) and capacity to conduct research and development (Aghion et al., 2015). Hence, the increased concentration would result in high innovation levels. Bykova (2017) found a positive relationship between concentration (measured by Herfindahl-Hirshman Index) and innovation. However, high concentration also implies low competition, which may reduce incentives for innovation. Consistent with this view, Rodríguez-Castelán et al. (2020) found a negative association between market concentration and productivity. Other studies predict an inverted U-curve relationship, such that increased concentration raises innovation levels to some point. Further increases after this point have reversal effects on innovation (Bykova, 2017). Thus, no conclusive evidence supports the view that the low concentration of the industrial caused the crisis.

2.2.4 The Role of Swiss Currency and Economic Shock during Quartz Crisis in 1970s

The Swiss currency market may have also contributed to the crisis in a way. Specifically, the strong Swiss franc may have made it challenging for Swiss firms to adapt efficiently to this technological change (Daveau, 2019). However, as Donzé (2014) highlights, the links between the Swiss franc, the industry's competitiveness, and the crisis are yet to be validated. Other potential factors are shocks in oil prices, the high prices of Swiss watches, changing economic climate, and high labor costs (Donzé, 2014). Still, similar to other factors, the supporting evidence is scarce.

2.2.5 The Costly Failure of Swiss Watchmakers to Adapt to Market Changes

The failure of Swiss manufacturers to respond effectively to external changes may have also led to the industry's decline. In the years leading to the crisis, Swiss manufacturers had a narrow market perspective. On this note, Tajeddini and Trueman (2008) conclude that the failure of Swiss manufacturers to match their Japanese counterparts was a case of marketing myopia. Daveau (2019) also suggests that the watchmakers underestimated their rivals' competitive strengths and failed to anticipate future changes. Instead, they chose to concentrate on their mechanical watches, which had market superiority at the time. This apparent shortsightedness may have had costly impacts on the industry.

Comparable conclusions are reported elsewhere. For instance, Schlegelmilch et al. (2003) argue that the reliance on outdated strategies and historical patterns augmented the market's exposure to external developments. As Tajeddini and Trueman (2008) reiterate, there was an apparent shortage of entrepreneurs with the courage, imagination, and vision needed to respond to the influx of Japanese novelties. The view that Swiss manufacturers ignored fundamental market changes draws support from many perspectives. For example, Daveau (2019) notes that as early as the 1960s, Japanese firms had become experimenting and developing prototypes for quartz-made watches. Although their procession was evident even in these early stages, the new technology failed to generate sufficient interest among Swiss scientists and manufacturers. Thus, as posited by Daveau (2019), Swiss industry players continued with their production ways unperturbed. However, when the quartz revolution struck, Swiss firms paid the price of this apparent blindness. Such observations highlight the need for firms to be responsive to changes in their external and internal environments.

2.2.6 Summary

In sum, the quartz crisis caused significant shocks in the watch industry, and its impacts were widespread. However, the research on its causes remains scarce. Many authors allude to the role of the quartz revelation and the resulting influx of Japanese watches as to the crisis origin. However, some

scholars, such as Donzé (2014), have questioned this hypothesis and, instead, argued that the decline had non-technical causes. This view is echoed by other scholars, such as Tajeddini and Trueman (2008) and Schlegelmilch et al. (2003), who have criticized the industry for its apparent myopic view. Nearly a decade later, the industry had recovered from the near-collapse and demonstrated robust growth. The forces behind this reemergence have received considerable academic attention.

2.3 The Re-Emergence

The comeback of the Swiss watch segment from the crisis was remarkable. From the 1980s, the Swiss market experienced rapid growth in demand and Switzerland returned to its global dominance. The number of exports increased from a low of about 30,000 in 1980 to above 50,000 in the early 1990s (Donzé, 2017a). Similarly, the number of employees grew from around 30,000 in 1980 to above 50,000 in the late 1990s (Donzé, 2017a). By 2008, Switzerland was once again the world's leading exporter, accounting for 55% of the industry's export value, from a low of 30% in the 1980s (Raffaelli, 2019). The nature of this growth and the factors leading to the reemergence have attracted the attention of several works. Factors highlighted in the literature include the launch of new products, perseverance of an old technological culture, renewed demand for old legacy (technological reemergence), new innovations, and supportive government policies (Donzé, 2011; Raffaelli, 2019). Still, as shown in this section, disagreements on the specific roles played by such variables are rife.

2.3.1 The Role of Technological Innovations

The comeback of the Swiss watch segment from the crisis was remarkable. From the 1980s, the Swiss market experienced rapid growth in demand, and Switzerland returned to its global dominance. The number of exports increased from a low of about 30,000 in 1980 to above 50,000 in the early 1990s (Donzé, 2017a). Similarly, the number of employees grew from around 30,000 in 1980 to above 50,000 in the late 1990s (Donzé, 2017a). By 2008, Switzerland was once again the world's leading exporter,

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(1) An Industrial District Defined by SMEs and Global Leader in Watchmaking Industry

The Swiss watch market is considered an industrial district and for several reasons. The unique relationship between large companies and SMEs in such an industry is another defining feature of an industrial district. An industrial district is a geographical region with several interconnected small firms and a few big enterprises with global connections (Belussi & Caldari, 2009). The latter assumes leading roles in shaping the district, especially as an export driver. According to Donzé (2017a), in the years after the crisis, the Swatch Group assumed instrumental roles as the largest manufacturer in the industry. Thus, the re-emergence of the Swiss watch market in the 1980s relied on the presence of a global leader, the Swatch Group.

(2) Technical Culture in Swiss Watch Industry

The other aspect of an industrial district highlighted in the case of the post-crisis Swiss watch market is the presence of a unique atmosphere – an old technical culture in the country. Various scholars, such as Tajeddini and Trueman (2008) Tushman (1986), have emphasized the roles of various technical aspects, such as inter-firm competition-complementarity and an industrial climate. The argument is that this technical culture enabled Swiss firms to manufacture high-quality products and reposition themselves in the market. Notable innovations in this era included solar, spring drive, and radio-controlled watches. They provided Swiss manufacturers with new opportunities to revive the

market demand, which had fallen drastically following the influx of Japanese watches. Garel (2015) also notes that the innovative design of the new Swatch watch was instrumental to the company's repositioning and the industry's revival. Such observations attribute the reemergence of the Swiss watch industry to technological innovation aided by a market-wide technical culture.

(3) The Reemergence of Legacy Technology

Apart from new innovations, other studies have highlighted the recovery of legacy technologies, otherwise known as technological reemergence. Many studies on legacy technologies view them as costly processes or systems that should be modernized. However, their reemergence may have been instrumental to the revival of the Swiss watch industry, as exemplified in Garel (2015) and Raffaelli (2019). Specifically, the recovery of previously outdated technologies may have allowed Swiss manufacturers to reposition themselves and occupy new niches.

The recovery of legacy technologies may achieve multiple objectives. Generally, legacy technologies may be defined as technologies that were built many years in the past but still play vital roles in an organization's strategies (Vijaya & Venkataraman, 2018). The reuse of these such technologies to create competitive advantages constitutes a reemergence. According to Raffaelli (2019), during an emergency, a legacy technology retrenches, either by migrating into a limited niche within the domestic market or shifting into a new market application. However, it reappears later and achieves significant and sustained demand (Raffaelli, 2019). In the case of Swiss manufacturers, incumbents and new market entrants began reinvesting in the previously obsolete mechanical watches. Thus, while their Japanese peers focused on expanding the quartz market, Swiss manufacturers concentrated on redesigning the mechanical watches.

The efforts along this reemergence extend beyond the industry's achievements before the crisis. Garel (2015), whose work focuses on the Swatch Group, argues that the company's success was due to the recycling of old mechanical watch technologies and successfully hiding it from customers. Raffaelli

(2019) also concludes that Swiss watchmakers integrated craftsmanship, precision, and luxury to create mechanical watches with new meanings and values. This reemergence was instrumental in creating new consumer segments and rebuilding competitive strategies. Hence, it may be concluded that technological inventions assumed leading roles in the revival of the Swiss watch market and the global industry.

(4) Summary

Overall, the dominant view in the extant literature is that technological innovations were instrumental to the post-crisis recovery of the Swiss watch market. However, not all scholars concur on the role of this technological revolution. On this note, Donzé (2011) observes that the technological novelties created during this period had insignificant impacts on the industry's growth following the crisis. Instead, Donzé (2011) attributes much of the revival to non-technological innovations and realignments. A similar view is favored by Jeannerat and Crevoisie (2011) who compared innovation approaches among Swiss watch firms before and after the crisis. They downplay the role of technological innovations and, instead, highlight a notable shift in marketing strategies. The next subsection reviews the literature focusing on the birth of new marketing strategies.

2.3.2 Non-Technological Innovations

(1) Introduction and the role of non-technological Innovations

Many studies have stressed the significant role of innovation in the race out of the quartz crisis. However, as mentioned previously, some authors downplay the contribution of technological growth and, instead, focus on non-technological reemergence. Non-technological innovation encompasses non-technical novel ideas or marketing approaches to repositioning a product, company, or segment (Pereira & Romero, 2013). The range of strategies in this area may include reorganizing business routines, internal processes, and external relations with customers or suppliers. Yao et al.'s (2019) findings show that although both technological and non-technological innovations may have notable impacts on an

organization's brand image, their effects are not the same. Therefore, supplementing innovative products with non-technological novelties may contribute significantly to a company's competitiveness.

(2) Non-technological Innovation's Contribution to the Revival of Swiss Watch Market

The role of non-technological innovation is stressed by various authors who doubt the contribution of technological novelties to the recovery of the Swiss watch market. For instance, focusing on the Swatch Group, Donzé (2011) argues that Swiss watch firms' recovery was based on rationalizing the production system and implementing new marketing strategies. Donzé (2011) uses the stagnation and decline of the Japanese watch market to illustrate his point. Japanese firms have the technological know-how and hold patents to create many innovative and luxury watches. Their failure to revitalize the market is due to non-technical or marketing reasons. The approach employed by Swiss manufacturers was a sharp contrast to their Japanese peers, whose emphasis was on technological growth. Donzé (2017b) and Donzé (2014) also argue that part of the revival was due to the transformation of the country's production systems to global competition. This re-adaptation also led to the redefinition of luxury brands, specifically luxury watches, and facilitated the emergence of a new generation of international brands. Therefore, it may be that much of the growth observed after the 1980s had less to do with technological innovations but more with new marketing paradigms.

(3) Evidence and Arguments from Other Sources

Similar arguments are evidence elsewhere. For instance, Jeannerat and Crevoisie (2011) note that before the 1970s, the Swiss watch industry thrived on technological competencies powered by the superiority of their mechanical watches. Their marketing strategies also stressed their industrial production and the technical quality of their products. However, after the crisis, an innovation culture that promoted diversified marketing emerged. The various strategies in this mix included effective communication, exclusive marketing, arts, such as museums and fashions, and events sponsoring and

organizations, among others. Thus, according to these authors, this non-technological innovation was central to the reemergence of the Swiss watch industry.

(4) Insights on non-technological innovations from Scholars Focused on Technological Novelties

Even scholars focusing on technological novelties have acknowledged the role of non-technological reemergence in the Swiss watch market. For instance, Raffaelli (2019) shows that Swiss watchmakers used innovative marketing strategies to reposition their old legacy, the mechanical watch, as a national identity and status marker. They recalled their successful beginnings and connected them to the future, while also redefining new market niches through community building and reclaimed competitive sets. Garel (2015) notes that effective marketing strategies were vital for the reclamation of old technologies. Similarly, although Tajeddini and Trueman (2008) stress the pitfalls of ignoring technological changes, they emphasize the need for customer-focused innovation, not only technology or product novelties. According to Tajeddini and Trueman, organizations need to source new ideas from a broad knowledge base and encourage opinions, including those they may not use immediately. Hence, non-technological innovations likely made significant contributions to the Swiss market's recovery.

(5) Summary

Briefly, various factors may have contributed to the revival of the Swiss watch industry after the quartz crisis. The research in this area has emphasized the role of variables related to technological novelties, reuse of old technologies, the transformation of the production system, and innovative marketing strategies. The current study draws on this literature but focuses on four companies that have received minimal attention. The effects of the quartz crisis may also be assessed from the perspective of economic shocks. The next section reviews the literature on the relationship between economic shocks

and innovation. Studies in this area may offer additional insight into the response strategies that Swiss firms utilized to recover from the crisis.

2.4 The Role of Economic Shocks

From the above reviews, many studies examining the fall and re-emergence of the Swiss watch industry have underscored the vital role of both technological and non-technological innovations. The effects of the crisis and the firm's responses can also be analyzed from an economic shock perspective. Economic shocks are random, non-predictable occurrences that cause widespread and lasting impacts on an economy (Aarstad & Kvitastein, 2021). Shocks can be positive or negative, depending on the direction they cause an economy to shift. The quartz crisis can be considered a negative economic shock from the Swiss watch industry's perspective because it caused declines in market performance. Hence, this review focuses on the effects of adverse shocks only.

The relationship between economic shocks and innovation can be modeled from various perspectives, such as the Schumpeterian growth hypothesis. As summarized in Aghion et al. (2015), the hypothesis has three fundamental ideas. Firstly, innovations bring about new entrepreneurs and firms, resulting in long-run growth. Innovations are, in turn, the results of entrepreneurial investments motivated by the possibility of gaining monopoly rents. Lastly, new innovations tend to replace old technologies, a phenomenon termed as creative destruction (Aghion et al., 2015). Creative destruction is a contrast to creative accumulation. Under the latter, low technological opportunities and high accumulativeness create a stable environment where large and established companies conduct bulk innovation, leading to oligopolistic markets with high entry barriers (Archibugi et al., 2013). This hypothesis can be used to model the links between external shocks, market competition, and innovation.

2.4.1 The Link between Competition and Innovation

(1) The Schumpeterian Hypothesis and the Relationship between Competition and Innovation

The Schumpeterian hypothesis offers some insights into the relationship between competition and innovation. Indeed, Aghion et al. (2015) used the Schumpeterian growth hypothesis model to analyze the link between these two variables. Their findings suggest a U-shaped (curvilinear) relationship between competition and innovation. Specifically, they noted that for low competition levels, increased rivalry encourages entrepreneurs to acquire new leads over their competitors, leading to improved innovation. In contrast, in markets with high competition levels, further increases produce reversed innovation trends as laggards give little priority to the prospect of becoming innovators. Comparable findings are reported elsewhere. For example, Aghion et al. (2018) showed that for firms operating in equal technological levels, increased competition prompts them to increase investment in research and development, leading to high innovation levels. However, for companies lagging their peers, increases in competition have negative impacts on their innovation levels. Thus, the effects of competition on innovation and creativity depends largely on existing market structures.

(2) Divergent Findings on the Relationship between Competition and Innovation

However, not all studies have generated similar results. For example, the findings of Moen et al. (2018) cast doubt on the inverse U-shape relationship. According to their study, the U-curve holds only for only one in 60 firm settings. Instead, increased competition, especially in production technology, is associated with gains in industry innovation levels.

(3) The Role of Methodology Differences in Understanding the Competition-Innovation Link

In their analysis, De Bondt and Vandekerckhove (2010) clarify that the inconsistencies in the findings result from the differences in the models used. They conclude that the relationship can be linear (negative or positive), inverted U-shaped, or non-significant, depending on the approach used and the way research and development costs are incorporated.

(4) Implications of the Competition-Innovation Relationship on Economic Shocks

Despite the inconsistency, much of the research in this area suggests significant associations between competition and innovation. This relationship may, in turn, explain the link between economic shocks and innovation.

2.4.2 Economic Shocks, Competition, and Innovation

(1) Economic Shocks and Innovation's connection

Various studies have explored the possible effects of economic shocks on innovation, but the findings in this area are inconsistent. Generally, the relationship between negative economic shocks and innovation may be two-fold. On the one hand, crises, especially those resulting in low returns, may lower the funds available for research and development. Besides, the resulting uncertainties may make firms and other entrepreneurs to be investment-averse (Archibugi et al., 2013). The combination of these two factors may culminate into reduced innovation levels. On the other hand, the presence of a crisis may prompt entrepreneurs to search for innovative ways to mitigate the adverse impacts. Thus, negative economic shocks may have both positive and harmful effects on innovation.

(2) The Interplay of Economic Shocks and Competition

The causal path from negative shocks to innovation may also be through competition. Negative economic shocks may have negative or augmentative effects on competition, depending on effects on individual firms. The presence of a crisis may result in reduced consumption trends and a subsequent fall in demand. If such a situation occurs, inter-firm rivalry may rise as there will be many business entities and few buyers. Gugler et al. (2015) confirmed that the onset of a crisis has significant effects on firms' bidding behavior. Specifically, crises may cause competition levels. However, this analysis ignores the effects of negative shocks on organizational survival. As Rose (2020) observes, the economic downtowns resulting from a crisis may cause some business entities, especially SMEs, to collapse. Remaining companies may seek for mergers, acquisitions, or other corporations to respond to demand decreases and supply issues (Rose, 2020). In that case, there may be few incentives to compete. Therefore, the relationship between economic shocks and competition depends largely on the effects of such events on individual companies and consumers.

(3) Empirical Studies on the Effects of Economic Shocks on Innovation

The findings of various empirical studies appear to support the view expressed above. Notably, Aarstad and Kvitastein (2021) analyzed the effects that an oil shock had on the innovation levels of a sample of Norwegian companies. They showed that in oil-dependent regions, the crisis undermined firm's innovative capacities due to reduced resources. In contrast, the innovation levels for firms in non-oil dependent zones were almost unaffected. Further, firms that were not innovative before the shock experienced a positive change in their innovation likely due to rising competitive pressures. However, for entities that were innovative, there was an inverted U-shaped association between oil dependency and innovation experienced a positive change in their innovation likely due to rising competitive pressures. Aarstad, and Kvitastein's (2020) results offer interesting insights into the potential impacts of unexpected shocks on innovation. Specifically, they show different shock-innovation relationships that

are mediated or moderated by factors like resource-dependence (or availability), demand, and inter-firm rivalry. Their findings are also consistent with the Schumpeterian growth model and Aghion et al.'s (2015) prediction on the association between competition and innovation.

(4) The Influence of Firm's Position on the Impact of Economic Shocks

The outcomes of a negative shock may also depend on a firm's position relative to its competitors. On this note, Archibugi et al. (2013) utilized the Schumpeterian hypothesis to examine the innovation levels of a sample of European companies before and after the 2008 Recession. According to their results, before the crisis, incumbents increased their innovation investment, likely to maintain their dominance and compete effectively with beers. In contrast, SMEs and new entrants were willing to go against the mainstream after the crisis. Consequently, they expanded their research and development facilities and expenditures.

However, Brem et al. (2020) found a negative impact of the Recession on companies' innovation levels, measured by their dominant designs. Brem et al. attribute this apparent decline to an indifference toward risk-taking. Overall, the extant research reveals mixed findings on the link between economic shocks and innovation.

2.4.3 Relevance to the Quartz Crisis

(1) Introduction of Economic Shocks on Innovation

The foregoing review has focused on the possible effects of economic shocks on innovation levels. This appraisal helps put the quartz crisis within the Swiss watch industry's innovation landscape. Briefly, negative economic shocks may have adverse impacts on innovation either by exerting additional pressures on funds for research or by reducing competition and the incentive to be creative (due to reduced number of firms and increased concentration) (Archibugi et al., 2013; Rose, 2020).

(2) The Quartz Crisis and its Implications on the Swiss Watch Industry

The quartz crisis caused notable restructuring of the Swiss watch industry. The majority of small, non-competitive players exited the market and the number of firms declined significantly, resulting in increased concentration (Donzé, 2017a). The remaining companies also lost large amounts of revenues to their Japanese peers. Theoretically, the new situation created few incentives for innovation. Hence, if internal competition and resource availability were the only variables, one would expect the industry's innovation levels to decline drastically. However, other forces were also involved.

(3) The Role of Competition and the Answer to the Quartz Crisis

In addition to internal rivalry, Swiss watch firms faced increasing competition from their Japanese counterparts. Based on the Schumpeterian hypothesis and Aghion et al.'s (2015) prediction, one would expect to innovation levels to rise then fall in an inverted U pattern. The available research showed that the companies engaged in a series of technological and non-technological innovations to respond to Japanese pressures (Donzé, 2017a; Donzé, 2014; Jeannerat & Crevoisier, 2011; Raffaelli, 2019). They were compelled to search for innovative ways to mitigate the adverse impacts. Thus, overall, it seems that the quartz crisis had positive impacts on the industry's innovation incentives. Still, it remains unclear whether the new creativity trends lasted in the long-run or formed a U-shaped curve, consistent with the Schumpeterian hypothesis. The limited research makes it challenging to appraise the possible long-term consequences.

(4) Mixed Results, Unpredictable Events, and Future Research

Briefly, theoretical models and empirical findings reveal mixed results on the possible impacts of negative economic shocks on firm's innovation levels. Such unpredicted events have positive or inverse relationships with innovation and creativity. The Swiss watch industry is a unique case because the companies had to contend against domestic competition and the onslaught of their Japanese rival's.

Thus, while many authors emphasize the role of innovation in the reemergence of the Swiss market, further research on this area can offer additional insights into the industry's behavior. Such knowledge can be particularly valuable as the country battles the COVID-19 pandemic and its spillover effects.

2.5 Summary of Literature Review

The genesis of the quartz crisis is subject to multiple interpretations. The controversies notwithstanding, this market shock had drastic impacts on watchmakers in Switzerland and other firms that depended on them. Negative shocks can sometimes have positive, and the Swiss watch market exemplifies this postulation. Despite the downturns in the 1970s and early 1980s, the industry recovered from a near-collapse. This revival is attributed to multiple factors linked to the companies' innovative behaviors. Still, discrepancies regarding the specific contributions from innovation are evident. Numerous studies focus on technology or product innovation, including the reuse of old technologies. In contrast, another stream of literature emphasizes the role of non-technology innovation in the fall and re-emergence of the industry. Thus, the research in this area has been characterized by these two conflicting views.

Overall, some investigations have assessed the strategies utilized by Swiss firms to respond to the crisis. In contrast, studies on the specific causes of the crisis and its propagation are limited. This gap is noteworthy considering that effective response strategies rely on the accurate and detailed understanding of a problem. Theoretical and empirical models suggest that the innovation and growth experienced during the recovery may have been due to increased pressure from Japanese manufacturers. However, as noted previously, not all scholars concur on the role played by Japanese watchmakers in the decline. Further, the studies in this area focus on individual firms, especially the Swatch Group. Therefore, their findings may be subject to biases. Besides, despite the Swatch Group's leading roles in the reemergence, other companies made distinctive contributions. Few investigations have explored the role played by other Swiss firms.

Previous research has emphasized the role innovation in the reemergence of the watch market. Still, many of them employ a single dominant view, focusing on either technological or marketing-oriented innovations. Few studies have endeavored to integrate these two perspectives into a unified understanding. It is also not apparent whether the innovations initiated to respond to the crisis are relevant today. Additional investigations along these directions can be insightful. The current study addresses some of these gaps by including four firms in the analysis. This increased sample size can generate new perspectives that may have not been considered previously. Additionally, it combines different perspectives, instead of focusing on either technological or marketing-oriented innovations. The study also uses the lessons drawn from these four companies to identify potential trends that might define the future watch industry.

2.6 Thesis hypothesis

Drawing from past research analysis, and the economic theory presented in the previous chapters, Three key thesis hypotheses can be formulated as followings:

(i) The revival of the Swiss watch market in the 1980s was influenced by the blend of technological and non-technological innovations implemented by the key surviving watchmakers – Piaget, Jaeger-LeCoultre, Breguet, and Blancpain.

(ii) Adopting innovative strategies positively impacted the performance of Swiss watchmakers – Piaget, Jaeger-LeCoultre, Breguet, and Blancpain.

(iii) Innovation strategies which were applied during Quartz Crisis make positive influence on future trends of the key surviving watchmakers – Piaget, Jaeger-LeCoultre, Breguet, and Blancpain.

RESEARCH METHODOLOGY

3.1 Introduction

Based on thesis hypotheses mentioned in Chapter 2.6:

(i) The revival of the Swiss watch market in the 1980s was influenced by the blend of technological and non-technological innovations implemented by the key surviving watchmakers – Piaget, Jaeger-LeCoultre, Breguet, and Blancpain.

(ii) Adopting innovative strategies positively impacted the performance of Swiss watchmakers – Piaget, Jaeger-LeCoultre, Breguet, and Blancpain.

(iii) Innovation strategies which were applied during Quartz Crisis make positive influence on future trends of the key surviving watchmakers – Piaget, Jaeger-LeCoultre, Breguet, and Blancpain

The study intended to examine the contribution of the individual Swiss watchmakers to the industry's recovery following the quartz crisis. Specifically, it explored the strategies employed by four such firms: Piaget, Jaeger-LeCoultre, Breguet, and Blancpain. The previous chapter has critiqued the supporting literature and hypothesis. The current chapter is an overview of the methodology used to address the research questions. The chapter begins with a review of the four firms in their historical and modern contexts. The specific methods used for each question are then summarized and justified.

3.2 Research Context

The study is set in the Swiss watch market. Since the 18th century, the industry was organized under the établissage system, which involved mastering each stage of the watch development process (Donzé, 2017a). This approach allowed it to be self-reliant and produce cheap mechanical watches with varying designs, sizes, and prices. By the 1970s, Switzerland accounted for over 90% of the all the mechanical watches sold worldwide (Donzé, 2014). Swiss manufacturers competed against their rivals

along three key dimensions: high-quality mechanical watches, cheap prices, and systematized production (Donzé, 2017a). The competitive gains in this area enabled them to dominate the global watch industry.

For most of its history before the quartz crisis, the Swiss watch market maintained low market concentration. For example, in the early 1900s, Longines, one of the leading manufactures, accounted for only 1.4% of the country's total exports (Donzé, 2017a). Similarly, by the 1970s, the two largest companies, Omega and Longines, contributed only 3% of the total exports (Donzé, 2017a). This partial concentration implied high inter-firm rivalry, a factor that may have facilitated its growth and innovation. As of 1970, the Swiss watch industry had about 2,200 companies with over 500 manufactures, among them Piaget, Jaeger-LeCoultre, Breguet, and Blancpain. As shown in Table 3.1, the four firms were founded at different times. The age gape between the oldest (Blancpain, 1735) and the youngest (Piaget, 1874) of the four is 139 years. Hence, they likely emerged under different historical and economic settings, a factor that justified their selection. The next sub-sections provide an overview of the four manufacturers.

Table 3.1 *The Four Companies*

Company	Founded	Founder	Head Office (Present)
Piaget	1874	Georges Edouard Piaget	Geneva
Jaeger-LeCoultre	1833	Antoine LeCoultre	Le Sentier, Le Chenit,
Breguet	1775	Abraham-Louis Breguet	L'Abbaye,
Blancpain	1735	Jehan-Jacques Blancpain	Paudex/Le Brassus,

Note: Information obtained from the companies' websites

3.2.1 Piaget

Piaget is a Geneva-based manufacturer specializing in producing luxury watches and jewelry. Currently, Piaget is a subsidiary of the Richemont group, operating 120 boutique shops in 23 countries worldwide (Piaget Around, n.d.). Since its formation in 1874, the company has perfected its procedures

for crafting luxury jewelry and watches. Georges Piaget, the founder, established the firm's first workshop on a family farm in the Jura mountains (Teillol-Foo, 2009). The company became a registered trademark in 1943 and began an expansion strategy (Teillol-Foo, 2009). About 12 years after its registration, Piaget began producing ultra-thin watch movements as a differentiation strategy. This innovation was followed by a rapid expansion phase. In 1964, the firm presented its first-ever watch with dials (Teillol-Foo, 2009). A few years after this launch, the country entered the quartz crisis. Thus, at the crisis' onset, Piaget was experiencing a rapid growth phase.

3.2.2 Jaeger-LeCoultre

Jaeger-LeCoultre (Manufacture Jaeger-LeCoultre SA) is Le Sentier-based luxury watch manufacturer, currently operating as a subsidiary of the Richemont group. Since its formation nearly two centuries ago, it has produced over 1,200 caliber watches and more than 400 patents. Currently, Jaeger-LeCoultre is among the leading brands in the industry and has a reputation for innovation. Its innovative culture (the Jaeger-LeCoultre culture) and strong identity has earned it the recognition as the "watchmaker's watchmaker" (Rénier, 2021). However, similar to other manufacturers in the industry, the quartz revolution and the resulting crisis tested this long-standing innovation history.

Antoine LeCoultre, the founder, was a member of the LeCoultre family, a French Huguenot household that had fled to Geneva, Switzerland, to escape religious persecution. In LeCoultre had invented a machine that could cut watch pinions from steel, and in 1833, he established a workshop at Le Sentier, where he improved his watchmaking skills. About three years later, LeCoultre collaborated with his son, Elie LeCoultre, to the first full-fledged production system in the the Vallée de Joux region, allowing to pool their expertise and employees' skills (Jaeger-LeCoultre, n.d.). By the early 1900s, their Manufacture, which had over 500 employees, had produced more than 350 calibers with different design and functionalities, including chronograph and repeater mechanism Jaeger-LeCoultre, n.d.). Its notable innovations during this period included the Millionomètre (1844), calibers with small complications

(1866), and a record thin movement (1907). Thus, Jaeger-LeCoultre established itself as a leading innovator, right from its formation and early history. This long-standing legacy became instrumental in its recovery after the quartz crisis.

3.2.3 Blancpain

The Le Brassus-based manufacture is the world's oldest watch brand. Since its formation in 1735, Blancpain has maintained its commitment to innovation and creativity. Indeed, the company identifies innovation as its tradition and fundamental principle (Blancpain, n.d.). In 1961, became a member of the Société Suisse pour l'Industrie Horlogère (SSIH), alongside other watchmakers, including Omega, Lemania, and Tissot. During the quartz crisis, the combination of the Japanese influx, oil crisis, a strengthening franc, and other factors imposed intense pressure on the group's manufacturing and marketing system. In 1979, SSIH's production capacity reduced to less than 50% of its pre-crisis value. The group incurred significant losses that rendered its almost obsolete (Blancpain, n.d.). In 1983, it joined with the Allgemeine Gesellschaft der schweizerischen Uhrenindustrie to form the Swatch Group (Blancpain, n.d.). Thus, the crisis had significant impacts on Blancpain's operations.

Blancpain's constant innovation approach has given a high level of control and freedom over the watch manufacturing process. In-house design and production are critical aspects of its growth strategy. The firm manufactures the majority of its parts locally, a factor that has contributed to its efficiency and competitive strength. Blancpain also focuses on reclaiming Swiss practices that were once innovative and respectful of the country's traditional watchmaking culture. Each of Blancpain's modules and collections, including Fifty Fathoms, Villeret, and the female Métiers d'Art watches are designed to match this philosophy. This seemingly conservative approach was instrumental during the firm's post-crisis recovery.

3.2.4 Breguet

Breguet is a L'Abbaye-based firm also specializing in the production and marketing of clock's watches, and jewelry. The company was established in 1775, making it one of the oldest watchmakers in the industry. Breguet has pioneered many watchmaking technologies throughout its history, and remains an icon in the Swiss luxury industry. Since 1999, the company has operated as a subsidiary of the Swatch group (Breguet, n.d.). Abraham-Louis Breguet, the brand's pioneer, founded a watchmaking business after almost a decade of learning under other influential watchmakers at the time. His previous connections allowed Breguet to establish himself as a respected watchmaker, a status that was instrumental in the company's early growth. In the subsequent years, Breguet evolved into one of the leading watchmaking brands globally. Nevertheless, this growth was slowed down during quartz crisis.

3.3 Research Approach and Design

The study adopted the deductive approach, which entails basing the design, strategy, objectives, and outcomes on existing theories. As outlined in the previous chapter, the quartz crisis may be considered as a negative economic shock because it caused significant disruptions in the global watchmaking industry (Aarstad & Kvitastein, 2021). Various theoretical models, such as the Schumpeterian hypothesis, may help understand the effects of such events on a company's innovation strategies (Aghion et al., 2015). Besides, the Swiss watch market may also be viewed as an industrial district, a geographical region that has several interconnected small firms and a few big enterprises with global connections (Belussi & Caldari, 2009). The industrial district hypothesis also emphasizes the presence of a unique atmosphere (Donzé, 2017a). These assumptions dictated various aspects of the study methods, including the choice of the design.

Despite its usefulness, theory-based deduction is relatively rigid since a study must flow within the limits set by the chosen theory. Still, with strict definition and control of variables, which was fundamental for this study, the deductive approach could generate high-quality results. A confirmatory

qualitative design was chosen for the study. The goal of the confirmatory design is to provide evidence for existing theories or hypotheses. In the present analysis, it is argued that the old technical culture prevalent in the country before the crisis provided a favorable atmosphere that propelled the industry to a recovery path. This culture facilitated the emergence of various technical and non-technological innovations that enabled Swiss watchmakers to respond to the Japanese invasion.

This qualitative study used a multiple-case design. Case studies are non-experimental designs in which an investigator exhaustively explores an entity of interest in its natural environment and observes how it relates with various elements of the environment (Rashid et al., 2019). The subject or case can be an event, organization, group of persons, or an individual. Given that the focus was on single entities, the design allowed for the generation of rich and detailed information about each case (Rashid et al., 2019). Additionally, cases for qualitative studies should be unique and have the desired attributes (Rashid et al., 2019). For this study, suitable cases would be watchmakers that existed sometime before and after switch crisis. The cases were also selected to include firms that were established under varying economic conditions. The assumption was that such differences would likely reflect on their response strategies. Therefore, the four companies were selected such that the age gaps between them based on the years they were formed were broad (see Table 3.1).

3.4 Research Methods

Table 3.2 presents a summary of the methods used to address each of the research questions. The study utilized multiple sets of primary and secondary data sources. A detailed summary of the research methods is provided in this section.

Table 3.2 *Summary of the Research Methods*

Research Question	Thesis Hypothesis	Research Variable(s)	Type of Analysis
What innovation, marketing, and branding strategies did Swiss watch companies use to respond to the quartz crisis?	The revival of the Swiss watch market in the 1980s was influenced by the blend of technological and non-technological innovations implemented by the key surviving watchmakers – Piaget, Jaeger-LeCoultre, Breguet, and Blancpain	Innovation, technological innovation, non-technological innovation	Thematic content-based analysis
What effects did such strategies have on their performance and the Swiss watch market?	Adopting innovative strategies directly made positive impact on the performance of the key surviving Swiss watchmakers – Piaget, Jaeger- LeCoultre, Breguet, and Blancpain	Innovation, productivity, profitability, revival, competition, competitiveness	
What potential trends might define the global luxury watch market in future?	Innovation Strategies which were applied during Quartz Crisis make positive influence on future trends of the key surviving watchmakers – Piaget, Jaeger-LeCoultre, Breguet, and Blancpain.	Future trends	

Note: information obtained from the company websites, published interviews and industry reports and company adverts

3.4.1 Data and Data Sources

(1) Primary Sources

Four sets of primary sources were used: news articles, previously published interviews, company adverts, and one-on-one interviews with the companies' managers. For the first category, the websites of various news agencies were searched for relevant publications. The search words included the quartz crisis, companies in the sample and their leaders, specific watch brands, or influential persons. For the second group, Google searchers were conducted for interviews with various influential persons

or experts. The names of such persons were obtained from the companies' websites, industry reports, and other sites.

The companies' advertisement campaigns during and after the crisis may also offer some insight into their response strategies. A method employed in Raffaelli (2019) was used for this search. Adverts for the four companies and their brands were retrieved from multiple sources, including Ad Patina and Time and Watches. The promotional messages in the adverts provided crucial insights into the philosophies and strategies employed by each firm before, during, and after the crisis.

Table 3.3 *List of Interviewee*

Company	Name	Contact Method	Interview Date	Interview Length
Piaget	Sarah Zhao	sz.zhao@piaget.com	12.06.2021	27 minutes
Jaeger–LeCoultre	S.Y.	+8602163302618	11.22.2021	23 minutes
Blancpain	Sally Jiang	+8602163110999	12.20.2021	24 minutes
Breguet	David Ma	+8602163296778	12.20.2021	19 minutes

Note: Information obtained from interviewees

The final data set comprised one-on-one structured interviews with four individuals currently working at each company. Three of them held marketing managerial roles, while the fourth respondent was a senior sales officer. The respondents had worked in their respective firms for two to five years. The interviews covered about four weeks, from mid-November to mid-December. Participants were recruited after they were informed of the aim of the research. The interview instrument had four questions, including 'What is your quarter new product?', 'What is the brand's future trend?', 'What is your opinion about the potential improvements on your brand?', 'Compared with other brands, what are

your strengths?', designed to identify potential future trends in the watchmaking industry. Each interview lasted for about 20 minutes and focused on four areas: the current products or innovations, the brands' future trends, potential improvements, and strategies employed by competitors. All the sessions began with a formal introduction, which entailed explaining the nature and purpose of the study. The respondents were then invited to give their thoughts on each question. The responses to various items were used to appraise the technological and non-technological trends that may shape the industry in the future.

(2) Secondary Data

The companies' annual statements before, during, and after the quartz crisis would be ideal secondary sources. Notably, information from these reports would help evaluate the companies' respective innovation strategies and financial performance during the analysis period. However, the reports were largely unavailable. Besides, none of the four companies operate as a stand-alone entity today; rather they operate as subsidiaries of other firms. Hence, it was challenging to obtain relevant information in their statements about their historical activities. Still, the four watchmakers' websites provide relevant insights into their activities before and after the crisis. The study relied on published stories on different historical and industry-based websites. The data from the two sets of sources were used to validate each other. Three such websites included the *Hodinkee*, *Time+Tide*, *Time and Watches*. *Hodinkee* provides regular news and updates on notable developments and events in the watchmaking industry. *Time and Watches* also publishes the origins and present states of various iconic watches. This website was searched to obtain information on each of the companies using various keywords.

3.4.2 Data Analysis

The analysis followed the thematic content-based approach. Content analysis involves examining the content of a given data set to identify key themes and ideas (Neuman, 2011). The technique is valuable for analyzing various forms of qualitative data. The study followed standard

procedures for content analysis, as outlined in the literature (Neuman, 2011). Textual data were examined based on a combination of words, phrases, and themes that were believed to have meaningful information (see Table 3.2). Next, a priori axial coding system using descriptive codes was developed. The coding process was deductive and was guided by the generated data, the theoretical frameworks as outlined in prior sections, and previous findings (Easterby-Smith et al., 2009). The coding system was then verified for consistency. Finally, the codes and themes were used to draw relevant conclusions and interpretations.

3.4.3 Data Quality

One of the major methodological issues in the present research concerns data quality. Notably, the study relied on secondary data from sources other than the companies' websites or reports. The researcher cannot guarantee the accuracy and reliability of such information. Some of the publications may have been exposed to the authors' biases or the dominant views prevailing at the time of the crisis. Still, the data from each publication was compared against similar information published in other sources to establish inter-reporter consistency. Such validation likely alleviated the errors and biases inherent in the reports.

3.5 A Statement on Ethics

The investigator endeavored to adhere to standard ethical principles and guidelines in research. The principal ethical issues pertinent to the present study included informed consent and autonomy (Vanclay et al. 2013). All the respondents were informed of the purpose of the research and the expected findings. Participation was voluntary, and, since all the respondents were of legal age, the researcher believed that the principle of autonomy was upheld.

3.6 Chapter Summary

The study employed a case study design based on the deductive approach to examined various strategies employed by Swiss watchmakers in response to the quartz crisis. Both primary and secondary sources provided relevant information, while thematic content-based analysis was utilized to identify major themes. The key findings are presented and discussed in the next chapter.

RESULTS AND DISCUSSION

The previous study has summarized the approach used in this study. To figure out main findings and results which were presented in Table 4.1, necessary analysis processes are required as followings:

(i) Define thesis hypotheses

Drawing from past research analysis, and the economic theory presented in the previous chapters, three key thesis hypotheses can be formulated and presented in Chapter 2.6.

(ii) Data collection

Relevant information on thesis hypotheses was gathered to address research question which was presented in Chapter 1.3. This relevant information could be qualitative data (interviews or observations) and quantitative data (numbers or statistics).

(iii) Data analysis

Analysis of data collected from various primary and secondary sources is vital for identifying specific strategies employed by the four firms in this analysis. The selection of methods is dependent on both the field of study and the nature of the dataset, with thematic analysis being a suitable approach. To structure and organize the data effectively, posteriori axial descriptive codes are developed.

(iv) Interpretation

This chapter discusses the key findings (Table 4.1) in the context of the existing literature. The chapter is organized into three sections according to the research questions. The first part reports on the innovative approaches that Swiss manufacturers employed during the crisis. The next section evaluates the impacts of the core strategies on the companies' competitiveness. Finally, the last part uses the results of the preceding sections to predict future trends in the Swiss and global luxury watch manufacturing.

Table 0.1 *Summary of the Findings According to the Research Questions*

Research Question	Thesis Hypothesis	Key Findings
What innovation, marketing, and branding strategies did Swiss watch companies use to respond to the quartz crisis?	The revival of the Swiss watch market in the 1980s was influenced by the blend of technological and non-technological innovations implemented by the key surviving watchmakers – Piaget, Jaeger-LeCoultre, Breguet, and Blancpain.	The innovation landscape in the post-crisis Swiss market had technological and non-technological domains. The former involved creating new technologies and reclaiming old legacies. Non-technological inventions focused primarily on new marketing strategies.
What effects did such strategies have on their performance and the Swiss watch market?	Adopting innovative strategies directly made positive impact on the performance of the key surviving Swiss watchmakers – Piaget, Jaeger- LeCoultre, Breguet, and Blancpain.	The technological and non-technological innovations resulted in improved image and financial gains
What potential trends might define the global luxury watch market in future?	Innovation Strategies which were applied during Quartz Crisis make positive influence on future trends of the key surviving watchmakers – Piaget, Jaeger-LeCoultre, Breguet, and Blancpain.	Customer-driven manufacturing/marketing, culture-oriented manufacturing/marketing, size reduction, increased digital marketing, and increased complexity

Note: Findings obtained from the company's websites, published interviews, industry reports and company adverts

4.1 Response Strategies During the Quartz Crisis.

Based on the first thesis hypothesis which was mentioned Chapter 2.6:'The revival of the Swiss watch market in the 1980s was influenced by the blend of technological and non-technological innovations implemented by the key surviving watchmakers – Piaget, Jaeger-LeCoultre, Breguet, and Blancpain.', this section draws on primary documents and secondary data to examine the various strategies employed by Swiss manufacturers to respond to the quartz revolution. The analysis of the four firms demonstrates that watchmakers combined both technological and non-technological innovations to reposition themselves against their Japanese peers.

4.1.1 The Role of Technological Innovations

Generally, various authors concur that innovation was key to the remarkable comeback of the Swiss luxury watch industry after the crisis. However, controversies exist on the specific innovations that led to the recovery. While one stream of the literature focuses on the emergence of new innovations, others argue that the recovery was primarily due to the recovery of previously obsolete legacies (Garel, 2015; Raffaelli, 2019; Tajeddini & Trueman, 2008). The evidence presented in the current study shows that both new and legacy innovations were crucial for the industry's recovery.

(1) Reclaiming Legacy Innovations

The two cases highlighted in this section reveal that some watchmakers focused on recovering the technologies they had used previously to create competitive advantages. For instance, Jaeger-LeCoultre's revived some of the designs used in the original Reverso. Similarly, Blancpain focused on rebuilding its existing brands.

The Reverso. Jaeger-LeCoultre's Reverso demonstrates the role played by technological innovations in the post-crisis Swiss watch industry. This outstanding innovation first appeared in 1931, following a request by a group of polo players for a watch that could withstand hard knocks (Rénier, 2021). Reverso was designed with a rotating case that had a clock and protective steel faces on either of its sides. These features allowed it survive the harsh conditions during games. Regarding the design, Nick Foulkes, a historian and watch expert, notes:

> The Reverso's design was dictated not by a desire to be different but by mechanical functionality. Its value lay not in the costliness of its materials and lavishness of its embellishments but in *the ingenuity and intricacy of its engineering* (Bajpai, 2021)

The ingenuity and intricacy played crucial roles in its adoption. The watch was popular throughout the 1930s until World War II, when it became obsolete. However, Reverso made a remarkable comeback during the quartz revolution, with the introduction of Calibre 601 (JLC 601) in

1982. Calibre 601 (JLC 601) is an ultra-thin quartz movement introduced as a response to Japanese inversions. At about 1.88 mm thick, JLC 601 was a new record as the company's thinnest watch movement at the time, similar to the 1907 caliber (*The Jaeger-LeCoultre Reverso*, n.d.). Jaeger-LeCoultre also began making Reverso cases in-house and continued to unveil new designs in the following years. A new fully in-house made Reverso was reborn, becoming a standard that has defined the firm since the 1980s. The new design appealed to many consumers, and was instrumental in LeCoultre's market penetration.

Reverso remains one of the most highly regarded luxury brands among Swiss watch experts and enthusiasts. The watch has also featured in some high-profile movies and TV shows. Consumers can choose from the various models available today. The fact that many people are willing to buy it despite its high price tags demonstrate its value. Thus, in this case, the revival strategy focused on reviving an old innovation.

There Has Never Been a Quartz Blancpain. Few watch manufacturers, if any, were as influential as Blancpain in the quest to revive the Swiss legacy as the world's leading mechanical watch market. Since its formation in the 18th century, Blancpain had maintained its reputation as the world's oldest innovator. However, the quartz revolution challenged this status, and by the late 1970s, it had rendered the firm almost obsolete. In 1981, Jacques Piguet and Jean-Claude Biver purchased the rights to Blancpain. Instead of adopting the new quartz trend, the two innovators focused on rebuilding the brand's legacy. As shown in Figure 4.1, the company's position was reflected in its promotional message, "Since 1735 there has never been a quartz Blancpain watch. And there never will be." This conservative view has been Blancpain's philosophy since then. The firm has never made quartz watches, but has focused on perfecting the mechanical watch design. Blancpain employs a series of vintage adverts to emphasize the superiority of the Swiss watch, a position that demonstrate the industry's effort to revive its old legacies. Hence, Blancpain's response strategy was partly based on reclaiming past technologies.

Fifty Fathoms and Bathyscaphe were among the brands that Blancpain renewed during the post-crisis recovery. The Fifty Fathoms line is particularly famous among water sports lovers due to its water resistance. Similar to other luxury watch brands, Japanese watches rendered these two watches almost obsolete. In the 1980s, Fathoms and Bathyscaphe were among the designs targeted by Piguet and Biver. The reclaiming of these two watches boosted their reception and market significantly. Today, Blancpain produces and markets various Fifty Fathoms and Bathyscaphe models. In an interview published in Luxio, Biver confirms this vital role of old legacies by saying:

> I respect brands, I don't build a new brand. I build the brand upon its DNA, philosophy, and message. You must respect it because the brand will outlive you. You are just a servant of the brand; you cannot put your signature on the brand (Ho, 2019).

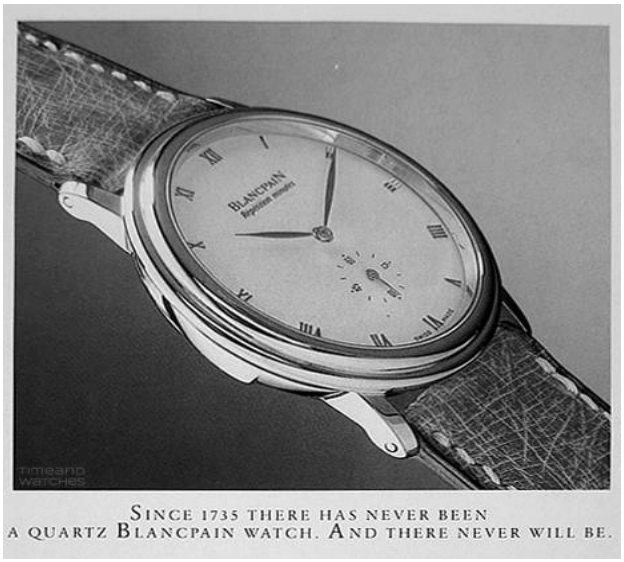
Overall, these two cases illustrate that reclaiming legacy innovations was a critical part of some watchmakers' revival strategy after the quartz crisis. This observation is consistent with the findings reported elsewhere (Garel, 2015; Raffaelli, 2019; Tajeddini & Trueman, 2008). According to Raffaelli (2019), technology emergence occurs in two phases. The first stage is characterized by manufacturers redefining new values and meanings associated with a legacy technology. Specific mechanisms include temporal distancing, value recombination, conceptual bridging, and identity marking. In the second phase, they redefine new market boundaries through competitive strategies targeting enthusiast. All these aspects were evident among technology revivers.

Table 4.2 *Summary of Legacy Technology Innovation Findings*

Company	Founded	Legacy Technology Innovation
Jaeger-LeCoultre	1833	Re-application of Jaeger-LeCoultre Reverso and combination of Reverso and JLC 601 quartz movement
Blancpain	1735	Renew of Fifty Fathoms and Bathyscphe during the post Quartz Crisis recovery

Note: The above legacy technology innovation strategy adopted by the majority of watchmakers as a common condition.

Figure 0.1 *A 1989 Blancpain Promotional Message for the Minute Repeater*



Note. When many watchmakers turned to quartz, Blancpain insisted on recovering its heritage technologies, as demonstrated in this 1989 advert. Image obtained from *Blancpain, the history of the oldest watch brand.* Copyright 2021: Time and Watches. https://www.timeandwatches.com/p/the-history-of-blancpain.html

(2) Innovating New Technology

In addition to reclaiming old technologies, the companies also adopted new technologies to enhance their competitiveness. From an industrial district perspective, the presence of a unique technological atmosphere was the key to the industry's revival (Donzé, 2017a). The assumption is that this technical culture enabled manufactures to design high-quality products and reposition themselves in the market. Various scholars, such as Tajeddini and Trueman (2008) and Tushman (1986) isolate some technology aspects that were key to the revival. They include inter-firm competition-complementarity and an industrial climate. The case of companies like Piaget and Jaeger-LeCoultre confirm this hypothesis. In an interview published in the *FHH Journal*, Gérald Piaget confirms that the 1970s was marked with a "cultural revolution" characterized by "freedom and extravagance of daring" (Clos, 2013). Hence, it may be concluded that an innovation atmosphere prevailed in this industrial district.

Swiss watchmakers had begun experimenting with quartz even before the Japanese revolution. For example, the Centre Electronique Horloger (CEH) was founded in 1962 to conduct and facilitate research in quartz movements (Frei, n.d). This Neuchâtel-based consortium of different Swiss watchmakers provided firms with various avenues to experiment with quartz. Hence, it can be argued that the shift towards quartz production in Switzerland was not necessarily due to Japanese invasion. Instead, the quartz movement was a stimulant along this direction. Indeed, much of CEH's impacts were evident during the quartz movement.

In 1969, after joining CEH, Piaget participated in the production of the first quartz movement in Switzerland, the 1300 Bêta 21 calibre. Two points stand out from this development. Firstly, although CEH existed before the crisis, its first quartz-based movement was developed shortly after the start of the revolution. Therefore, one may reason that the influx of Japanese rivals initiated additional interest in quartz-based movements. Frei (n.d.) concurs that many of the companies participating in CEH before 1966 did not consider the consortium a primary investment. None of them believed in the future of quartz-based electronic movements. Instead, they considered CEH a backup plan. Secondly, the fact that Bêta 21 calibre was the product of CEH also confirm the role a technology-oriented atmosphere. Commenting on this innovation, Gérald Piage observed that this "world's thinnest quartz movement established [the company] more firmly at the forefront of the ultra-thin watch segment." Thus, technological innovation played fundamental roles in the Piaget's recovery path.

A similar pattern emerged at Jaeger-LeCoultre. During Reverso's revival, the firm used the Computerized Numerical Control (CNC) technology for the first time in its production history (Bajpai, 2021). The computerized control allowed it to produce watch parts with improved precision, a move that increased the company's competitiveness significantly. From these two cases, it can be concluded that new technological innovations were an integral part of the Swiss watch market's recovery path.

Table 4.3 *Summary of New Technology Innovation Findings*

Company	Founded	New Technology Innovation
Piaget	1874	Involvement of CEH establishment and participate in 1300 Beta 21 calibre new quartz movement innovation
Jaeger-Lecoultre	1833	Application of Computerized Numerical Control technology in production process

Note: Note: The above new technology innovation strategy adopted by the majority of watchmakers as a common condition.

4.1.2 The Role of Non-Technological Innovations

Non-technological innovations also played significant roles in the revival of the Swiss watchmaking industry. Non-technological innovation includes non-technical novel ideas and marketing approaches that that focus on repositioning a company, industry, or its specific brands (Pereira & Romero, 2013). Donzé (2011) argued that revival was largely due new marketing strategies and the rationalizing the production systems. Similarly, Jeannerat and Crevoisie (2011) suggests that effective communication, exclusive marketing, arts, events sponsoring, and other marketing-based approaches were the primary mechanisms employed by Swiss watchmakers. Based on these arguments, the current analysis sought to establish the evidence of these approaches in the four companies in this study.

The most available sources to search for this form of evidence included the firm's marketing strategies during this period, and Blancpain is a classic example. Its tagline, "there has never been a quartz Blancpain watch" (see Figure 4.1) was one of the core marketing approaches used by the management to reposition mechanical movements. The new motto also represented a new dream for the revitalized brand. After the repurchase, Piguet oversaw technological innovations, while Biver supervised the company's marketing. Thus, there was an established market unit at Blancpain from the onset of the company's revival. This fact highlights the priority that the new administration assigned to marketing.

The new era was, indeed, marked by intense promotion at Blancpain. Biver recalls that during the initial stages, the company "didn't even have watches to show" (Ho, 2019). Instead, the firm focused on promoting the new dream, which, as Biver notes, was "disruptive" (Ho, 2019). For example, in a 1984 BaselWorld show, Biver displayed a sign with a "there has never been a watch" message in a secluded section within their booth and showed it to non-Swiss visitors only. This innovative approach allowed the brand to regain its popularity and was instrumental in its revival.

Figure 0.2 A 1986 Jaeger-LeCoultre Promotional Message for the Albatross II Series

Note. This advert contains one of Jaeger-LeCoultre's promotional messages in the 1980s that focused on differentiating the brand from competitors. Image obtained from *Jaeger-LeCoultre Albatros II Watch original advert 1986 (ref AD6920).* Copyright 2021: The Nostalgia Shop. https://www.thenostalgiashop.co.uk/products/copy-of-swiss-exactus-watch-with-colgate-and-palmolive-offer-original-advert-1968-ref-ad6918

Other manufacturers, such as Jaeger-LeCoultre, also recreated new promotional messages to distinguish them from competitors. Figure 4.2 shows a vintage advert run by Jaeger-LeCoultre during the 1980s. The promo begins with an eye-catching statement, “there is still a watch that will differentiate you from people who only believe they have to be different.” Thus, while Swiss watchmakers renewed or invented technological innovations, they also engaged in intense marketing. Specifically, their emphasis on marketing the Swiss culture may have also contributed to the post-crisis revival.

Table 4.4 *Summary of Non-technology Innovation Findings*

Company	Founded	Non-Technology Innovation
Blancpain	1735	Creation of new marketing strategy “there has never been a quartz Blancpain watch” and focus on non-Swiss market
Jaeger-LeCoultre	1833	Recreation of new promotional messages to distinguish its products from competitors’

Note: Note: The above non-technology innovation strategy adopted by the majority of watchmakers as a common condition.

4.2 Impacts of the Revival Strategies

Negative economic shocks can have disastrous impacts on macro-economies and individual firms. Still, shocks also show that they can be opportunities for learning and growth. Specifically, theoretical and empirical evidence suggest that shocks may have positive effects on companies’ innovative capacities (Aarstad & Kvitastein, 2021; Archibugi et al., 2013). In the context of the positive impact, the case of Swiss watchmakers – Piaget, Jaeger-LeCoultre, Breguet, and Blancpain – serves as compelling illustration. As the second thesis hypothesis which was stated in Chapter 2.6:’ Adopting innovative strategies positively impacted the performance of Swiss watchmakers – Piaget, Jaeger-LeCoultre, Breguet, and Blancpain.’

This latter effect was evident in the post-crisis Swiss watch industry. Despite the controversies surrounding the specific strategies employed by Swiss firms, both scholars, as well as expert opinions,

suggest that their approaches saved the industry from collapsing. The revival strategies adopted by Swiss firms had significant impacts on the performance and competitiveness.

The majority of the analyses and expert comments in this area focus on the tangible impacts, specifically, revenue growth and increase in the number of manufacturers. However, the revitalization mechanisms had both tangible and non-tangible effects, as demonstrated in this section. The latter were largely due to improved image.

4.2.1 Tangible Effects: Financial Improvements

Financial and related improvements were, perhaps, the most visible impacts of the post-crisis response strategies. The present study could not access the financial statements of the four companies before, during, and after the quartz crisis. Still, there is evidence that their financial standings improved significantly following the post-crisis innovation strategies. For example, Biver indicated in an interview that the rebuilding of Blancpain's traditional brands coincided with increased sales (Ho, 2019). While there is no data to substantiate these claims, the revival of these four companies following a near-collapse was likely due to financial improvements. Besides, previous studies have documented significant sales increases among Swiss watch manufacturers following the revolution (Donzé, 2017a; Raffaelli, 2019). Thus, it may be safe to conclude that the technological and non-technological innovations during the quartz crisis had positive impacts on the firms' financial performance.

4.2.2 Improved Brand Image: The Case of Piaget and Blancpain

The most notable non-tangible effect was improved brand image and reputation. The remarkable turnaround by Swiss firms increased their reputation and helped instill public confidence. Brand image or identity is one of the avenues for promoting a company's competitiveness. Today, many organizations dedicate significant resources to build or improve their brand identity and perception. Swiss manufactures seemed to realize the power of these tools and exploited them to respond to the

Japanese influx. For instance, regarding the post-crisis response, Piaget observes, “it is in the 70s that our name became an international brand” (Clos, 2013). Piaget’s sentiments are consistent with Donzé’s (2017b) and Donzé’s (2014) observations that the transformation to new production systems allowed Swiss watchmakers to redefine their positioning and facilitate and a new generation of international brands. The reorganization had comparable effects on Blancpain. According to the company’s history published on its website, the focus to reclaim old legacies allowed it to become one the world’s most respected brands. These observations highlight the positive non-tangible effects that the revival strategies had on Swiss firms.

4.3 Potential Trends

According to the third thesis hypothesis in Chapter2.6: ‘Innovation strategies which were applied during Quartz Crisis make positive influence on future trends of the key surviving watchmaker Piaget, Jaeger-Lecoultre, Breguet, and Blancpain.’, The analyses in this section are based on the interviews obtained from persons working at the four companies currently. The interviewees were asked to explain their new brands and potential future trends. Selected responses and the emerging themes are in Appendix A. Five themes were identified, and, as summarized in Table 4.2, they combine technological and non-technological innovations. Each of trends is discussed in the subsequent sub-sections.

Table 0.5 *Summary of the Future Trends Identified in the Interviews*

Trend	Common Condition
Customer-driven manufacturing/marketing	Increased emphasis on enriching or enhancing customer experiences
Culture-oriented manufacturing/marketing	Promoting the local culture/ integrating multiple cultures (multiculturalism)
Size reduction	Watches will become increasingly thin
Increased digital marketing	The number of watchmakers embracing digital marketing and the number of brands marketed digitally are likely to increase
Increased complexity	Future watches will likely integrate more parts or components

Note: Data extracted from author’s interviews with the companies’ respondents

4.3.1 Customer-Driven Innovations

One of the repeated themes in the interviews relate to customer-oriented manufacturing and marketing. Customer-driven manufacturing or marketing, as used in this discussion, refers to an outside-in strategy in which customers' desires and behaviors (Frau et al., 2020). This form of marketing is different from the inside-out approach in which an organization focuses on promoting its internal strengths. According to Tajeddini and Trueman (2008), the apparent shortages in customer-focused innovations in the Swiss watch market was a significant contributor to the crisis. If this observation holds, then Swiss manufactures seemed to be learning from their past mistakes. All the four interviewees highlighted an aspect of customer-driven innovations in their responses, as illustrated in these two examples. As a note, the respondents are cited using their companies' names for confidentiality.

> I believe taking care of our customers' demand and personal interest should be in the significant place of Blancpain's future development (S. Jiang, personal communication, December 20. 2021)
>
> We have different types of mechanical watches for different classes of customers. (S.Y., personal communication, November 22. 2021)

From these two examples, it is apparent that watchmakers are increasingly concerned with delivering value to their customers. One way to meet this goal is to allow customers' experiences and needs to define their design. The number of watchmakers and watch brands are expected to increase, meaning competition will intensify (Statista Research Department, 2015). Companies that take "care of [their] customers' demand and personal interests" may have competitive advantages over their peers (S. Jiang, personal communication, December 20. 2021). Accordingly, there has been increasing emphases on aspects, such as, aesthetics and cultural experiences, as evident in the interviews (see Appendix A).

Table 4.6 *Summary of Customer-Driven Innovation Trend*

Company	Founded	Customer-Driven Innovation Trend
Blancpain	1735	Interviewee of Blancpain mentioned one of Blancpain's future developments will be taking care of customer's demand and personal interest
Jaeger-LeCoultre	1833	Interviewee of Jaeger-LeCoultre figured out JLC has various watch product lines for different types of customers

Note: Data extracted from author's interviews with the companies' respondents

4.3.2 Culture-Driven Innovations

The interviews also offered insights into the roles that culture may assume in the watch industry's future innovation landscape. Indeed, cultural considerations will be an integral part of customer-focused manufacturing and marketing. The move towards a more culture-oriented production may be understood in two ways: strengthening local cultures and integrating different cultures (multiculturalism). Regarding local cultures, one of the respondents observed:

> We don't need to prove Piaget is a luxury brand. We have advanced watchmaking technique and we bring our customers watch products with *culture experience*, which I believe it is the most precious luxury services in the whole market (S. Zhao, personal communication, December 05, 2021).

Thus, Piaget believes that promoting local cultures is an essential competitive strength. The company combines culture and aesthetics to create customer value. Part of this culture-focused innovation will involve rebuilding traditional brands. The interviews revealed that some companies will continue reviving their legacy brands, a trend that was also evident during the quartz crisis. On this note, the respondent from Jaeger-LeCoultre observed: "during the whole [of 2021], we put our concentration on Reverso series and launched several memorial Reverso watches. You can check our new limited Reverso, we use enamel art and mosaic technology to bring Katsushika Hokusai's Ukiyo-e on Reverso watch" (S.Y., personal communication, November 22. 2021). Similarly, Breguet recently launched the

Classique Tourbillon Extra-Plate Anniversaire 5365. This masterpiece is “the memorial tourbillon watch” for the company’s founder (D. Ma, personal communication, December 20, 2021). These developments demonstrate the vital role that cultural revival and rebuilding will play in the future luxury watch market.

Apart from promoting local cultures, some watchmakers have begun embracing cultures from different regions. Pozzo et al. (2020) define cultural innovation as a complex co-creation that entails reflecting knowledge flow across different social environments while fostering diversity and inclusion. Thus, increased cultural diversity is also a fundamental aspect of culture-driven manufacturing. A good example is Piaget. During the interview, the respondent presented four pieces of micro-mosaic watches. These four pieces were made by Cesare Bella, one of the world-famous micro-mosaic artists (S. Zhao, personal communication, December 05, 2021). According to the respondent, each watch represents a distinct culture, specifically Chinese, Indian, Middle East, and European cultures(S. Zhao, personal communication, December 05, 2021). Similarly, Blancpain’s Villeret series combines Chinese culture with local tradition to create a unique experience. These examples suggest that multiculturalism will be a vital aspect of future innovations in the industry.

Table 4.7 *Summary of Cultural-Driven Innovation Trend*

Company	Founded	Cultural-Driven Innovation Trend
Piaget	1874	Combination of micro-mosaic art and watch collection
Jaeger-LeCoultre	1833	Combination of Japanese art and watch collection
Breguet	1775	Involvement of company history culture into watch design
Blancpain	1735	Combination of Chinese culture with local tradition in Villeret series

Note: Data extracted from author’s interviews with the companies’ respondents and company website

4.3.3 Size Reduction

Traditionally, watchmakers like Piaget and Jaeger-LeCoultre have used ultra-thin movements as their competitive strategy. The interviews revealed that this trend will continue defining the industry for many years in the future. For example, Piaget's Altiplano Ultimate Concept and Breguet's Classique Tourbillon Extra-Plate Anniversaire 5365, the companies' new brand for 2021, are among the world's thinnest watches today. These two innovations suggest that slim watches are becoming a trend. The interviews did not reveal the motivation behind slimming. Still, ultra-thin watches offer a level of convenience while also accentuating users' outfits (Perman, 2013). Hence, the emphasis on ultra-thin watches may also be a strategy for enriching customers' experiences.

Table 4.8 *Summary of Size Reduction Trend*

Company	Founded	Size Reduction Trend
Piaget	1874	Altiplano Ultimate Concept watch product line in 2021 is defined as one the of the thinnest watch collections
Breguet	1775	Classique Tourbillon Extra-Plate Anniversaire 5365 shows Breguet's innovation motivation on slim movement.

Note: Date obtained from the company's websites, past research and company adverts

4.3.4 Increasing Complexity

The decrease in watch sizes comes in the backdrop of the increasing number of components or parts. Technological innovations, such as ultra-thin movements, are allowing manufacturers to include several components and functionalities. For example, Blancpain's Villeret series has over 500 parts, including the Chinese lunar calendar (S. Jiang, personal communication, December 20. 2021). Similarly, the respondent at Piaget observed that the ultra-thin movement creates space that allows designers to add other parts. Nevertheless, Breguet's Classique Chronometrie 7727 is another example. This piece of watch is noteworthy for its magnetic pivot, a technology innovation which uses magnet to stabilize the

balance wheel and improve the precision of the timepiece. Even with this advanced technology, the Classique Chronometrie 7727 maintains a slim profile, with a case thickness of 10mm. This example demonstrates Breguet's ability to incorporate complex mechanisms into increasingly compact designs. Thus, as watches become increasingly thin, the number of parts and functions may increase significantly in the future.

Table 4.9 *Summary of Increasing Complexity Trend*

Company	Founded	Increasing Complexity Trend
Blancpain	1735	Blancpain's Villeret with Chinese Lunar calendar has more than 500 parts
Breguet	1775	Magnetic pivot's application in Classique 7727, such new innovation improved precision and balance wheel stabilization

Note: Data extracted from author's interviews with the companies' respondents

4.3.5 Increasing Digital Marketing

The marketing-oriented innovations that emerged during the quartz crisis were instrumental in repositioning the country's brands within the global market (Donzé, 2014; Donzé, 2017b). Today, watchmakers are still experimenting with different strategies, including digital marketing, to enhance competitiveness. Digital marketing occurs primarily through online channels, such as emails, web-based adverts, social media, and text or multimedia messages.

Notably, Breguet has been proactive in adopting these digital avenues. They strategically use social media platforms to provide valuable content, including behind-the-scenes glimpses into their manufacturing production process and detailed images of their watches, which engage their enthusiasts. Breguet also leveraged its official website for immersive digital experiences. For example, Breguet launched a virtual online exhibition titled "Breguet, Watchmaker to the Royal Navy" in 2021

(Breguet,n.d.). This exhibition allowed website visitors worldwide to figure out Breguet brand's history and its maritime horology connection.

However, the interviews revealed that not all watchmakers exploit these avenues. For instance, the respondent at Jaeger-LeCoultre felt that the company lacks experience in digital marketing. Instead, it focuses on offline activities, including watch guild shows, loyalty membership activities, and anniversary events (see Appendix A).

Digital marketing trend may change as the firm adjusts to unpredictable developments, such as the ongoing COVID-19 pandemic. Indeed, in the 2021 financial year, Jaeger-LeCoultre's digital sales in East Asia rose by over 80% (S.Y., personal communication, November 22. 2021). Jaeger-LeCoultre's example suggests that the number of companies using digital marketing platforms is likely to grow in the coming years.

Table 4.10 *Summary of Digital Marketing Trend*

Company	Founded	Digital Marketing Trend
Breguet	1775	Virtual online exhibition titled "Breguet, watchmaker to the Royal Navy" in 2021
Jaeger-LeCoultre	1833	Focus on digital marketing and according to interview, Jaeger-Lecoultre's digital sales in East Asia rose by 80%

Note: Data extracted from author's interviews with the companies' respondents, company website and past research

4.4 Chapter Summary

The above discussion suggests that Swiss manufacturers employed various technological and non-technological innovation strategies to respond to the influx of Japanese watches during the quartz crisis. The combination of these methods resulted in both financial and non-tangible gains. The analysis has also identified five trends that may define the global watch industry in the future. The next chapter summarizes the key findings and their implications.

It is the key findings which were figured out in Chapter 4 that can verify thesis hypothesizes which were stated as followings:

(i) The revival of the Swiss watch market in the 1980s was influenced by the blend of technological and non-technological innovations implemented by the key surviving watchmakers – Piaget, Jaeger-LeCoultre, Breguet, and Blancpain.

(ii) Adopting innovative strategies positively impacted the performance of Swiss watchmakers – Piaget, Jaeger-LeCoultre, Breguet, and Blancpain.

(iii) Innovation strategies which were applied during Quartz Crisis make positive influence on future trends of the key surviving watchmakers – Piaget, Jaeger-LeCoultre, Breguet, and Blancpain.

CONCLUSION

The current study sought to assess the strategies employed by watchmaking companies in in response to the quartz crisis. According to thesis hypothesis which was stated in Chapter 1.2, the thesis focus was on Swiss firms, and three research questions were formulated as follows: (i) What innovation, marketing, and branding strategies did Swiss watch companies use to respond to the quartz crisis? (ii) What effects did such strategies have on their performance, the Swiss watch market, and the worldwide industry? (iii) What potential trends might define the global luxury watch market in the future? The preceding chapter has presented detailed discussions of the study outcomes. This chapter provides formal answers to the research questions. The study limitations and recommendations are also presented and justified.

5.1 Summary of the Main Findings

5.1.1 What innovation, Marketing, and Branding Strategies Did Swiss Watch Companies Use to Respond to the Quartz Crisis?

Following the thesis hypothesis:' The revival of the Swiss watch market in the 1980s was influenced by the blend of technological and non-technological innovations implemented by the key surviving watchmakers – Piaget, Jaeger-LeCoultre, Breguet, and Blancpain, the analysis of different primary and secondary documents showed that Swiss strategies employed both technological and non-technological innovations to respond to the influx of Japanese watches. These results reconcile the findings of previous studies, most of which have focused primarily on either technological or non-technological approaches. Many manufacturers concentrated on developing new technologies based on quartz to enhance the precision of their watch movements. A good illustration of this point is the Centre Electronique Horloger (CEH). Although the Neuchâtel-based consortium existed before the quartz revolution, most of its works were evident in the 1980s. Piaget's 1300 Bêta 21 calibre was among the

first quartz movements in Switzerland and was the product of this association. It should also be noted that research in quartz among Swiss manufacturers started before the revolution, as exemplified by CEH. However, the Japanese invasion stimulated renewed interest in this area.

While some watchmakers shifted to developing quartz movements, others returned to previously obsolete technologies. The cases of Jaeger-LeCoultre's Reverso and Blancpain demonstrate that the reclaiming of legacy technologies was instrumental to their revival. Swiss manufacturers also exploited various non-technological innovations. The above analysis has emphasized mainly the marketing strategies used during this period. Watchmakers focused on repositioning their brand within the Swiss culture, including prioritizing mechanical watches. Hence, non-technological innovations were also vital to the Swiss recovery.

5.1.2 What Effects Did Such Strategies Have on their Performance and the Swiss Watch Market?

Economic shocks can have positive and negative impacts on a market. The quartz crisis had drastic effects on Swiss manufacturers, but it is noteworthy to hypothesize that adopting innovative strategies may have positively impacted the performance of Swiss watchmakers, such as Piaget, Jaeger-LeCoultre, Breguet, and Blancpain. The response strategies initiated by the firms contributed significantly to the industry's revival and growth. The present study did not evaluate the company's financial positions after the crisis. Still, evidence from previous investigations indicates that Swiss firms registered notable sales improvements during the late 1980s. Additionally, the remarkable post-crisis recovery gave Swiss manufacturers had a positive impact on their image. For example, both Piaget and Blancpain report that their recognition increased significantly following their response innovations. Thus, it may be concluded that the revival strategies employed by Swiss watchmakers were effective.

5.1.3 What Potential Trends Might Define the Global Luxury Watch Market in the Future?

Based on the thesis hypothesis which is stated as following:' Innovation strategies which were applied during Quartz Crisis make positive influence on future trends of the key surviving watchmakers – Piaget, Jaeger-LeCoultre, Breguet, and Blancpain, thematic analyses of interviews with current employees of the four companies identified at least five trends that may characterize the future watch industry. The five are customer-driven manufacturing/marketing, size reduction, culture-oriented manufacturing/marketing, increased digital marketing, and increased complexity. The luxury watch market is increasingly competitive, and manufacturers must be highly innovative to ensure their survival. Specifically, customer needs and behaviors will continue assuming central roles in product design and marketing. Firms that employ an outside-in approach will have increased survival probability. Part of this customer-focused marketing will involve cultural innovations. Future products and marketing strategies will focus on promoting local cultures while also integrating cross-border cultures.

Future watch movements will become increasingly thin to continue the slimming trend that has characterized the industry for many centuries. Rapid technological advancements will facilitate progress along this direction. Besides, ultra-thin movements will allow manufacturers to pack many parts with different functionalities. Therefore, future watches will become increasingly complex. Finally, the number of watchmakers embracing digital marketing and the number of brands marketed digitally are likely to increase. These five trends will define the luxury watch industry for many years to come.

5.2 Research Limitations and Further Research

5.2.1 Research Limitation

The study's findings are subject to several limitations inherent in its design. Notably, a case study design was adopted to help generate detailed knowledge about the companies' post-crisis responses. However, case studies usually lack scientific rigor, making it challenging to generalize the findings to non-represented population members. Specifically, the study's sample featured four

watchmakers only; hence, there is minimal scientific basis to extend the results to other Swiss manufacturers. Besides, the descriptive qualitative design exposed the results to subjective opinions and biased interpretations.

Data shortages also limited the study's scope and relevance of its findings. For example, the data needed to evaluate the companies' financial performance before and after the quartz crisis was unavailable. Although the study explored the impacts of the organizational response strategies, only positive outcomes were prioritized. Relevant data to analyze the potential adverse effects was unavailable. Besides, some conclusions are based on the firm's websites, which may also be biased. The limitations notwithstanding, the study offers vital insights into the Swiss watch market during and after the quartz revolution.

5.2.2 Further Research

The study also highlights some opportunities for further research. As noted previously, the generalizability of the present findings is limited by the small sample size. Besides, the case study design lacks scientific vigor. Future studies can attempt to address the same questions using larger samples with improved designs. Further, the study looked at the positive impacts of the post-crisis response strategies. Future investigations can consider examining the adverse outcomes that may have resulted from the company's response mechanisms. Many studies in this area have focused on the Swiss market. However, the Swiss crisis had a global reach and affected other firms outside Switzerland. Moreover, there is limited research on non-manufacturing firms within the watch industry. Future studies should attempt to replicate the above findings using non-Swiss manufacturers and consider including non-manufacturing companies in the luxury watch market.

5.3 Further Practice for Watch Companies

Economic shocks are recurring events and may adversely impact local and global markets. However, the ongoing COVID-19 pandemic has demonstrated that many organizations may not be prepared to combat such disruptions. The restrictions related to the pandemic have forced many companies to terminate their operations and exit the market. However, COVID-19 may not be the last of such disasters; thus, business entities need to be prepared for such occurrences. The lessons learned from the Swiss crisis can be valuable in this regard.

Managers should endeavor to create and maintain innovative cultures in their organizations. The role of innovation and creativity in the revival of the watch industry is emphasized throughout this report. The results show that the creative responses initiated by the companies were instrumental to the industry's revival. However, firms should not wait for a shock before implementing such strategies. Instead, innovation should be an everyday component of their operations. An innovative culture will enable firms to respond to shock-related disruptions. Besides, companies should prioritize both technological and non-technological innovations. Technological innovations were instrumental to the recovery of the Swiss watch market. However, the present analysis shows that marketing-based non-technological novelties were equally critical. Therefore, an organization's innovation landscape should emphasize both non-technological and technological strategies.

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Appendix A. Interview Responses and Generated Themes

For the reader's convenience, interview responses and generated themes are presented in Appendix A.

Questions and Responses	Key Themes
Q1. What's your quarter new product?	
Piaget Compared with other luxury watch brands, Piaget pays less interest on publicity of its luxury label in the market. We don't need to prove Piaget is a luxury brand. We have advanced watchmaking technique and we bring our customers watch products with culture experience, which I believe it is the most precious luxury services in the whole market. New brand: Altiplano Ultimate Concept	Enriching customer experiences (customer-driven) Culture-oriented manufacturing Watches become thinner
Jaeger-LeCoultre 2021 is important for Jaeger-LeCoultre since this year is 90th anniversary of our famous Reverso series mechanical watch. During the whole year, we put our concentration on Reverso series and launched several memorial Reverso watches	Improving traditional brands
Breguet Our quarter new product is Classique Tourbillon Extra-Plate Anniversaire 5365. It is the memorial tourbillon watch for the manufacture's founder, Abraham-Louis Breguet. The interesting point of this watch is that its tribute piece is produced in 35 numbered pieces, which equals the number of tourbillons produced by Breguet in this lifetime	Reviving traditional brands
Blancpain You are our loyal customer. And definitely you know our villeret series watch. You can find there is Chinese lunar calendar on the watch dial. Honestly, it is difficult for all watch makers to add Chinese lunar calendar into mechanical watch. There are more 500 parts in this watch. Compared with tourbillon mechanical watch, it is more complex. Combining Chinese lunar calendar function and traditional Blancpain watch model cost the whole watch factory five years	Increased complexity (many parts) Multiculturism
Q2. What's the brand's future trend?	
Piaget To create such the special Ultra-thin watch, Piaget factory combines movement and watch case together. In that case, technical staff save huge amount of space of the watch to assemble another watch component. Obviously, combining watch case and movement is not something new in watch industry. In 1970s, this kind of watch making designing was applied in ETA Quartz Delirium movement. However, the difficulty level of mechanical watch making is totally different from quartz watch making.	Increased complexity/ number of components
Blancpain The exciting point of this watch model is that Blancpain combines traditional culture (Chinese tradition and Blancpain watchmaking technique) together to create totally new experience to our customers. I believe villeret is Blancpain's watchmaking success and the luck of our Great China area market. Such the watch model presents our attention and concentration on this market.	Culture-oriented manufacturing Multiculturism (combining cultures) Customer-driven manufacturing

Q3. What's your opinion about the potential improvements on your brand?	
Blancpain I know some critics believe Blancpain should not cater to Chinese market too much and they think it is more important for Blancpain to improve its watchmaking technique. I totally agree their opinion. However, I believe taking care of our customers' demand and personal interest should be in the significant place of Blancpain's future development	Customer-oriented manufacturing
Jaeger-LeCoultre Personally speaking, I think Jaeger can improve its diligence on digital marketing. Compare with other brands, Jaeger pays more attention on offline activities, such as watch guild show, loyalty membership activities and great anniversary events. However, as you know, because of covid-19, almost all offline activities halted and we have to figure out different kinds of marketing strategies. And until this moment, I found Jager lacks too much experience on digital marketing. However, I think covid-19 is also a chance for Jaeger. I am digital marketing manager and in 2021, Jaeger's digital sales increased more than 80% in East Asia region. I think such the nice performance can wake our headquarters' attention on digital marketing and give digital department more resources	Increased digital marketing
Breguet	
Q4. Compared with other brands, what's your strengths?	
Jaeger-LeCoultre I believe compared with other brands, Jaeger has better product diversity. We have different types of mechanical watches for different classes of customers. For example, at the beginning, our Reverso is sports mechanical watch. However, with time goes by and our designing improvement, Reverso is famous with its elegant and delicate structure and designing. What is more, here is our master ultra-thin series, I know most of our loyal customers don't like this series since they believe this series pulls down our brand's reputation with its common quality movement. But it is also the truth that ultra-thin series contributed most of our profits and its sales amount is much larger than Reverso series. Only with the profit support from ultra-thin series, we can pay concentration on the movement improvement of Reverso series. And by the way, with master ultra-thin series, more and more people can start their journey in mechanical watch world. And I think it is good for not only Jaeger but also the whole mechanical watch industry.	Reviving mechanical watches Customer-driven manufacturing Reducing sizes (ultra-thin)
Piaget We just hope as the world's leading luxury watchmaker, Piaget provides our customers not only just a watch but also aesthetics and culture. Piaget tries combining different kinds of artistic form of expressions with watch. (*During the interview, the respondent presented four pieces micro-mosaic watches*). These four watches were made by Cesare Bella, who is the world-famous micro-mosaic artist. Each watch represents a culture. Cesare Bella presents Chinese, Indian, Middle East and European culture on these four pieces watches. And these pieces watches constitute the silk road series products. This is one of our attempts to endow culture symbol into our watch products. And you can find there is no jewellery in these watches. All you are seeing now are just about superb micro-mosaic culture and profound history of these four culture regions. (Introduction about watch parameters) With this product, we just want to prove luxury is not only about jewelleryFF but also about culture and aesthetics	Size reduction Culture-driven manufacturing/ multiculturalism Customer-driven manufacturing Culture-aesthetics integration