

VUCA AND LUXURY - CHALLENGES FOR EXPORT DEPENDENT GEM AND
JEWELRY SMEs AND WHAT CAN BE
LEARNT FROM THE PAST

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Dedication

I dedicate this Doctor of Business Administration thesis to everyone who has supported me on this journey.

To my children, Hayden and Lola: Your endless joy around the house brought light to the most difficult moments of this journey. My parents, Irene and Lasse, thank you for decades of support and endless love.

To my wife Annie, thank you for always standing by my side. Your support and belief in my abilities have been monumental. You are my rock and refuge. It is your support, sacrifice and patience that made this all possible.

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ABSTRACT

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Gems and jewelry are among Thailand's leading export products with approximately 80% of output being exported. It is also a vital industry in terms of job creation, accounting for hundreds of thousands of jobs nationwide with most businesses being classified as Small and Medium Sized Enterprises (SMEs). Small businesses are often more exposed to challenges than bigger companies in times of uncertainty, something researchers refer to as 'liability of smallness'. This liability of smallness is often linked with lack of resources, increased difficulties in accessing capital, loans, and their ability to keep key employees etc., all which becomes even more difficult in Volatile, Uncertain, Complex and/or Ambiguous (VUCA) environments. The reality becomes even more complex since gemstones and finished jewelry are considered discretionary products, meaning they are among the first purchases a wide range of consumers cut back on in times of uncertainty. Geopolitics, ESG trends, technological advancements, economic or political turmoil, international trade regulations along with other VUCA elements tend to have an impact on the performance of businesses. This study, therefore, intends to form a deeper understanding of the complex interrelation between Thai gem and jewelry SMEs and their

competitiveness in the global VUCA environment. How export dependent gem and jewelry SMEs interpret their experiences of VUCA environments, construct their direction thereafter, and what meanings they attribute to these experiences.

The idea is to generate an analysis which identifies VUCA factors related to the gem and jewelry industry and to widen the understanding concerning ways SMEs interpret and respond to these challenges through various means such as decision making, management, strategy, marketing, pricing, products, operations, technological advances et cetera and to explore which VUCA type stands most challenging going forward.

TABLE OF CONTENTS

List of Tables	x
List of Figures	xi
CHAPTER I: INTRODUCTION.....	1
1.1 VUCA and the gem and jewelry industry	1
1.2 VUCA as concept	4
1.3 SMEs and the liability of smallness.....	6
1.4 Research Objectives.....	7
1.5 Research Problem and Problem Statement	9
1.6 Purpose of the Research.....	10
CHAPTER II: REVIEW OF LITERATURE	12
2.1 Theoretical Framework.....	12
2.2 The four elements of VUCA.....	14
Below follows individual description of each of the elements in VUCA.	14
2.2.1 Volatility	14
2.2.2 Uncertainty.....	15
2.2.3 Complexity.....	15
2.2.4 Ambiguity	15
2.3 Small and Medium sized Enterprises (SMEs)	16
2.4 Thailand and SMEs.....	16
2.5 Gem and jewelry SMEs in Thailand.....	17
2.6 Jewelry, diamonds and gemstones – important export trends and factors	18
2.7 Strategy and strategic planning	22
2.8 Strategic Management shifts.....	23
2.9 Leadership and adaptation in a VUCA world.....	23
2.10 VUCA envisioned.....	24
2.11 Managing VUCA situations involving risk, volatility, and survival.....	27
2.12 Changing market trends, changes focus of research.....	28
2.13 Impacts on SMEs due to VUCA.....	29
2.14 Impacts on SMEs during COVID-19.....	31
2.15 Impacts on SMEs during the Global Financial Crisis.....	32
2.16 VUCA and strategies	33
2.17 SMEs Agility and Organizational Agility.....	35
2.18 Market disruptions and the influx of laboratory diamonds.....	35
2.19 Gem and jewelry SMEs, VUCA and Organizational Agility	36

CHAPTER III: METHODOLOGY	38
3.1 Overview of the Research Problem	38
3.2 Purposeful Sampling.....	40
3.3 Criterion-based Selection.....	41
3.4 Validity and Reliability.....	42
3.5 Member checking and validation.....	42
3.6 Audit Trail.....	43
3.7 Non bias	44
3.8 Data Saturation.....	44
3.9 Improving analytical accuracy through expert collaboration	46
CHAPTER IV: RESULTS.....	48
4.1 Research Questions	48
4.2 Theme 1: Strategic Responses to Current VUCA.....	48
4.2.1 Word Impact Analysis: Strategic responses to current VUCA.....	49
4.2.2 Word Cloud Analysis supporting Strategic Approaches to VUCA	51
4.2.3 Emerging subthemes under “Strategic Responses to VUCA”.....	52
4.2.4 Alignment with literature	55
4.2.5 Alignment with the Research Questions.....	56
4.3 Theme 2: Current VUCA environment challenges.....	60
4.3.1 Word Impact Analysis: Current VUCA environment challenges.....	60
4.3.2 Word Cloud Analysis on Current VUCA environment challenges.....	63
4.3.3 Emerging subthemes under “Current VUCA Environment Challenges”	64
4.3.4 Alignment with literature	67
4.3.5 Alignment with Research Questions.....	68
4.4 Theme 3: Crisis Response and Adaptation Strategies in VUCA.....	69
4.4.1 Word Impact Analysis: Crisis Response and Adaptation Strategies.....	69
4.4.2 Word Cloud Analysis on Crisis Response and Adaptation	72
4.4.3 Emerging subthemes under Crisis Response and Adaptation Strategies.....	73
4.4.4 Alignment with literature	76
4.4.5 Alignment with Research Questions.....	76
4.5 Theme 4: Future Outlook and long-term Viability.....	78
4.5.1 Word Impact Analysis: Future Outlook and long-term Viability	78
4.5.2 Word Cloud Analysis on Future outlook and long-term viability	81

4.5.3 Emerging subthemes under Future outlook and Longterm viability	82
4.5.4 Alignment with literature	85
4.5.5 Alignment Research Questions.....	85
4.6 Coding Matrix results	86
CHAPTER V: DISCUSSION.....	89
5.1 Discussion of Results.....	89
5.2 Temporal Progression: The VUCA navigation through themes.....	89
5.3 Relations to Research Question 1 (RQ1)	90
5.4 Relations to Research Question 2 (RQ2)	91
5.5 Relations to Research Question 3 (RQ3)	92
5.6 Strategic thinking beyond reactive responses	92
5.6 Capability as an evolution.....	92
5.7 VUCA Competence Development Model	93
5.8 Industry development.....	94
CHAPTER VI: SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS.....	95
6.1 Summary	95
6.2 Implications.....	96
6.3 Recommendations for Future Research.....	96
6.4 Conclusion	97
APPENDIX A INTERVIEW GUIDE	99
APPENDIX B INFORMED CONSENT.....	102
REFERENCES	104

LIST OF TABLES

Table 1: Interview participant data	46
Table 2: Word impact analysis: Strategic Responses to current VUCA	50
Table 3: Word Impact Analysis: Current VUCA environment challenges	61
Table 4: Word Impact Analysis: Crisis Response and Adaptation.....	70
Table 5: Word Impact Analysis: Future Outlook and Longterm Viability.....	79

LIST OF FIGURES

Figure 1: Visual of research problem.....	6
Figure 2 - VUCA visual - adapted from (Kraaijenbrink, 2019)	25
Figure 3: Word impact analysis: Strategic Responses to current VUCA	51
Figure 4: Word Cloud Analysis: Strategic Responses to current VUCA	52
Figure 5: Word Impact Analysis: Current VUCA environment challenges	62
Figure 6: Word Cloud Analysis: Current VUCA Environment Challenges.....	64
Figure 7: Word Impact Analysis: Crisis Response and Adaptation	71
Figure 8: Word Cloud Analysis: Crisis Response and Adaptation.....	73
Figure 9: Word Impact Analysis: Future Outlook and Longterm Viability	80
Figure 10: Word Cloud Analysis: Future Outlook and Longterm Viability.....	82
Figure 11: Coding matrix 1	87
Figure 12: Coding Matrix 2	88
Figure 13: VUCA Competence Development Model.....	94

CHAPTER I: INTRODUCTION

1.1 VUCA and the gem and jewelry industry

What does VUCA markets or environments mean to Thai gems and jewelry SMEs and how do they make sense of these rapid and complex changes? That is the essence of this research that looks at insights provided by business owners and managers with decades of experiences in the industry and highlights their lived experiences through various elements.

“Never let a good crisis go to waste.”

This famous quote is supposedly voiced by Sir Winston Churchill while setting up the United Nations after the end of World War 2 (Belk, 2020). The quote has been mirrored repeatedly, for instance by Rahm Emanuel, President Barack Obama’s Chief of Staff, with the wording “it’s an opportunity to do things you think you could not do before” (Patel and Spilsbury, 2010). Essentially, it’s how VUCA must be approached, as an eye opener to recognize a wide range of external forces impacting businesses performance and to find ways to stay competitive.

According to Cousins (2018) VUCA defines today’s competitive environment in the digital economy under which businesses must learn and adopt to face the rapid changes and complex realities under which they operate. The arrival of the Covid-19 virus is another example of how VUCA quickly can change the entire foundation of how business is being conducted, something that was perfectly portrayed by Bratianu and Bejinaru (2021, p. 11)

with the quote: *“the covid-19 crisis came like any other natural disaster, finding people and organizations unprepared for disruptive power and social nexus”*.

In a similar way Lawrence (2013) analyzed the pre- versus post financial crisis of 2008-2009, which exposed just how obsolete some business models become when having to compete in a ‘new normal’ world characterized by volatility, uncertainty, complexity and ambiguity. Price et al.(2022) discuss similar challenges that plans easily become obsolete in fast changing environments.

A later example of unexpected VUCA could be the Russia-Ukraine war which intensified during 2022 resulting in market turbulence, sanctions, regulations on logistics affecting Thai gem and jewelry exports to both Ukraine and Russia. Sanctions towards Russian mined diamonds also had huge impact on the diamond trade since Russia is the world’s largest miner of diamonds totaling annual sales surpassing \$4 billion USD (Oxford Analytica, 2024).

During Covid-19, for instance, supply chains transitioned from a ‘just in time’ to a ‘just in case’ reality for businesses (Shih, 2022). While the pandemic peaked, factories closed, making it temporarily harder for newly mined gems to cross international borders since brokers and traders were unable to travel and show new mining productions. A few months into the pandemic products started moving while people still couldn’t.

Further examples of VUCA can be the dramatic drop in naturally mined diamonds following the rapid influx of lab-grown diamonds across jewelry segments (Scott, 2024). While this is not a dissertation arguing for or against lab-grown diamonds, it merely shells attention to how such market disruption affects strategies of SMEs in the industry. VUCA environments are not necessarily standalone events, like a financial crisis, but more

ambiguous by nature, often complex in the way that one event creates another over the course of time. For instance, traditionally, up until perhaps 20 years ago the industry had a clear supply chain structure where a gemstone for instance would move from artisanal miners to cutters, to brokers, to a local gem trading houses in Africa, South America or Asia, to a gem dealer in the West, to a jewelry designer, to a retail store and, finally to the end-consumers. With Instagram, eBay and other social media or shopping platforms this structure was disrupted meaning gemstones now can skip from the first to the final link in one click.

Traditionally gemstones, diamonds and jewelry have been industries greatly dependent on face-to-face meetings at international/local trade shows with the reason being that buyers wanted to inspect the precious gems/diamonds in person before deciding on a purchase. With prices often fetching high amounts buyers prefer to examine the stones in person since even a tiny variation in color or clarity could mean a substantial difference to the price-tag they'd be willing to pay.

When Covid-19 forced borders to close and companies stood unable to meet their customers in person it forced many sectors to rapid change and strategy adjustments. Instead of selling through traditional channels many businesses turned to social media and other online platforms to uphold turnover (Akram et al., 2021; Gu et al., 2021; Rindita et al., 2021). For gem and jewelry businesses it became a necessity to visually present the jewels with absolute accuracy through videos and images while at same time providing that exclusive 'buying experience' matching expectations of their targeted customers.

1.2 VUCA as concept

According to Feversani et al. (2022) research on the VUCA topic gaining interest over the past decade most attention on management practices has been on larger operations with modules mostly aimed at larger companies, appearing to expensive and unfeasible for SMEs. To understand how VUCA is defined in research journals there are several extensive Literature Reviews summarizing the most accurate definitions. Below summary accurately defines the VUCA-acronym:

Volatility is larger scale trends or changes such as turbulent economies, social and political events, or demographic change.

Uncertainty is indirectly linked to the above volatility in the way that it's harder to predict the future based on past events, making traditional planning, forecasting decision-making systems increasingly irrelevant.

Complexity means that outcome is unpredictable because there are multiple factors that could have cause-and-effect impact independently.

Ambiguity regards to the set of data on which decisions being made as confusing and often incomplete (Wignall and Silvester, 2018).

VUCA research on SMEs is still developing yet there are some interesting studies in the past few years(Buckley, 2019; Eka et al., 2021; Santoso et al., 2020; Troise et al., 2022a)discussing the effects of VUCA on small businesses and how to apply agile strategies effectively in international business. Feversani et al. (2022) discuss that VUCA affects businesses of all sizes, especially SMEs since they often lack the resources that allow them to adopt or innovate according to customers' needs as well as their management practices. Santoso et al. (2020)discusses SMEs in Asia and how they differ in structure to western SMEs. According to Troise et al. (2022a) organizational agility has a positive

impact on SME performance where the outcome can be seen in terms of financial performance, product and process innovations.

To better describe my temporal-sequenced research questions I developed figure 1 to visualize agile capabilities for a export-dependent industry, dealing with the liability of smallness while selling products of discretionary nature. The research questions being:

Research Question 1 (RQ1): How did export dependent Gem and Jewelry SMEs interpret and respond to previous major VUCA environments such as the Financial Crisis of 2008-2009 and the Covid19 pandemic?

Research Question 2 (RQ2): Which ongoing VUCA-related scenario is perceived as the most challenging and what competitive strategies are currently employed by export dependent gem and jewelry SMEs in response to this environment?

Research Question 3 (RQ3). How do export-dependent gem and jewelry SMEs perceive the business environment going forward, and which challenges are seen as the most critical for their long-term survival and competitiveness?

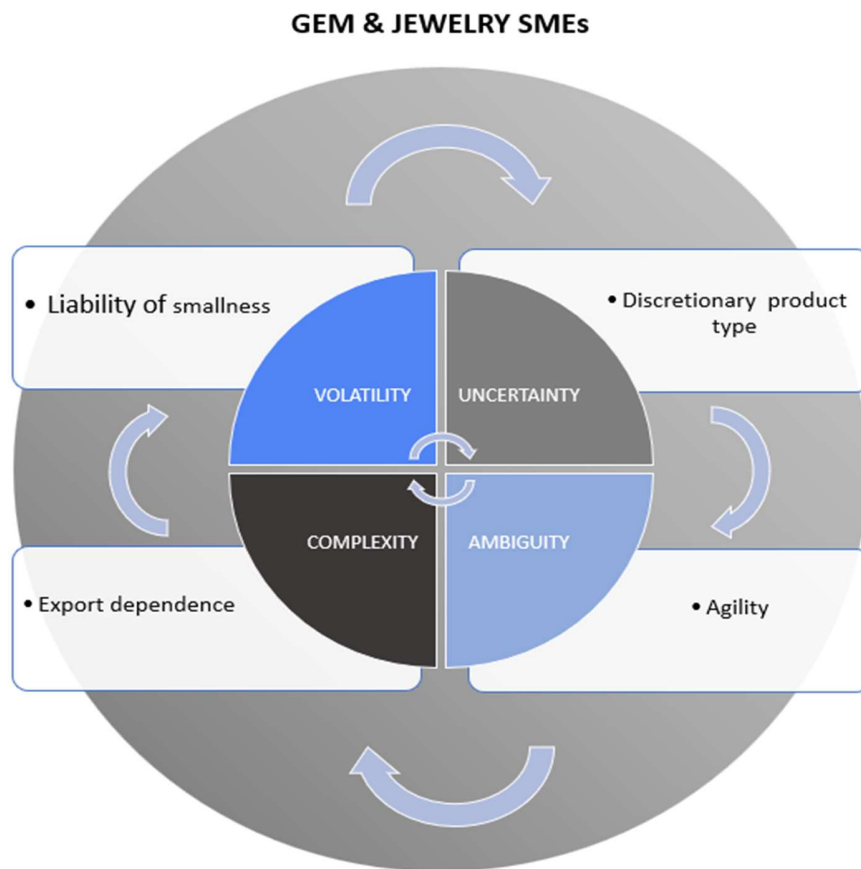


Figure 1: Visual of research problem

1.3 SMEs and the liability of smallness

It's not uncommon for small businesses to extensively depend on a local, regional, or national customer base with examples ranging from restaurants, cafés, beauty salons, law firms, transportation, spas, retail stores among many others. The products are of a local nature where exports simply are not an option. The list of such businesses is extensive and creates most jobs in local communities.

Thailand's gem and jewelry SMEs are on the other hand remarkably export-dependent with up to 80% of production going on export (GIT, 2009). This is a number that very likely stands steady since Thailand since decades back has been a global hub for jewelry manufacturing, gem cutting and trade. Depending on product and customer base, various industry SMEs are likely to deal with the 'liability of smallness' in different ways. Banks and financial institutes tend to be reluctant to approve loans to small businesses in times of economic uncertainty which affects their capability to keep/hire key employees, invest in products or develop their business model. At the same time, liability of smallness' can be turned into something positive with the right strategies and focus (Freeman et al., 1983). Even this stands over time.

The uncertain and rapid changes SMEs face need to be addressed for SMEs to stay competitive. Whether these VUCA realities are of a technical or economic nature, instability, regulatory changes, competitive disruptions or shifting consumer inclinations, it's advised for businesses to face these with an agile and proactive mindset. Entrepreneurs often start small, and this usually includes various levels aspects of liability of smallness whether it is financially, organizational, staff or background (Gimenez-Fernandez et al., 2020; Kale & Ardit, 1998; Morris et al., 2020). Similar discussions frequently occur whether smallness is a liability or an asset (Choi et al., 2022).

1.4 Research Objectives

The objective of this research is to explore how Thailand's export dependent gem and jewelry SMEs perceive and make sense of the Volatile, Uncertain, Complex and Ambiguous (VUCA) environment in which they operate. This research highlights the lived experiences of industry leaders, business owners and managers with decade long

experiences and how they navigate disruptions and change. Through their insights, this research examines how past disruptions, such as the Global Financial Crisis 2008-2009 and the Covid-19 pandemic, have shaped their strategies and decision making.

The research also explores how these SMEs respond to current VUCA challenges, such as the rapid influx of lab-grown diamonds, geopolitical tensions, generational shifts, and regulatory changes. Finally, it explores how gem and jewelry SME leaders anticipate and prepare for the future, identifying what they see as the most critical threats to survival and where they find opportunities for long term competitiveness. It follows explores a temporal sequence on learning capabilities, agility which shapes future competitiveness.

In summary, the objective is to provide a comprehensive detailed analysis based on how Thai Gem and Jewelry SMEs understood and learned from previous VUCA events, what they see now and how they interpret the business world going forward. What do they expect of the future and how do they plan for long term survival and growth.

Benefits of this study will be to generate knowledge on the importance of understanding how VUCA affects operations for gem and jewelry SMEs, the survival strategies required for throughout prolonged uncertainty and how they successfully strategize knowing their liability of smallness selling products categorized as discretionary. These may be carefully considered strategies based on official data or decisions made purely on intuition.

1.5 Research Problem and Problem Statement

Thailand's gem and jewelry industry is deeply integrated in global trade. For decades it has served as a trading, manufacturing and gemstone cutting hub. Dealers and manufacturers have long relied on international travel, in-person trade shows, and trust-based relationships models to sell products that are not only discretionary but often high in value. Over the past decades a lot has changed. The traditional business model has been repeatedly disrupted by various VUCA-events like the financial crisis, the rapid acceleration of digital sales channels, Covid-19 pandemic but also geopolitical wars in key markets such as Russia/Ukraine and Israel/Palestine where both Russia and Israel are major players in the diamond industry globally.

These disruptions reshape how the industry operates from sourcing raw materials to selling finished jewelry to end-consumers. While large corporations often have financial capabilities with access to resources which allows them a short cut to adapt quickly, SMEs often operate with limited resources and must rely on flexibility, intuition and informal networks. Despite their importance in the global jewelry network, these SMEs have received relatively little academic attention in terms of how they interpret, adapt to, and survive ongoing VUCA conditions. There is a clear need for research that captures the mindset of SME leaders across different VUCA moments over time to understand how they navigate their businesses and prepare for the future.

Export dependent SMEs in the gem and jewelry industry are repeatedly exposed to external shocks that test their resilience and strategic capabilities. Some businesses manage to pivot or innovate; others struggle or completely disappear. Yet, little is known about how these SMEs interpret such turbulent environments, what patterns of decision-making they follow or how they adjust their strategies over time. Existing research often lacks a

temporal dimension, failing to show how gem and jewelry SMEs adapt over the course of multiple VUCA events. This study examines that gap.

1.6 Purpose of the Research

This research aims to understand what VUCA environments mean to Thai gem and jewelry SMEs and how they navigate these disruptions over time. Based on rich, qualitative insights from industry insiders, leaders, authorities, the study explores three main questions: how these SMEs interpreted responded to previous major VUCA such as the Global Financial Crisis of 2008-2009 and the Covid-19 pandemic (RQ1); which current VUCA-related reality are seen as most pressing and how SMEs respond to them strategically (RQ2); and how these business leaders perceive future risk and opportunities as they consider operational strategies for long-term survival and competitiveness (RQ3).

The purpose is not only to document challenges but to uncover how strategies are shaped under VUCA pressure, how experience and improvisation interconnect to build agile competitive capabilities. This research therefore seeks to offer both academic insights as well as practical guidance for SMEs dealing with an increasingly unpredictable global business environment.

Benefits of this study will be to generate knowledge on the importance of understanding how VUCA affects operations for gem and jewelry SMEs, the survival strategies required for throughout prolonged uncertainty and how they successfully strategize knowing their liability of smallness selling products categorized as discretionary. These may be carefully considered strategies based on official data or decisions made purely on intuition and experience, or a combination of both.

Results of this study will contribute to the knowledge of how gem and jewelry industry as well as to individual SMEs maneuver the complex world of VUCA. Another topic that is closely related to the gem and jewelry industry is gold, gems and diamonds for investment purposes as well as an alternative to the traditional stock market, something most traders know in the back of the head when they purchase stones and diamonds. Historically hard assets, like rare gems and diamonds has been of interest to investors (Renneboog and Spaenjers, 2012).

In recent years, a series of VUCA related disruptions have either emerged gradually or impacted small and medium sized enterprises with sudden impact. These include inflation on expenses and raw materials such as gold, gemstones, labor, services, influx of high-quality lab-grown diamonds on the market, trade-tariff disputes, wars among others. These are factors RQ2 and RQ3 looks to increase understanding about.

CHAPTER II: REVIEW OF LITERATURE

2.1 Theoretical Framework

The world we are living in changes at a rapid pace (Rath et al., 2021). Reeves and Deimler (2012) argue that uncertainty means a huge challenge for strategy makers and that traditional strategies may need to be replaced. Many refer to operations in such VUCA world is just as Volatile, Uncertain, Complex and Ambiguous as the acronym indicates. The term, which has its origins in the US military, has been used since the late 1980s to describe the geopolitical uncertainty at the end of the cold war (Clegg et al., 2019; Horney et al., 2010). Lawrence (2013) mentions the example of the chaotic new normal following the financial crisis of 2008-2009. Each letter of the acronym appears highly relevant to performance for gem and jewelry SMEs operating in such VUCA environment. Statistics show that during financially difficult times, discretionary purchases, such as jewelry, are amongst the first items consumers cut which was evident in 2008-2009 when jewelry sales in United States dropped 14% and it took seven years for jewelry retail sales to exceed the levels of 2007 (Danziger, 2022). The correlation between decreased private jewelry spending and economic downturns is obvious. Also, the Covid-19 pandemic initially had a severe impact around the world, forcing many businesses to temporarily or permanently close, affecting supply chains, health, cash flow, sales, leaving no industries unaffected (Donthu and Gustafsson, 2020). The aim with this thesis is to explore how this VUCA environment impacts Thailand's export dependent gem and jewelry SMEs a highly is relevant research area since over 90 percent of businesses in the Thai gem and jewelry industry are SMEs (Arunmas, 2022), and approximately 80 percent of the all products go on export with only 20 percent being sold in domestic market (GIT, 2009). Bratianu and

Bejinaru (2021) described the emergence of Covid-19 to be a perfect example of VUCA with the quote: “the covid-19 crisis came like any other natural disaster, finding people and organizations unprepared for disruptive power and social nexus”. In a similar way Lawrence (2013) described the financial crisis of 2008-2009 as an example of VUCA. Research on the topic has gained momentum over the past decade (Bennett and Lemoine, 2014; Lawrence, 2013; Price et al., 2022; Sinha and Sinha, 2020; Yoder-Wise, 2021) but there is a gap in research over how managers and owners of SMEs in the Thai gem and jewelry industry interprets and acts regarding to VUCA.

To fill in the gaps in the current research I have developed the following research questions:

Research Question 1 (RQ1): How did export dependent Gem and Jewelry SMEs interpret and respond to previous major VUCA environments such as the Financial Crisis of 2008-2009 and the Covid19 pandemic?

Research Question 2 (RQ2): Which ongoing VUCA-related scenario is perceived as the most challenging and what competitive strategies are currently employed by export dependent gem and jewelry SMEs in response to this environment?

Research Question 3 (RQ3). How do export-dependent gem and jewelry SMEs perceive the business environment going forward, and which challenges are seen as the most critical for their long-term survival and competitiveness?

These questions are intended to explore how VUCA readiness help leaders form which help their SMEs to stay competitive through Volatile, Uncertain, Complex and Ambiguous times.

These research questions were developed with the idea to learn the lived experience that SMEs in the gem and jewelry industry make sense of, strategize around and work around in order to be competitive. RQ1 focuses on retrospective analysis and learning from past crisis management strategies. RQ2 focuses on what they are doing now to stay competitive given today's VUCA specifics whereas RQ3 is more based on future-oriented concerns about perceived opportunities and threats.

2.2 The four elements of VUCA

Below follows individual description of each of the elements in VUCA.

2.2.1 Volatility

Volatile environments are environments where realities change quickly without predictability (Taskan et al., 2022, citing Sullivan 2012). It could be considered unstable change if there is available information, a clear and logical reality, but change is frequent and unpredictable (Bennett and Lemoine, 2014). In essence it's about nature, speed and dynamics of the change taking place. Volatility refers to the rapid speed under which change takes place in an industry (Bennett and Lemoine, 2014). The more volatile the world is, the faster things change. Kraaijenbrink (2019) argues that *"volatility is associated with fluctuations in demand, turbulence, and short time to markets and it is well-documented in the literature on industry dynamism. The more volatile the world is, the more and faster things change."* In a recent literature review by Taskan et al. (2022) frequent key words related volatility were measured and concluded that 'change, 'unpredictable' and 'dynamic' to best described the V in VUCA.

2.2.2 Uncertainty

Bennett & Lemoine (2014) describes uncertainty as situations characterized by lack of knowledge, for instance when cause-and-effect is understood but it is unknown if an event will generate the change needed. Simply, when reality lacks predictability. There are various levels of uncertainty depending on timing and industry. More uncertainty means more difficult to predict (Kraaijenbrink, 2019). Taskan et al. (2022) concluded that ‘unpredictable’ and ‘lack of information’ best described the U in VUCA.

2.2.3 Complexity

Complexity is defined as an environment characterized by multiple interconnected components forming a network of information, often complicated but not necessarily confirm change (Bennett and Lemoine, 2014). A complex set of forces that surrounds an organization. According to Kraaijenbrink (2019) a complex environment refers to the number of factors taken into account and the relationships between them, more complex interconnected factors are harder it is to analyze. Taskan et al. (2022) in their key word analysis based on an extensive literature review concluded that ‘quantity of factors to analyze’ and ‘relations between factors’ best described the C in VUCA.

2.2.4 Ambiguity

Ambiguity is described as a situation where cause and effect are not clearly understood and is characterized by lack of knowledge on what to expect (Bennett and Lemoine, 2014). A situation is ambiguous when information is insufficient to draw appropriate conclusions (Kraaijenbrink, 2019). Ambiguity is most frequently understood as ‘inability to understand’, ‘lack of clarity’, and ‘multiple interpretations’ according to a recent keyword analysis (Taskan et al., 2022).

2.3 Small and Medium sized Enterprises (SMEs)

This research thesis focuses on Small and medium-sized enterprises in VUCA environments with effects on Thailand's export dependent gem and jewelry SMEs . It is therefore important to discuss SMEs which are the pillar of every economy (Eggers, 2020).

In the European Union, an SME is a business with a head count below 250 and a turnover or balance sheet up to fifty million Euro, following that SMEs account for 66% of employment (Lukács, 2005). While there is no global definition of the exact specifics of an SME in terms of size and turnover, definitions vary from country to country (Scheers, 2011). An SME is a business where the numbers of employees and business turnover falls below specific level. In the United States the definitions are varying depending on industry, annual receipts and number of employees (U.S. Small Business Administration, 2019). Small and Medium sized Enterprises total around 44 percent of the total economy (US Small Business Administration, 2019). In terms of employment SMEs created two out of three new jobs over the past twenty-five years (US Small Business Administration, 2022).

2.4 Thailand and SMEs

Korwatanasakul and Paweenawat (2020) found that SMEs account for 45% of the total GDP, employs 86% of the total employment, represents 99.8% of registered business enterprises but in terms of total exports SMEs only accounted for 29%. It seems that Thailand's export dependency is clearly driven by large enterprises. The Thai Gems and Jewelry Traders Association (TGJTA) plays an important role here for the export dependent gems and jewelry industry. Micro Enterprises were most heavily affected at the beginning of the Covid-19 pandemic but recovered relatively quickly due to non-complex business structures and low capital intense structures. Small enterprises were also heavily

affected during the pandemic, with banks restricting loans due to uncertainty, many small enterprises started liquidizing assets and terminating employments. Meanwhile medium enterprises recovered the fastest due to strong export growth and more financial stability than smaller firms (OSMEP, 2022).

2.5 Gem and jewelry SMEs in Thailand

Gems and jewelry industry is one of Thailand's major export products, employing around 664,000 people and over 90% of businesses in the sector being an SME (Arunmas, 2022). Other research shows that employment numbers can be as high as over one million if including formal and informal sectors (Chowdhury and Lawson, 2022; Rittapirom, 2021).

In terms of export value, the Gem and Jewelry sector ranks among the largest for the Thai economy (Rittapirom, 2021). Most businesses in the Gems and jewelry industry are SMEs and according to BOI (2014) as cited by Ahmad et al. (2017, p. 14) the gem and jewelry SMEs is immensely important for Thailand's economy. A recent report released by Thailand Convention and Exhibition Bureau (Public Organization) highlights that Thailand is one of the world's largest exporters of gems and jewelry and regarding silver jewelry Thailand is the world's leading exporter (MICE INTELLIGENCE CENTER, 2022).

There are distinguished differences between gem and jewelry SMEs and SMEs in other sectors such as F&B, wellness, hair salons, dental clinics, law firms among many others which depend mainly on local, provincial or domestic markets. Gems and jewelry dealers and manufacturers on the other hand greatly rely on exports, with over 80% of products

going on export (GIT, 2009). This statistic is noteworthy since only 11.9 percent of Thailand's total export is made by an SME and remaining 88.1 percent is exported by Large Enterprises, making the industry particularly export dependent. Bangkok's strength in the gem and jewelry industry dates back decades, growing into the world's leading cluster for colored gemstones, cutting and jewelry manufacturing (Chowdhury and Lawson, 2022). According to Yan (2021) Thailand has an advantage due to its expertise in heat treating techniques, gemstone cutting and fine jewelry manufacturing, such craftsmanship cannot be replaced by automated equipment.

This thesis focuses on SMEs in the Thai gem and jewelry industry where a vast majority of businesses are SMEs, they are export dependent and therefor, due to their export dependence and smallness, more VUCA sensitive. I found an apparent research gap to be filled when it comes to understanding how SME owners and managers deal with VUCA environments and respond to related crises which often follows.

2.6 Jewelry, diamonds and gemstones – important export trends and factors

To understand just how VUCA sensitive the export performance is for gem and jewelry businesses in Thailand below follows a summary on export data during the global financial crisis 2008, 2009 and 2010 and then again performance right before Covid-19 outbreak 2019 until latest known data for 2024. This data highlights the need for industry specific VUCA research. The statistical data comes from The Gem and Jewelry Institute of Thailand (Public Organization) also referred to below as GIT and their annually released industry report. The statistics should not be over-analyzed on their own since there are multiple variables related to performance that are difficult to measure with only these statistics, so they rather serve as indicators on how the VUCA environments impact

export performance. I made the decision to mostly exclude exports of unwrought gold since it is generally, but not entirely, traded as an investment product rather than a part of the traditional gem and jewelry industry itself. Specific years however, where statistical data highlight important macroeconomic indicators of VUCA I will include it. All data are based on official exports extracted from Thai customs Chapter 71 of Harmonized Tariff Schedule and summarized by GIT. An important note is that export data includes temporary exports to international trade shows or other similar consignment agreements which may come back to the country immediately or at a later timing. These may have minor impacts on the statistics the following year.

2007 saw positive trends in all categories: jewelry exports grew strongly +24% year on year compared to previous year, diamonds grew +11.74% and colored gemstones grew by + 40.81% (GIT, 2008b). Interesting here is that exports of unwrought gold more than tripled which had significant effects on total industry exports (GIT, 2008b). This dramatic increase could in retrospect be seen as an early indicator of what was about to happen in 2008-2009 with financial investors moving capital to gold, which often is considered safer in unruly times.

In 2008 jewelry exports sharply increased by +35.22%, diamond exports rose with +16.10% year on year and colored gemstones grew +39.97%. Interestingly here is that USA fell to fourth spot on largest export market for Thai exporters after having had the top position in previous years. This had a lot to do with the financial crisis that was about to get more serious in North America, instead we saw an increase in exports to Hong Kong, Russia, India and other markets (GIT, 2009). In 2009 we started to see the results of the financial crisis that alarmed consumers, with unwrought gold exports strongly increasing

while exports of jewelry fell -12.52%, diamonds plunged -25.85% and colored gemstones -23.56%. This appeared to be a difficult year and a serious challenge to small and medium sized businesses. GIT at this point gave recommendations to exporters to shift focus to markets such as China, India, Russia and Australia (GIT, 2010). 2010 we witnessed a slowing demand in unwrought and semi-manufactured gold while jewelry showed great numbers by growing +25.29%, diamonds up +34.15% and colored gemstones +19.17% (GIT, 2011).

2019 showed an increase in exports of colored gemstones by +17.45% year on year but a decline in exports of jewelry and diamonds by -5.11% and -9.78% respectively. Exports to India skyrocketed as well as regional exports to other ASEAN member states. Exports to other major markets such as Hong Kong, USA, EU, China and Japan decreased year on year. Fear of the Covid-19 outbreak in late December raised alarms (GIT, 2020).

2020 turned out to be overwhelmingly difficult for gem and jewelry firms. While exports of unwrought gold increased +75.67%, jewelry exports fell, -29.01% overall and gold jewelry fell -42.81% year on year. The case for diamonds and colored gemstones were even more brutal with a sharp fall of -37.87% and -61.84%. The sharp decrease in exports of jewelry, diamonds and gemstones were a big consequence of the global Covid19 pandemic. On everyone's mind there were issues such as pandemic, raising public debt, unemployment rates, travel restrictions etc. A new focus on digital media to raise competitiveness turned crucial for firm survival. Creativity in production and service to exceed customers' expectations was described as key to future success (GIT, 2021).

2021 turned out to be the exact opposite of 2020 with exports of unwrought gold falling sharply by -70.88% while exports of fine jewelry grew +28.73%, diamond exports grew by +33.21% and colored gemstones by +25.51% year on year. From March onwards exports grew every consecutive month for the remainder of the year. The ever-growing numbers of population getting vaccinated played a positive part in this recovery. Exports to India, UK and USA were especially important (GIT, 2022).

2022 was according to GIT (2023) generally positive in all product segments. Jewelry exports were up +20.89%, diamonds +41.26% and colored gemstones +69.09%. Exports of unwrought gold were up +82.03% year on year. Warning signs about a recession in USA and Europe were issued by GIT as well as the war in Ukraine and soaring energy prices and interest rates. The public organization therefor advices businesses to switch focus to other markets such as Japan, China, ASEAN and India as well as a adjust product offerings to match demands from these markets.

2023 export performance was relatively good and increased by 8.40% year on year if deduct unwrought gold. Exports of fine jewelry increased 9.81% year on year; colored gemstone exports increased sharply by a staggering 70.47% year on year compared to the previous year. Exports of semi-precious gems increased by 97.19% year on year. At the same time diamond exports decreased by 26.71% (The Gem and Jewelry Institute of Thailand (Public Organization), 2024).

2024 export of gems and jewelry products increased 10.99% year on year if exclude unwrought gold. Exports minus unwrought gold totaled approximately \$9.6 billion USD which was 6.11% of Thailand's total export making it the third largest export products.

Exports of fine jewelry rose by 8.11% year on year, while exports of colored stones increased 3.99% year on year. The most important markets of exports were Hong Kong and United States of America. Exports of natural diamonds fell sharply with 7.53% year on year compared to 2023. Exports to mainland China remains troublesome due to low demand and impacts from the real estate sector (The Gem and Jewelry Institute of Thailand (Public Organization), 2025).

Finally, the first four months of 2025 the Thai gem and jewelry industry stood for a remarkable performance driven by demand from the US in the light of proposed tariff increases. By April exports grew a staggering 39.62% to previous month and the accumulated increase in exports was up 91.67% year on year compared to 2024. The Gem and Jewelry Institute of Thailand (GIT) also warns of geopolitical risks as well as the challenges of a strong Thai Baht (The Nation, 2024).

2.7 Strategy and strategic planning

Strategy is described as the long-term goals of a business along with the actions they take to make those goals happen (Kraaijenbrink, 2019). It's already been 45 years since Ansoff's (1980) showing that future environmental evaluations are fundamental to strategic planning. Mintzberg (1994) in his notorious article *The Rise and Fall of Strategic Planning*, questions the process how we managers build strategy since the world is under such rapid continuous transformation. (Price et al., 2022) argues that traditional strategic planning assumes that the environment around them is predictable, and that strategy is only about vision and inspiration for the future. The authors continue to explain that for many

traditionalists strategic planning has become an exercise to update current plan to include goals, ambitions, visions and values.

2.8 Strategic Management shifts

Kraaijenbrink (2019) explains strategy as “an organization’s unique way of sustainable value creation”.

Referring to the facts that circumstances change, Mintzberg (1987) argued that Strategy is like a force that resists change, not encourages it. McGrath (2013) argues that strategy today is different from the past since markets change at a very high speed and that strategies set for a longer time span are no longer relevant for most businesses. Reeves and Deimler (2012) also discusses that traditional approach to strategy assumes a relatively stable world where businesses aim to achieve a competitive advantage that lasts over time, either through scale or by occupying a specific niche market. The authors conclude that globalization, new technologies and greater transparency has changed how a sustainable competitive advantage can be achieved and that firms must notice change and adjust operations and motivate employees and other stakeholders (Reeves and Deimler, 2012).

2.9 Leadership and adaptation in a VUCA world

"In situations that are characterized by volatile, uncertain, complex, and ambiguous (VUCA) conditions, it becomes necessary to structure organizations in such a way that will meet the challenges presented by the environment" (Whiteman, 1998, p15). Horney et al.(2010) discuss that leaders reach the ability to succeed in a VUCA environment if they learn to make changes necessary related to operations. Price et al. (2022) argue that leaders doesn't always follow through their initial strategies since they feel the world around them changes at a pace that their plans quickly become obsolete, that

strategic plans get too much focus on a day-today perspective rather than long term and that businesses often fail to align the diversity of people's talents and skills in a way that long term could boost performance. Bennet and Lemoine (2014) argue that all words in VUCA (Volatility, Uncertainty, Complexity and Ambiguity) tend to be mixed and treated synonyms but it is when leaders really understand the difference each word represents it becomes useful. As explained by Alkhaldi et al. (2017) the current VUCA threat environment demands a more solid support structure for leaders who may be faced with crises of increasing magnitude and frequency. Change is nothing new to business leaders but what's new is the rapid complex speed under which change takes place (Taskan et al., 2022). Certain behaviors are critical for system viability in this new world order, for instance the importance of authenticity, which unlike inauthenticity will always lead to failure in a VUCA world (Bartscht, 2015).

2.10 VUCA envisioned

A world that combines some or all these VUCA elements is unpredictable and risky to operate in without clear strategies. In an exclusively volatile world, there is rapid but predictable change. In an exclusively uncertain world, it's difficult to tell how things will progress. A solely complex world is overall difficult to understand. And in a strictly ambiguous world events are hard to comprehend and make meaning out of (Kraaijenbrink, 2019).

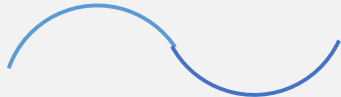
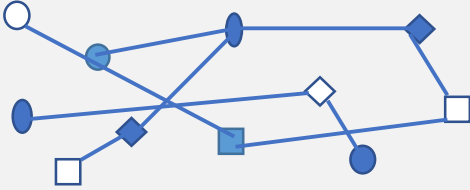
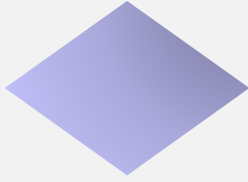
Low Volatility Market	High Volatility Market
	
Low Uncertainty Environment	High Uncertainty Environment
	
Low Complexity	High Complexity
	
Low Ambiguity	High Ambiguity
	

Figure 2 - VUCA visual - adapted from (Kraaijenbrink, 2019)

Volatility means being subject to frequent, rapid and significant change where for instance the economy changes swiftly in a short timeframe and where the direction of the trend suddenly can reverse. Uncertainty is a part of that situation in which what happens, and the results thereof are unpredictable, businesses must find ways to create certainty for their business. Complexity involves multiple factors, some of which are complicatedly interconnected, and when complexity increases even more it causes confusion within teams within the businesses. Ambiguity is described as lack of clarity which makes it difficult to understand the situation accurately, giving pressure on leadership and decision makers to find solutions on problems that may have multiple possible answers (McPheat, 2020)

Horney et al. (2010) discusses that separating each one of the acronyms helps leaders find agile frameworks when identifying and facing them, where leadership agility is all about observe and adapt to changes fast and with flexibility.

There are several ways to look at VUCA. One is to regard its presence as a depressing unclear or to look at VUCA and “*accept that this is the normal-for-now state of affairs and figure out how to cope*” (Yoder-Wise, 2021).

Sinha and Sinha (2020) concludes that successful leadership now is different from the past. What used to work before will not work in a VUCA world so leaders must commit themselves to tolerance for chaos and continuously adopt themselves to succeed.

2.11 Managing VUCA situations involving risk, volatility, and survival.

Baran and Woznyj (2020) reasons that agility is necessary for management teams to deal with VUCA and highlights *adaptive performance* which involves dealing with crisis, learning new technologies, and coping effectively with stress. The researchers argue that if managers on all levels of the organization is to successfully manage operations, VUCA first need to be identified internally as well as externally, come to an understanding of how to void the threat and act on opportunities. In a huge study, ranging over three years and including over one thousand business leaders (Baran and Woznyj, 2020) identified the three most disruptive (VUCA) trends: (1) tools for helping people collaborate on different locations, (2) economic recessions and (3) the influence of government on business. According to Araújo (2021) a quick response with innovation as key component is a main factor for successfully managing VUCA where they highlight Covid-19 as example, saying it was impossible for anyone to predict and prepare or plan for such a global pandemic. Innovation is necessary to stay competitive when realities shift in order to stay competitive (Araújo et al., 2021).

VUCA environment involves risk for SMEs, and it is fair to assume that risk is a part of VUCA. Businesses should therefore look to the management of risk which according to Baranoff et al. (2009) is the strategy for surviving and thriving in a volatile, uncertain and complex world. This volatility tends to hit smaller firms the hardest, something often described as liability of newness which often coincides with liability of smallness (Freeman et al., 1983). According to Eggers (2020) SMEs could be losing critical employees, affected by stricter financing regulations, entry of new competitors or a crisis hitting the economy. Given their small size SMEs are more flexible when new threats arise, plus in a smaller company managers are closer to customers and other stakeholder (Eggers, 2020). External financing such as banks and other creditors indicate that credit risk was

mostly concentrated on SMEs and that they tend to favor lower risk profiles especially in times of crisis (Piette and Zachary, 2015). Risk and how it is managed are critical aspects of decision making in all levels of every organization (Baranoff et al., 2009). This appears valid for gem and jewelry SMEs in Thailand who are likely to face similar difficulties as businesses in India where a report by World Gold Council (2022) confirms that it is hard to secure a loan due to the high degree of loans, 20%, becoming Non-Performing Assets, scandals becoming public, and the high degree of cash involved in daily transactions.

So, financing is an important factor for SMEs as well as the ability to manage liability of smallness. Another important factor when it comes to surviving VUCA environments is according to Simón-Moya et al., (2016) the very foundation under which the business was started in the first place. Businesses that are based on market opportunity have better survival chances during times of economic crisis than those that were started out of necessity and SMEs must focus on improving advantages such as less bureaucracy, closer contact with customers and more flexibility improve chances of survival (Simón-Moya et al., 2016).

2.12 Changing market trends, changes focus of research

Research of VUCA has gained more relevance in business and strategy. Previously most research was concentrated on production capacity and financial strength which no longer is the only desirable direction, paving way for small firms with a mindset on information, knowledge and relations where the strength lies in moving fast and being flexible (Bjerke and Hultman, 2002). Peter Drucker (1980, p.226) wrote: *“The greatest danger in times of turbulence is not the turbulence: it is to act with yesterday’s logic”*. The

fundamentals have been on building strategies that are last over time, with focus on core competencies which has been central to the field of Strategic Management. Henry Mintzberg (1978) referred to Strategic Management as guidelines that helps shape future decisions. The introduction of VUCA in late business research serves as a crucial complement to traditional view on strategy in the new rapidly changing marketplace gem and jewelry firms operate in.

2.13 Impacts on SMEs due to VUCA

Robbins and Pearce II (1993) discuss that SMEs are the most vulnerable in economically difficult times. SMEs notice these consequences faster due to their limited financial resources and capacity to endure an economic crisis (Bourletidis and Triantafyllopoulos, 2014a).

Studies show that the financial crisis in 2009 had a negative impact on commercial enterprises in general but there were some companies/industries that showed remarkable yield (Bourletidis and Triantafyllopoulos, 2014). Reports show a drop in demand for goods and services globally with tightened credit terms to SMEs (OECD, 2009).

Managers in these businesses are the main change agents in most organizations where their decisions shape the organizations culture (S. P. Robbins and Judge, 2014). To stay competitive business-leaders need to analyze competition, environment, and strategies to be successful and share this insight throughout the organization (Bensoussan and Fleisher, 2013). With managers setting the direction of an organization it is fair to say that individual managers' capability to lead are crucial to the success or failure of that organization. Bensoussan and Fleisher (2013, page 2) claim that winning strategies are based on originality and define this as *"being different from competitors in a way that customers value"*. Volatile, uncertain, complex, and ambiguous (VUCA) environments

test firms' decision making, making it the essence of strategy execution for all sized firms. Every opportunity seized or missed is part of decisions taken or missed. Yet, unclear rules of decision-making process are quite common, and it affects firms' performance (Rogers and Blenko, 2006). They outline a model summarized as the RAPID decision model which in short stands for (Recommend, Agree, Perform, Input and Decide). This theoretical model explains how businesses can use decision making in a way that minimizes lost time and information. In fact, the research of Rogers and Blenko (2006) show the ability to clarify decision roles, avoiding bottle necks and making decisions quickly are all defining characteristics of high performing organizations in ways that clearly outline flow of information, input, action and ultimate decision making plus who should perform what according to clear responsibilities. This flow should play a huge role in every SME as well as larger ones, especially in these times of economic uncertainties.

Vertical integration may include in-house cutters versus outsourcing per demand, in-house CAD designers, casting and mold structures, sales and marketing channels and so on. The concept of virtual integration probably plays a bigger role in the gem and jewelry trade than many people assume. Examples can be both forward integrations such as a wholesale jeweler opening its own jewelry store in order to cut middlemen or a gemstone-miner beginning to attend international trade shows cutting the market share of dealers, or jewelry brands going directly to the diamond or gemstone mines instead of buying from established trading houses etc. The integration could also be backward in such a way that a jeweler merges with a supplier, or a tapered mix of both forward and backwards integration. Speculatively, all could prove to be useful strategies depending on circumstances and competences.

2.14 Impacts on SMEs during COVID-19

Hossain et al., (2022) reveals that disruptions in supply chain disruptions and cash flow shortages were the main difficulty amongst SMEs and that those managing the digital transformation were most profitable. Due to SMEs' reliance on cash flow, a quick and unexpected decline in demand disrupts the company's cashflow which in turn makes SMEs extra vulnerable in the crisis period (Thorgren and Williams, 2020).

Mankins and Steele (2005) argue that most companies only deliver 63% of promised financial value and suggests business leaders towards seven steps to improve performance and turn a great strategy into the perfect performance. In brief these include (1) Keep strategies simple, (2) Challenge assumptions to the long term strategy, (3) Use benchmarking like making sure everyone speaks the same language when assessing performance, (4) Discussions of implementation timelines, (5) Identify priorities and focus on key actions, (6) Monitor performance against your plan, and finally (7) Focus on execution with focus on managers in charge of implementation (Mankins and Steele, 2005). Closing these gaps could improve performance. When it comes to improving performance, companies that correctly match their strategy-making process perform better than companies that do not (Reeves et al., 2012b). To simplify such strategy planning process the authors created a framework into four styles based on how predictable the market on which the firm is operating is and weighs it against how much power firms possess to change it. Reeves et al. (2012) explains these four strategic styles as:

1. Classical (If your industry is mostly predictable but you can't change it)
2. Adoptive (If your industry is mostly unpredictable and you can't change it)
3. Shaping (If your industry is mostly unpredictable but you can change it)
4. Visionary (If your industry is mostly predictable and you can change it)

The authors give multiple examples: Examples of **classical style** could be found in the industries of Tobacco, Beverage, Automobiles, Banks and Household products etc. Examples of the **adoptive style** could be found in Transportation Infrastructure, Biotechnology, Construction materials, Computers, and Specialty Retail. Examples of **shaping style** could be construction and engineering, auto components, metals and mining, airlines, health care technology, professional services, hotels and restaurants etc. Examples of **visionary style** could be media, food products, aerospace and defense, and health care providers. The authors also discuss a fifth style, **Survival**, when no other strategizing style would work well. Examples of such style would be in environment of crisis or a sharp economic downturn when a short-term strategy must be implemented with focus on reducing costs, preserving capital and reducing business portfolios (Reeves et al., 2012b).

This important study applied gem and jewelry SMEs would likely place firms somewhere between Adoptive and Shaping styled strategies since it is difficult to predict market trends for discretionary products which are also heavily season and trend sensitive. It is to assume that SMEs interpret the market as highly unpredictable with low malleability and strategize thereafter. Verhoef et al (2021) discovered a research phenomenon that indicate that a digital transformation goes faster during crisis than in normal times, something it is believed also happened during Covid-19 something that motivate why I assume they position themselves somewhere between Adaptive and Shaping.

2.15 Impacts on SMEs during the Global Financial Crisis

The 2008-2009 global financial crisis severely impacted SMEs in discretionary markets, particularly the gems and jewelry sector, which experienced dramatic demand contractions and financing constraints. This is in line with Bourletidis and Triantafyllopoulis (2014b) conclusion that SMEs suffer disproportionately in times of

economic downturns. Gemstones and jewelry, which is often seen as a discretionary purchase, can be one of the hardest-hit categories when consumers tighten their spending something that can clearly be seen in the annual reports by Thai Gem and Jewelry Institute (GIT) annual reports during and after the financial crisis (The Gem and Jewelry Institute of Thailand (Public Organization), 2009, 2010, 2011).

This can properly be described by this exact quote *“While crises can have devastating impacts on economies and societies, they also open up an opportunity space for strategic renewal”* (Wenzel et al., 2020). Resilient SMEs utilized distinct survival approaches, emphasizing enhanced customer management practices, smart marketing actions, improving productivity and efficiency and downsizing among many other measures. Entrepreneurs that considered these factors significantly improved their survival chances (Kottika et al., 2020). Miklian & Hoelcher (2022) discusses that active adaptation rather than passive endurance often creates opportunities for repositioning in the market.

2.16 VUCA and strategies

Over the past fifty years there have been several economic crises including the oil crisis in 1973 and 1979, stock market crash in 1987, Black Wednesday crash in 1992, Asian Financial Crisis 1997, dot-com bubble of late 1990s. Other major turn of events in the 21st century can be the Tsunami in Southeast Asia, SARS, the Subprime Mortgage Crisis, political turmoil in Russia (Som and Blanckaert, 2015). All these VUCA can often be associated with various forms of crisis where the foundations of businesses rapidly change due to unforeseen turn of events. Som and Blanckaert (2015) further argue that a financial crisis is a sudden devaluation of assets, such as stocks or currencies, which may or may not impact on the real economy and that a crisis of financial nature only leads to the destruction of paper wealth.

Schoemaker et al. (2018) researched and concluded the importance of understanding environmental challenges before developing strategic responses. Bennet and Lemoine (2014) argue that each acronym in VUCA (Volatility, Uncertainty, Complexity and Ambiguity) tend to be mixed and treated synonyms but it is when leaders really understand the difference each word represents it becomes useful.

Horney et al. (2010, p.38) concludes the aim for leaders is to prepare employees for a VUCA world that enables them to shift their mindsets and skills from *“I know change is coming, but I can’t really see the potential changes that might impact our organization”* to *“I see change coming and am prepared and already doing something about it”*.

Boin et al. (2017) discusses that it is this crisis readiness that can become organizational learning opportunities which help shape strategies. Change is nothing new to business leaders but what’s new is the rapid complex speed under which change takes place (Taskan et al., 2022). Certain behaviors are critical for system viability in this new world order, for instance the importance of authenticity (Bartscht, 2015).

Horney et al. (2010) presents an agile model which concludes that agility is the skill to identify and respond to challenges with fast and distinct actions. The authors highlight the ability to prepare an entire organization for VUCA (Horney et al., 2010, p.38). Developing organizational resilience help businesses owners become more proactive instead of reactive something that emerges from systematic learning (Lengnick-Hall et al., 2011; Vogus and Sutcliffe, 2007).

The gap making this research relevant and needed is the combination of the latest knowledge on the VUCA topic together with the dominance of export dependent SMEs operating with a ‘liability of smallness’ and a product type being of discretionary nature.

2.17 SMEs Agility and Organizational Agility

Troise et al., (2022b) conclude that SMEs that continuously sense and respond to changes are more likely to Succeed in VUCA environments. They argue that innovation and relational practices are paths to reaching this organizational agility. The authors further argue that its not the planning or strategizing itself that creates organizational agility, but their research focuses on being adoptive, iterative and responsive.

Teece et al., (2016) argue that strong dynamic capabilities are essential to manage uncertainty and risk. At the same time SMEs need the ability to remain flexible and adjust their strategies when needed (Weber and Tarba, 2014).

Agility is according to Rialti et al., (2019) associated with higher chances of survival in a VUCA environment. Agility strengthens the competitive position of firms (Roberts and Grover, 2016, cited in Troise et al., 2022b). Ravichandran (2018) concludes that agility has a positive effect on financial performance whereas many authors agree that there is still research needed on SMEs (Teece et al., 2016; Troise et al., 2022b).

2.18 Market disruptions and the influx of laboratory diamonds

A leading challenge for any firm is the aspect of generational shifts. Every generation has their specifics given that no major agenda decides upon that. In the jewelry industry design elements and sustainability requirements are likely to be decisive elements when younger consumers spend money. The generational theory that demographic transition fundamentally restructures value chains something that Strauss and Howe (1991) discusses.

Given its predominant B2C structure, the diamond industry is particularly exposed to inflationary pressures and evolving customer preferences, tendering it more vulnerable than many other commodity markets (McKinsey & Company, 2024). One of the largest

industry developments in the gem- and jewelry industry over the past two decades is the increased production of gem-quality laboratory-grown diamonds using CVD and HPHT methods (Eaton-Magaña et al., 2024). Even though this research is not on the topic lab grown diamonds I do choose to include a discussion about it since it is estimated to double and reach 44 billion USD by 2028 (Sun et al., 2024). The rapid popularity in recent years has shaken the diamond industry. After steady price increase of natural diamonds during the Covid pandemic prices started falling sharply this is explained “First and foremost, the massive success of lab-grown diamonds has reduced the prices for natural stones well beyond what the mining industry had expected, driven largely by consumers who want more affordable options. Second, in the context of rising environmental, social, and governance (ESG) concerns, consumers are looking for improved sourcing traceability for their gems. And third, industry players are navigating sanctions against products from Russia, a major rough-diamond producer” (McKinsey & Company, 2024). Huge industrial investments in lab-grown diamonds production mainly in China and India now stands for a big proportion of the global gem trade and the demand is there. The technological disruption of the lab-grown diamond revolution reminds us of Christensen’s (1997) discussions on how new technologies challenge existing firms. Leading wedding planner marketplace ‘The Knot’ found in a recent study that 46% of engagement rings in 2023 were with synthetic diamonds (lab grown), up from only 12% in 2019 (McKinsey & Company, 2024).

2.19 Gem and jewelry SMEs, VUCA and Organizational Agility

Gem and jewelry SMEs ability to sense and reshape through agility is an asset in VUCA environments. Whether it is about adjusting to a market where lab-grown gems take up more space or adjusting to new consumer preferences, increasing demand on

sustainability or a more digital marketplace remains the issue. It is still a high value industry where many consumers want to see the actual jewelry in person before deciding on a purchase. It is believed that a lot changed during the pandemic where dealers and brands had to explore new sales methods, improving their capabilities and agile mindset.

CHAPTER III: METHODOLOGY

3.1 Overview of the Research Problem

This research thesis focused on export dependent Thai gem and jewelry SMEs and how they deal with the threats of VUCA environments. The study explored how SMEs in this industry interpret their surroundings and create a perception from their experiences, this research is interpretive. Based on the research objectives and the exploratory nature of the study, a qualitative research methodology was selected. The method that was determined to match the topic best was Basic Qualitative Research, often referred to as Generic or Interpretive, as discussed by Merriam and Tisdell (2016).

The method of choice, Basic Qualitative Research, was determined to be most relevant since the overall purpose was to understand how SME owners interpret their experiences in order to successfully run their businesses with focus on meaning, understanding and process. A phenomenological approach was also considered, as the research focus was on the experience. However, a Basic Qualitative Research method was chosen, since a phenomenological focus is more on the *lived experience*, which is often emotional in nature. Worthington (2013) discusses that many researchers mistakenly choose phenomenological design even though it is closer to a Basic Qualitative Study. Merriam and Tisdell (2016, page 41-42) argue that Basic Qualitative Research is the most common form of Qualitative Research

Data collection was conducted via a series of in-depth semi-structured interviews, a method which gave the researcher great flexibility to explore in depth around the research questions and at the same time gave the interviewee freedom to speak around the topic

(Merriam and Tisdell, 2016; Silverman, 2018; Yin, 2015). Questions were based on the interviewee's experiences going through proven VUCA realities such as the 2008-2009 Financial Crisis, 2020-2022 global Covid-19 pandemic, and the current post-Covid turmoil characterized by regional wars, high inflation, energy crisis and stock market volatility etcetera. These are generally regarded as VUCA were supported by detailed statistical comparison of official industry gem and jewelry export data, extracted from Thai Customs and GIT.

Purposeful Sampling based on a *Criterion Based Selection* was used to carefully select interview candidates that fulfilled a certain set of criteria such as (1) being a SME (Micro or SME), (2) having been in business for a minimum of at least 10 years (having survived various VUCA environments), (3) participating/attending international exhibitions (4) being a member of ICA (International Colored Gemstones Association), Thai Gem and Jewelry Traders Association (TGJTA) or Gem and Jewelry Institute of Thailand (GIT), or RJC (Responsible Jewellery Council, (5) using multiple sales channels such as B2B or B2C trade shows, online platforms, auctions etc. and (6) having a clear connection to the Thai gem and jewelry industry. Businesses that fulfilled minimum five out of these six requirements above qualified as important contributors for this qualitative study. It was essential for the validity of the findings to ensure all respondents had accurate knowledge on the data to be measured, including criterion validation (Olsson and Sörensen, 2007).

In terms of validation my first interview was analyzed and coded using Otter transcription and NVivo software. With data collected being inductive and comparative in nature, the Constant Comparative Method was used. Themes that appeared guided the

researcher to a better understanding of how gem and jewelry businesses navigate successfully through VUCA environments. Interview questions were created from the research questions, with a flexible approach that allowed interviewees to share their experience openly until saturation in accumulated knowledge was reached. Respondent Validation and a clear Audit Trail documenting how key concepts from early interviews guided later interviews until data reached rich research context. The Criterion Based selection in the data collection also aimed at reaching reliability and validity to the findings.

Data analysis was conducted using comparative methods, and the *Constant Comparative Method* as introduced by Glazer & Strauss (1969) was chosen, which normally is associated with Grounded Theory but is also widely used throughout all Qualitative Research (Merriam and Tisdell, 2016). Fram (2013) also argues for the use of this method outside of Grounded Theory.

3.2 Purposeful Sampling

Purposeful sampling was chosen as it allowed targeting individuals that met specific criteria to collect highly valid data. This meant that semi-structured interviews were conducted with individuals with deep knowledge of the industry. Patton (2002) discusses the benefits of highly informative data with the benefits being that the researcher can learn a lot on issues of great importance. With this sampling method valuable data was collected from industry experts with decade-long experience. This study employed purposeful sampling with a criterion-based selection strategy to identify participants with connection to the Thai gem and jewelry industry in some ways. In several instances, introductions were facilitated through prior interviewees. This approach is commonly used in expert-focused qualitative research, particularly in industries where access depends on

trust. All referred participants were evaluated against the same inclusion criteria to ensure consistency and validity of the sampling strategy. All this was conducted according to definitions of purposeful sampling according to Patton (2002) that it helps provide information rich data.

3.3 Criterion-based Selection

Criterion-Based selection as part of the already chosen purposeful sampling allowed this research to further narrow down the population size in order to reach high validity of quality of data collected. The set of criteria are briefly discussed in chapter 3.1 above but included six important elements such as (1) being a SME (Micro or SME), (2) having been in business for a minimum of at least 10 years (having survived various VUCA environments), (3) participating/attending international exhibitions (4) being a member of ICA (International Colored Gemstones Association), Thai Gem and Jewelry Traders Association (TGJTA) or Gem and Jewelry Institute of Thailand (GIT), or RJC (Responsible Jewellery Council, (5) using multiple sales channels such as B2B or B2C trade shows, online platforms, auctions etc and (6) having a clear connection to the Thai gem and jewelry industry. Meeting at least five out of these six requirements meant that the interviewee has possessed the lived experience managing a business through multiple VUCA- environments where a minimum of 10 years in the industry as well as being an SME were mandatory requirements. It also helped with the reliability of data collected.

Criterion-based selection is described as when all participants have deep knowledge on the subject being studied (Patton, 2002).

3.4 Validity and Reliability

All research must aim at producing valid and reliable knowledge that is collected and analyzed in an ethical manner (Merriam & Tisdell, 2016, p. 237). The authors further argue that using member checking and a clear audit trail are useful tactics. After each interview the author contacted each one of the interviewees asking them to confirm and/or edit any details of the interview. The only person who asked to do a subject related withdrawal was interviewee 3 who retracted his statement that gold prices had seen a recent plunge and said it was misspoken.

Furthermore, a clear protocol was kept, and each interview was transcribed with the help of transcription software Otter where the researcher listened to the interviews and edited anytime the transcription was incorrect or did not accurately understand industry language terminology.

The criterion-based purpose sampling proved effective in guaranteeing that data collected by industry veterans. All interviewees, including those via referrals, met predefined selection criteria which helped me achieve consistency.

3.5 Member checking and validation

Data validation was conducted through member checking to enhance the credibility of the research findings. Data was collected from different types of industry leaders including businesses with manufacturing, diamond background, colored gemstone background, jewelry designers, as well as graduated gemologists and international gem laboratories as old as 102 years in this industry. Following transcription of each interview, a summary of key takeaways was shared with each respondent to ensure accurate

representation of their perspectives while maintaining anonymity. This participant validation process allowed respondents to verify or modify their statements. Participant 3 requested removal of discussions regarding gold price increases. Participant 17 providing an age clarification, correcting age to 49 years. Participant 20 requested to review the transcript after the interview to clarify all was correct and after a few days reached out confirming all content. All remaining participants confirmed satisfaction with their answers.

This member checking process served as validation that their answers were accurately captured and represented in the research. Additionally, the inclusion of perspectives across diverse industry segments (including manufacturing, gemstone traders, jewelry designers, gemological laboratory experts) allowed rich data collection while at same time maintaining the flexibility to explore different views and themes.

3.6 Audit Trail

A clear data trail was maintained by the researcher. All interviews were recorded and transcribed using Otter software and were manually edited for accuracy. Questions were updated when needed throughout the interview process, but author tried to keep them as intact as possible since the interviews were semi-structured in nature. The 20 participants possessed a combined accumulated industry experience of 437 years including jewelers who were second and third generation as well as three participants (9,10 and 18) who had been in the trade for 45 versus 55 years and had successfully navigated their SMEs through all sorts of VUCA scenarios.

3.7 Non bias

Ensuring objectivity and minimizing bias are fundamental to the credibility and trustworthiness of academic research. In this study, steps were taken throughout the research process to mitigate researcher bias and potential respondent bias. The researcher continuously engaged in self-reflection on the topic of potential bias.

To minimize bias, a semi-structured interview guide was used, and each participant received the same core questions and information on the topic ahead of the interview.

Participants were selected using purposeful sampling with criterion-based parameters. Participants came from gemstone, jewelry and laboratory background enhancing the scope of perspectives included in the study.

NVivo software was used during coding which enhanced transparency and reduced the influence of subjective interpretations.

Interview participants anonymity was maintained to help reduce bias and eliminate potential pressures that could influence participants' responses.

3.8 Data Saturation

Data saturation was achieved after conducting the 20th semi-structured interview with long term industry experts. Each interview lasted between 26 and 78 minutes with an interview average of 44.01 minutes, generating rich and detailed narratives. 17 out of 20 participants in the interview stage were business owners, either first, second or third generation. The remaining 3 participants were General Managers or Regional Managers. The average industry experience was 21.85 years, which showed that participating participants had navigated their respective SMEs through multiple VUCA realities. As the interview process progressed, no new major themes, concepts, or patterns emerged.

Indications of saturation started to be noticed after the thirteenth interview but with the ongoing global tariff turmoil, the decision was made to keep the interview process going until more clarity appeared. The uncertainty surrounding the current tariff war and economic uncertainty led to understanding the enormous agility gem and jewelry businesses possess. Before tariffs were declared effective some participants shared various examples of agile actions taken by firms in the industry. According to participant 13, one diamond dealer from Surat, India, rented a private jet and flew \$200 million worth of goods into the US right before the tariffs took effect. The same participant also mentioned that some Chinese businesses quickly registered businesses in Dubai (free zone) so they could rearrange shipments and avoid some of the tariffs. The final interviews confirmed and reinforced previously identified themes rather than introducing substantially new information. Other signs of saturation included that data was found coherent no matter which source the data came from, whether an established 100-year-old gem laboratory, international jewelry brand or a gemstone merchant. This was in line with qualitative research standards, where saturation is reached when data becomes repetitive and further collection is unlikely to bring added insights (Guest et al., 2006). Therefore, the data collection phase was concluded, and the study proceeded to the full coding and thematic analysis stage. Guest et al. (2006) indicate that based on their research basic elements of meta themes can be identified after six interviews and saturation generally achieved within the first twelve interviews. In this study saturation was confirmed when twenty interviews had been completed.

Participant data presented as follows:

Participant data						
Participant number:	Participant age	Position	Industry segment	Years in the industry	Gender	Interview minutes
Participant 1	45	Owner	Jewelry Factory	25	M	39.30
Participant 2	51	General Manager	Jewelry Brand	10	M	27.16
Participant 3	45	Owner	Jewelry Brand	17	M	26.21
Participant 4	36	Owner	Gemstones	13	F	28.17
Participant 5	48	Regional Manager	Gemstones	18	M	76.01
Participant 6	54	Owner	Jewelry Brand	20	M	61.13
Participant 7	35	Owner/Family	Gemstones	15	M	64.05
Participant 8	50	Regional Manager	Laboratory	20	M	67.09
Participant 9	78	Owner	Gemstones	45	M	30.07
Participant 10	69	Owner	Gemstones	45	M	27.34
Participant 11	37	Owner	Gemstones	18	M	31.00
Participant 12	35	Partner/Family	Laboratory	11	M	39.13
Participant 13	52	Owner	Jewelry Brand	30	M	53.51
Participant 14	31	Owner/Family	Jewelry Brand	7	M	78.34
Participant 15	49	Owner	Gemstones	17	F	45.24
Participant 16	42	Owner	Laboratory	13	M	26.06
Participant 17	49	Owner	Gemstones	17	M	44.48
Participant 18	68	Owner	Gemstones	55	M	40.42
Participant 19	53	Owner	Jewelry Brand	25	F	32.05
Participant 20	49	Owner	Jewelry Brand	16	M	43.38
Average:	48.8			22		44.01

Table 1: Interview participant data

3.9 Improving analytical accuracy through expert collaboration

To ensure methodological accuracy and maximize the validity of the collected data, an experienced NVivo specialist was engaged to provide technical guidance during coding and the thematic analysis phase. This helped progress significantly since it included complex interviews based on both historical lived experiences as well as present and forward perspectives. The data was based on 20 interviews averaging approximately 45 minutes each. The total interview time of all interviews I performed equaled nearly 900 minutes (15 hours) with business owners and executive directors. This data required sophisticated analytical technical assistance from someone with expertise knowledge of NVivo's features. The guidance from the NVivo expert helped identify coding patterns that may otherwise have been overlooked and help link the time aspects of the interviews (crisis learning capabilities for instance). It is important to point out that all interpretive decisions and thematic naming were decided by the researcher to be in line with the (1) research

questions, (2) collected data, and (3) literature covered in the literature review. Assistance on coding also helped decrease the risk of potential bias which otherwise may occur when a complex doctoral thesis is written by a sole author. To make sure the thematic analysis was thorough and trustworthy, O'Connor and Joffe (2020) were followed on intercoder reliability. The NVivo expert was consulted to assist with technical set up and organization of the coding process. A NVivo audit trail with updates throughout the results and discussion chapter was kept where renaming, editing etc. was deemed important. One of the benefits with inter-coding while at same time refining the codebook over time is an increase in reliability leading to more meaningful, precise and consistent analysis (MacPhail et al., 2016).

CHAPTER IV:

RESULTS

4.1 Research Questions

This doctorate thesis researches three major research questions. The first Research Question (RQ1) look backwards at lived experiences navigating a SME through previous major VUCA environments. The second research question (RQ2) looks at current VUCA and how SMEs make sense and respond to these. Finally, the third research question (RQ3) looks at perceived future VUCA challenges and how these SMEs view long term competitiveness. In essence a temporal study on how export dependent gem and jewelry SMEs strategize and act when external environments change.

To answer the research questions the author used NVivo to interpret and analyze completed interviews with business owners and general managers which generated rich insightful data grouped into four major themes or codes. Within each of these themes, subthemes were generated, each subtheme also had grandchild themes.

4.2 Theme 1: Strategic Responses to Current VUCA

The first theme emerged prominent concern among export dependent gem and jewelry SMEs, representing their tactical approaches to navigating VUCA market conditions. These themes also directly addressed Research Question 2 (RQ2) regarding which ongoing VUCA-scenario that are perceived the most challenging and what competitive strategies are currently used to respond to these. The theme's emergence aligns with Bennett and Lemoine's (2014) assertion that understanding each VUCA element individually becomes useful for leaders when developing suitable responses. The data

collected indicate that participants are actively engaged in strategic adaptation rather than long term planning.

4.2.1 Word Impact Analysis: Strategic responses to current VUCA

Below follows a word impact analysis.

Word	Length	Count	Weighted Percentage	Similar Words
online	6	17	4.14%	online
social	6	15	3.65%	social
like	4	13	3.16%	like, likely
media	5	11	2.68%	media
business	8	9	2.19%	business
people	6	7	1.70%	people
make	4	6	1.46%	make, making
trust	5	6	1.46%	trust, trusted
instagram	9	6	1.46%	instagram
market	6	5	1.22%	market
customer	8	5	1.22%	customer, customers
focus	5	5	1.22%	focus, focused

stones	6	5	1.22%	stone, stones
crisis	6	4	0.97%	crisis
going	5	4	0.97%	going
platform	8	4	0.97%	platform, platforms
sale	4	4	0.97%	sale, sales
best	4	3	0.73%	best
channels	8	3	0.73%	channel, channels

Table 2: Word impact analysis: Strategic Responses to current VUCA

The word impact analysis above reveals a relationship between frequency of mention and strategic importance across the vocabulary. The analysis shows a declining pattern from high-frequency, high-importance terms to moderate-frequency, moderate importance terms. The word “online” emerges as the most strategically significant term with 17 frequency counts and a 4.2% weighted percentage, demonstrating the fundamentals of digital channels in current strategic thinking. “Social”, “like” and “media” also groups in high frequency, high-importance range with 12-15 frequency counts. This reinforces that Digital Transformation is a primary strategic focus. This reflects the nearly forced nature of digital adaptation during the pandemic, as described by Participant 5: *“Pre-Covid, I knew clients that would say, ‘I would never buy something from a picture. I have to see it.’ But then with COVID, because no one could travel, it really shifted people’s need. It was no longer a question if they wanted to or not. They had to buy from this.”*

The words “business” and “people” occupy moderate-frequency, high-importance with 7-9 frequency counts each indicating their fundamental role in strategic thinking. Customer Relations strategies are then proven always relevant with terms like “trust” and “customer” appearing with 5-6 frequency counts, something that aligns well with the industry’s traditional relationship-based business models where quality relationships with fewer number of customers often are more valuable than wide market reach.

Word Impact Analysis: Strategic Responses to Current VUCA

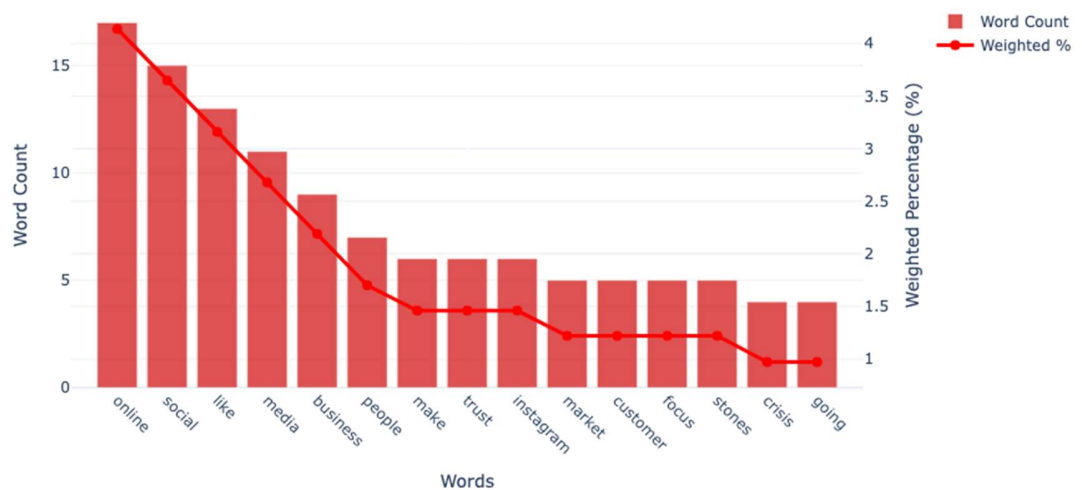


Figure 3: Word impact analysis: Strategic Responses to current VUCA

4.2.2 Word Cloud Analysis supporting Strategic Approaches to VUCA

Another visual of this is shown nicely with a Word Cloud Analysis which shows strategic vocabulary by participants when discussing current VUCA responses. Words like “online”, “social”, “media”, “business” and “people” in larger fonts highlight their importance in strategic discussions. Mid-tier words like “trust”, “relationship” and “reputation” are prominent supporting the Customer Relations strategic importance which indicates that Digital Transformation is a primary strategic focus. Trust-related terms such as “trust”, “relationship” and “reputation” appear prominent supporting the Customer

survival. Participants consistently described being forced into digital channels, contradicting traditional strategic planning models that assume deliberate technological adaptation. This is likely due to the product nature, that each gemstone is unique and historically a product that needs to be seen I person before purchase. This rapid adaptation took place on multiple platforms simultaneously including social media (Instagram, Facebook), e-commerce platforms (Etsy) and direct communication tools (WhatsApp, WeChat) indicating more of a shotgun strategy rather than focused digital planning. The most significant finding in this subtheme is converting the traditional ‘trust-building mechanisms into the digital environment. Participants identified review systems, detailed photography and videos as critical trust building tools in digital sales. The Covid-19 pandemic created a shift in which the speed of digital adaptation took place where clients now often had to purchase their gems and jewelry via digital platforms. This is supported by several quotes on the topic throughout the interview process such as Participant 7; *“If I don’t post my goods, are you buying from me? No”*. The importance of online platforms was reiterated by Participant 4: *“During that COVID time, it was kind of hard to do all the show because the border closed everywhere... I have to move to online instead”*. Regarding the importance of building trust for product and business online Participant 4 also said: *“I have to focus on reviews to make new customers trust online purchasing”*. Participant 18 explained: *“People couldn’t travel to you. There were no trade shows, so the only outlet was the internet access”*.

The second sub-theme, Customer Relations and Trust Building, shows key findings that ‘trust’ is the fundamental currency in the gem and jewelry industry where digital transformation requires new trust-building mechanisms. This study also found that rather than expanding customer base SMEs focus on deepening existing relationships during

crisis periods which could indicate a defensive rather than growth-oriented approach. Reputation management became a critical digital skill which amplifies word-of-mouth marketing which slowly challenges traditional interpersonal capabilities. The increase in business with established customers shows a two-tier ecosystem. This is supported by Participant 10: *“Trust is everything. Once trust is broken, it’s bad”*. Participant 17 explained the relationship deepening strategy: *“Strong relationships were strengthened during the pandemic, leading to increased trust and business volume”*. Participant 15 discussed this further: *“In the shows...we sell to people that know us. they come back. So they kind of appreciate what we do, how we do, so they come back.”*

A third sub-theme comes to capabilities around agility and innovation where small business size appeared as a competitive advantage enabling a rapid decision-making process. Innovation took place through necessity driven improvisation rather than R&D processes which also indicate ad hoc workflow rather than traditional innovation models. Operational flexibility (agility) benefitted SMEs to rapidly adjust inventory, pricing, and service offerings. Participant 14 explains this as: *“Being small helps us to be agile, to find new ways forward”*. The agility is also effectively described by participant 20: *“Use the uncertainty to shuffle the card”*.

The fourth sub-theme relates to market adaptation and positioning where SMEs in the gem and jewelry industry adapted their market position reactively rather than proactively responding to customer demand shifts. Product lines were flexibly adjusted including price point modifications and product category shifts for instance by adding new product lines or shifting towards high-end or lower-end price points. In this section the author also noticed rapid geographical market pivoting where SMEs quickly could move focus from one

market to another. This market adaptation also gives insight into strengthening ones niche rather than general market expansion.

Above is supported by Participant 2: *“I started to change the mind towards online business and we created a new cheaper line”*. Participant 19 discusses the importance of being strong in a specific niche: *“You want your niche, how you can differentiate yourself?”*. On the route to successful business strategizing Participant 16 clarified: *“The success for small entrepreneurs is first not to spend all his money fast on the first product, but try different things and always listen to the customer”*.

4.2.4 Alignment with literature

The findings show a significant interdependence between all subthemes. Digital transformation success depended heavily on trust-building capabilities while SME agility enabled both digital and market adaptation. The findings support the theoretical framework established in the literature review. The reactive nature of strategic responses aligns with Price et al.’s (2022) observation that leaders don’t always follow through their initial strategies as they feel the world around them changes at a pace that their plans quickly become obsolete.

The dominance of digital transformation as a strategic response validates the literature discussions of Covid-19 as the perfect example of VUCA, where organizations were found unprepared for disruptive power (Bratianu and Bejinaru, 2021). The forced nature of this transformation demonstrates what Lawrence (2013) described as the *“chaotic new normal”* requiring immediate adaption.

4.2.5 Alignment with the Research Questions

Findings from the interview process provide insights that SMEs reactively respond to immediate VUCA pressures while also exhibiting strategic thinking in developing competitive positioning approaches. The evidence suggests that SMEs demonstrate more deliberate strategic capabilities in competitive positioning as evidenced by Participant 19's approach: *"You want your niche, how you can differentiate yourself. Because that's what people want. There is too much of everything. How can you stand out compared to the others, so study your product"*. The findings also show that actions decided upon are not entirely ad hoc responses but consistent patterns across interviews show strategic learning integration. Participant 6 describes this perfectly: *"Be aware of the difference between knowledge and information. There is a big difference between the two and knowledge generally is king... It is the serious ones with deep knowledge that survive and thrive, not the ones that are based on information"*.

Research Question 1 (RQ1) is informed through participants reflections on how previous crisis helped shape current competitive approaches. The evolution from reactive to proactive positioning demonstrates learning integration as shown by Participant 20: *"Use the uncertainty to shuffle the cards... take a negative feeling that is uncomfortable, and you use that discomfort to push yourself to do something new"*.

Learning from previous VUCA events helps shape future capabilities. Participant 18 and Participant 10 have a combined 100 years (55 years and 45 years) industry experience and remember the Global Financial crisis well. Participant 18 looks back at the 2008 Global Financial Crisis: *"Definitely was a big pullback in sales. There is a big panic, because liquidity in the market just evaporated. So, the extra cash people had for luxury discretionary products hugely disappeared for a few years"*. When asked how his SME

dealt with such disruption, industry-veteran Participant 18, with 55 years in the gem and jewelry industry responded: *"Being based in Bangkok gives me an edge in that respect, that if business is really, really tough, I can trim way, way back. And you know, I can keep my business expenses, my office... under \$1,000 a month, impossible to do in a city like London, New York or Geneva"*. Other respondents remember the financial crisis of 2008 in similar ways. Participant 10 who has been in the industry for 45 years remembers: *"I've dealt with people who have flourished well and had good marketplaces, and I've dealt with people who things dried up and they needed to sell items at lower prices"*. When asked his own strategy to survive the Global Financial crisis he responded: *"I went into that recession, that downswing in the markets, with a large, large inventory that I had at a very, very good price. So that didn't bother me. I had the materials to sell, and I could sell at a price that other people couldn't get the materials at. So, I was a little, I was a little bit bulletproof, so to say, as far as the markets went"*. When asked about being an SME in such environment Participant 10 responded: *"Being small and a little quiet, I was able to weather that storm very well. I had what people needed and wanted, and I was one of the choices they made to source their goods from"*.

Another industry veteran with 45 years of experience remembers the overall market situation of 2008 financial crisis with the following words by participant 9: *"It affected my business in a very negative way. People were shocked. So disposable income was how should I say people were not looking to buy fine jewelry at that time"*. Discussing strategies to survive such a financial crisis participant 9 turned to diamonds: *"Had to try to concentrate on private business. More or less, I actually sell diamonds as well. So I would sell a lot of referrals from private people for engagement rings to survive color stone industry at that moment, the purchasing was almost non-existent."*

Research Question 2 (RQ2) is directly addressed through identification of specific ongoing VUCA scenarios that SMEs perceive the most challenging: digital marketplace intensification, supply chain disruptions, generational market shifts among others. The competitive strategies employed include platform diversification, relationship-based differentiation and agile adoption. The digitalization in the industry, however unavoidable yet harder for some participants to accept. Participant 11 said: *“it was always strictly B2B. And we never show online or sell online stones, because I think it’s the opposite of what gemstones are”*. Similar thoughts were shared by participant 15: *“Before Covid, I think we never really did like any Instagram or like Facebook, no nothing, you know, like, just simply- we never needed it”*. This explains a lot how slow this industry was to adapt to an online presence. Other participants discuss digitalization and digital marketplace as something unavoidable that came with a negative consequence, participant 10 reasons: *“overheads eat up everything and so many places are going online, and they are losing their footprint and getting a bigger footprint online, and it costs so much less, but then you lose your customer service a little bit. You lose your humanity”*.

More discussion took place on the topic and one insight generated was pricing transparency. Online prices are always clearly marked, which upsets some customers. Participant 7 speculated: *“the problem we face is jewelers complaining we are putting prices on. That’s the biggest thing we face, and we lost some good clients because of that in Europe”*. Participant 7 also discussed the effects of posting products online by saying: *“online is mostly impulsive buying. If we are shopping on any site, and when you like the price, you just click”*.

Research Question 3 (RQ3) is addressed through forward-looking competitive positioning strategies. Participants demonstrate strategic thinking that extends beyond immediate

adaptation to long-term competitive advantage development supporting Participant 18's observation: "If you buy exceptional quality, you're always find a buyer for it. But buying medium quality, the variety and quantity of supply is so huge that trying to compete in that market is very, very difficult". The evidence suggests that while initial VUCA responses are reactive, SMEs in the gem and jewelry industry develop increasingly strategic approaches to competitive positioning through accumulated VUCA experience, challenging the assumption that SMEs remain perpetually ad hoc in their strategic thinking capabilities. Participant 6 speculated on this topic: *"Sometimes it's time not to do too much on the sales department, because trying to sell right now, in a very uncertain market, it just won't work. Because it doesn't matter how low you set your prices, nobody's going to buy anything until they either have an order for it, which seems highly improbable. Right now, because nobody's ordering anything so I think that now it's time to plan for the future"*. On discussions on strategies for the future participant 17 shares: *"So the biggest challenge, and that's a fact, is in the future, in any industry, it's going to be mine to market with the globalization, with so much openness on an online platform"*. The mine to market concept means a existential threat to dealers, traders and brokers. Participant 17 continues: *"So basically, all the people who, as we are the middlemen, will vanish, because mines to market means you are mining directly from the source, and you are sending to the end retailer. So, if you want to do that, you have to eliminate the middle line, which, in previous times, they used to follow a chain system"*. One of the established, well known gemstone laboratory managers, participant 12, disagree with this trend saying middlemen serve an important function in the trade: *"I've noticed that sometimes people say, oh, like, as a consumer, why are gemstones so expensive? But you have to think that by the time you're buying a gem in a jewelry store that's already been tested by a lab and has already gone through all these processes, a lot of the risk has been taken out of the supply chain for you,*

right?". The element of risk-elimination is something consumers in the long run benefit from, even if it means paying a higher price for an item.

4.3 Theme 2: Current VUCA environment challenges

The second major theme emerging from the interviews is coded as “Current VUCA environment challenges” and developed as a critical area of concern for gem and jewelry SMEs, representing their perceptions and experiences towards VUCA market conditions. This theme directly addresses RQ2 by analyzing which ongoing VUCA related scenarios are perceived as the most challenging, while also providing insights into RQ3 about how SMEs perceive the business environment going forward. The theme’s emergence aligns with Schoemaker et al.’s (2018) framework that emphasizes the importance of understanding environmental challenges before developing strategic responses. This theme complements theme 1 by providing the environmental context that drives strategic responses previously analyzed in 4.2.

4.3.1 Word Impact Analysis: Current VUCA environment challenges

Word	Length	Count	Weighted Percentage	Similar Words
supply	6	8	2.46%	supply
generation	10	7	2.15%	generation, generations
price	5	7	2.15%	price, prices, pricing

chain	5	7	2.15%	chain
jewelry	7	6	1.85%	jewelry
biggest	7	5	1.54%	biggest
everything	10	5	1.54%	everything
gemstones	9	5	1.54%	gemstone, gemstones
kind	4	5	1.54%	kind
younger	7	5	1.54%	younger
crisis	6	4	1.23%	crisis
fluctuate	9	4	1.23%	fluctuate, fluctuation
high	4	4	1.23%	high, highly
people	6	4	1.23%	people
think	5	4	1.23%	think
big	3	3	0.92%	big
borders	7	3	0.92%	border, borders
challenge	9	3	0.92%	challenge, challenging
changed	7	3	0.92%	changed, changing

Table 3: Word Impact Analysis: Current VUCA environment challenges

Word Impact Analysis: Current VUCA Environment Challenges

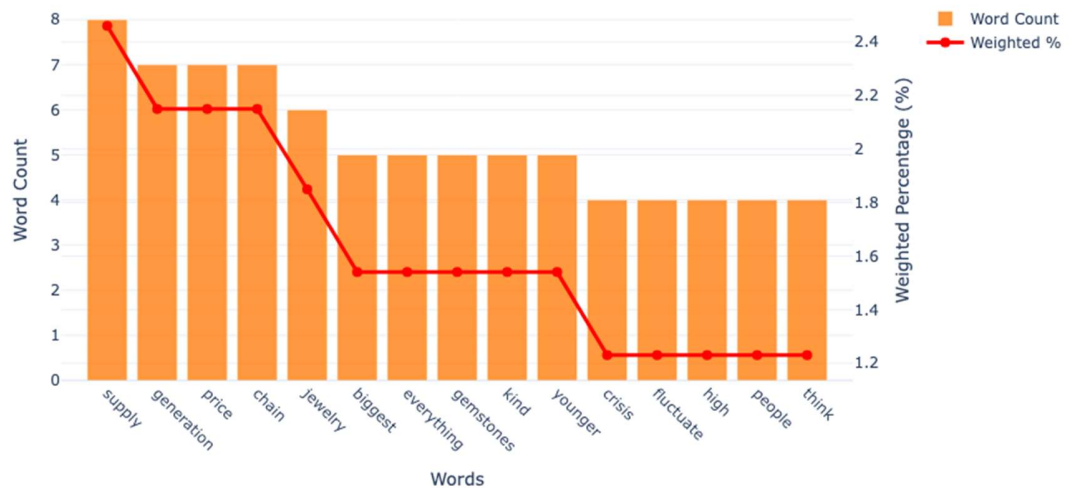


Figure 5: Word Impact Analysis: Current VUCA environment challenges

The word impact analysis reveals distinct patterns in how participants articulate current VUCA challenges. “Supply” emerges as the most frequent mentioned challenge with 8 word counts and a 2.46% weighted percentage, indicating supply chain disruptions as the primary VUCA concern in this theme. This is followed by “generation”, “price” and “chain” (each 7 word counts, and 2.15% weighted percentage) creating a cluster of interconnected challenges around supply chain management, pricing volatility and generational market shifts.

This analysis shows a decline from high-impact terms to moderate impact terms with “jewelry”, “biggest”, “everything”, “gemstones”, “kind” and “younger” forming a secondary cluster (5–6-word counts, 1.54-1.85% weighted percentage). This suggests that although supply chain and price issues dominate, fundamental industry challenges around product positioning and demographics maintain prominence. Low frequency but still persistent terms such as “crisis”, “fluctuate”, “high”, “people”, and “think” (4 word counts each, 1.23% weighted percentage) indicate underlying concerns about market instability.

4.3.2 Word Cloud Analysis on Current VUCA environment challenges

A ‘Cloud visualization’ provides granular insights into the challenge vocabulary employed by participants 1-20 when discussing current VUCA environment pressures. The prominence of “supply”, “chain”, “generation”, and “price” in larger fonts confirm their central importance. Mid-tier terms such as “jewelry”, “everything”, “gemstones” and “younger” reveal the foundational business realities underlying strategic concerns. The visual representation shows that operational terminology such as “supply”, “chain”, “price” and “fluctuate” dominate the challenge discourse while market evolution terms such as “generation”, “younger”, “changed” indicate longer term structural shifts. Crisis-related vocabulary such as “crisis”, “war”, “borders”, “closed” appear throughout the cloud indicating awareness of external disruptions beyond traditional market elements.

The ‘Word Cloud’ show the presence of both immediate operational challenges and long-term market evolution concerns. Terms like “luxury”, “material”, “mining” indicate industry specific challenges. The word cloud effectively highlights the complexity of VUCA from supply chain disruptions to fundamental industry transformation.



4.3.3 Emerging subthemes under “Current VUCA Environment Challenges”

Several subthemes were identified with Supply Chain vulnerability being the first prominent and reveal that global supply networks become severely disrupted during crisis periods. SMEs experienced material shortages, unpredictable delivery schedules that fundamentally challenged traditional inventory management.

Another key finding relates to the nature of the products where unlike manufactured goods, gemstone business faces unique supply chain limitations tied to natural production, something that creates a fundamental unpredictability in inventory management as well as business planning.

The third key finding related to geographic and political barriers we could see that border closures and political instabilities, regional or global, create immediate operational

crises, forcing SMEs to rapidly identify alternative suppliers, customers or logistics solutions.

The fourth key finding relates to quality and authenticity and came down to inspection capabilities during crisis periods challenging reputation management in an industry that is almost entirely built on trust and relationships.

Above is supported in the interviews by multiple interviews including Participant 18: *“A factory can produce any kind of bag you want, but we’re restricted by what the ground, what the nature produces”* The supply chain vulnerability is described by Participant 11: *“Somebody who mined the stone in the middle of Africa can now kind of sell it directly to somebody in China just by taking a video of it and sending it”*. Another quote while discussing disruptive challenges was explained by industry veteran, Participant 18, with 55 years of experience in the trade: *“You have to find ways to adapt. Otherwise, you get phased out”*.

The second subtheme relates to Market Demographics and generational shifts. Key findings here include a generational value disconnect in how younger generations perceive value, luxury and ownership compared to traditional customer bases. A second key finding demonstrates differences priorities where younger generations tend to prioritize adventures, experiences and technology over traditional luxury products. The appreciation gap appears to be a factor that gem and jewelry SMEs must learn to deal with. This subtheme is supported in interviews by Participant 1: *“The new generation doesn’t really have this strong knowledge, and because they don’t need the luxury goods, they actually focusing the focus on the spending is way different”*. This is supported by Participant 13: *“People don’t want to own anything anymore. The new generation wants freedom, flexibility”*. On the same track is Participant 17 who said: *“New generations prefer spending on gadgets, fashion jewelry, and vacations rather than high-value jewelry”*.

A third subtheme relates to economic and financial pressures. Where key findings indicate that fluctuations in raw material and currency exchange rates leads to pricing strategy difficulties. Economic uncertainties also lead to price sensitivity challenging traditional pricing models. Frequently mentioned was also the market segment polarization where only very low-end and very high-end products moved effectively, leading brands away from the traditionally comfortable middle market segment. Discussions also covered challenges related to inflation and cost structure. This subtheme had strong support in the interviews. Participant 15: *“This mid-range segment is nearly not moving, and what we sell is like cheap stones or high-end, expensive pieces”*. On the challenges of inflation Participant 16 said: *“The worst-case scenario is a high inflation always coming and coming and coming, because it puts in a difficult situation to have to raise the price”*. Economic situations are however always difficult to predict something Participant 12 highlights: *“People never notice when they’re at the top of the financial cycle... its only when it starts to go down that people start to really worry”*.

The fourth subtheme relates to industry competition and market evolution where the digital transformation completely changed competitive dynamics and intensified global competition. The digital platforms created unprecedented transparency that opened the markets wider than only the established players. Here SMEs lacked resources to compete with larger corporations but had to find ways of doing so often via product or brand proliferation, new competitors and brands started to appear. Supporting evidence found in the interviews include Participant 14: *“The more the market is open, the more challenging it is for our business”*. Participant 19 ventilates the same frustration: *“After Covid, I think everything changed, and we went all to extremes, and somehow there is even more competition, because before we didn’t have all these online”*. Participant 14 again: *“The*

market is so open that people can discover everything through their mobile phones. There are no secrets anymore”.

There is a cross-subtheme integration on various levels. For instance, supply chain disruptions worsened financial pressures, generational shifts intensified competition, economic hardships limited SMEs ability to deal with vulnerabilities. With multiple VUCA elements impacting firms’ operations simultaneously it deepens the reality of dealing with the “A” in VUCA, the Ambiguity. Limited resources in SMEs lead to tradeoffs between operational needs and strategic positioning. Conclusion of this is that we see obvious patterns across all subthemes.

4.3.4 Alignment with literature

The findings strongly support the theoretical frameworks emphasis on VUCA as a multi-dimensional environment. The indication of supply chain, generational, economic, and competitive challenges align with Bennett and Lemoine’s (2014) assertion that each VUCA element requires different analytical and response approaches. The nature of challenges validates Bratianu and Bejinaru’s (2021) observation that modern VUCA environments, where multiple disruptions interact to amplify overall impact.

The findings particularly support the literature discussion that SMEs vulnerability in VUCA environments, as discussed by Eggers (2020), where flexibility advantages can be overwhelmed by resource limitations when multiple challenges occur simultaneously. The generational shift findings also align with broader literature on changing consumer behavior.

4.3.5 Alignment with Research Questions

The findings demonstrate that SMEs perceive the ongoing VUCA environment as a significant threat to their long-term performance. The nature of challenges identified across all subthemes validate the concerns about long term competitiveness, as evidenced by Participant 9's observation: *"People are really, I think, right now, in the state of being completely flabbergasted and flustered which way to go, because there's so much uncertainty"*.

Research Question 1 (RQ1) and Research Question 2 (RQ2) are discussed by most participants. Like the Word Cloud analysis show, the high frequency of words such as "generations", "younger", "price", "supply", "chain", "gemstone" and "jewelry" identify the need to develop strategies to stay relevant to new consumer groups, changing consumer behaviors. It was discussed by most participants.

Research Question 3 (RQ3) is addressed through participants forward looking concerns about industry evolution and long-term ability to compete. Participant 1's observation about industry resilience provides perspective on future outlook: *"Jewelry industry, it won't be extinct, it's always gonna be, it's always gonna be needed. It's just about the time, or we have to just go through the tough time, but after that, it should be good"*.

The evidence of adaptive capacity supports the concept that SMEs continue to rely on ad hoc decision making in the initial stages. Forming forward-looking strategies, but at the same time rely on historically accumulated learning capabilities on how to approach uncertainty. This adaptive capacity is described by participant 1: *"we have to evolve as the world spins"*.

4.4 Theme 3: Crisis Response and Adaptation Strategies in VUCA

The third major theme identified throughout the interviews was related to crisis response and adaptation strategies. This emerged as a pivotal area among gem and jewelry SMEs representing retrospective how they navigated previous major VUCA environments, particularly the 2008 Global Financial Crisis and the Covid-19 pandemic. This theme directly addresses Research Question 1 (RQ1) while providing insights into the evolution of adaptive capabilities over time.

The themes development aligns with framework developed by Weick and Sutcliffe (2007) on organizational resilience, which discusses the importance of learning from crisis experience to develop adaptive capacity. Collected data from the interviews demonstrates a retrospective sense-making about crisis events something that is in line with Boin et al. (2017) assertion that crisis experiences become organizational learning opportunities that can help shape strategies.

4.4.1 Word Impact Analysis: Crisis Response and Adaptation Strategies

Word	Length	Count	Weighted Percentage	Similar Words
covid	5	18	2.04%	covid
online	6	17	1.92%	online
people	6	16	1.81%	people
business	8	12	1.36%	business
social	6	11	1.24%	social
started	7	10	1.13%	start, started
everything	10	10	1.13%	everything

change	6	9	1.02%	change, changed
customer	8	9	1.02%	customer, customers
media	5	8	0.90%	media
still	5	8	0.90%	still
website	7	8	0.90%	website
video	5	8	0.90%	video, videos
instagram	9	7	0.79%	instagram
pandemic	8	7	0.79%	pandemic
price	5	7	0.79%	price, prices
thing	5	6	0.68%	thing, things
anything	8	5	0.57%	anything
crisis	6	5	0.57%	crisis

Table 4: Word Impact Analysis: Crisis Response and Adaptation

Word Impact Analysis: Crisis Response and Adaptation Strategies

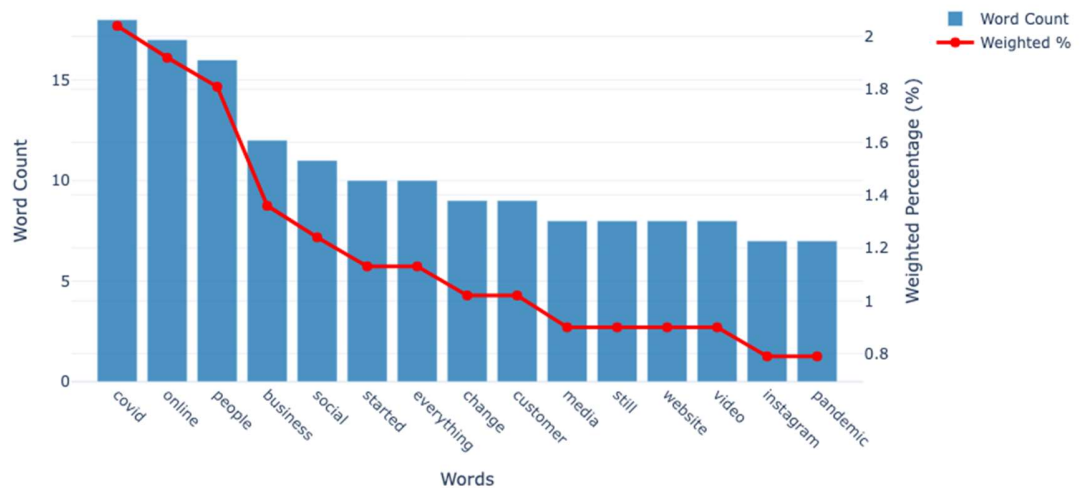


Figure 7: Word Impact Analysis: Crisis Response and Adaptation

The word impact analysis reveals clear patterns in how participants describe their crisis response experience. “Covid” emerged as the most frequent mentioned crisis reference with 18 word counts and a 2.04% weighted percentage indicating its dominance as the primary crisis experience. This is followed by “online” with 17 word counts and a 1.92% weighted percentage. Third is the word “people” with 16 word count and 1.81% weighted percentage. This can be viewed as a human-centered digital adaptation to crisis. After these high frequency terms, the analysis shows a steep decline to adaptation strategy terms such as “business”, “social”, “started”, “everything” which forms a second word cluster (all with 10-12 word counts each). Behind these follow low-frequency terms that still has significance including “change”, “customer”, “media”, “still”, “website”, “video” that reveals specific tactical adaptations used during crisis periods.

4.4.2 Word Cloud Analysis on Crisis Response and Adaptation

Below word cloud visual provides insights into crisis response vocabulary used by participants when reflecting on adaptation strategies. The prominence of words like “covid”, “online”, “people”, and “business” in larger fonts confirm their central importance in crisis response. Mid-tier terms such as “social”, “started”, “change” and “customer” show levels of transformation based on adaptation strategies.

Most interesting is that crisis-specific vocabulary such as “covid”, “crisis”, and “pandemic” integrates with action-specific vocabulary like “started”, “change”, “customer”. “social”, and “media”. Digital Transformation terms like “online”, “social”, “media”, “website”, “Instagram” and “video” appear prominent throughout the cloud showing that a digital adaptation was a primary crisis response strategy. The word cloud reveals both reactive and proactive language with words like “started” and “change” indicating a transformation rather than temporary crisis management. It also shows a learning-oriented nature where immediate survival strategies evolve into permanent business adaptation.

while maintaining personal connection through digital channels. The last aspect relates to how temporary crisis adaptation turned into a permanent business model even post-crisis.

Support for this subtheme is found throughout the interviews where Participant 2 stated: *“I started to change the mind towards online business and we created a new cheaper line, cheaper pieces and launch online sale”*. Participant 18 said: *“Covid had a lot to with that, because there was no way to market your gems. People couldn’t travel to you. There was no trade shows, so the only outlet was the internet access”*. This is further supported by Participant 7: *“It’s not something we want to do, but we are forced to do. If we don’t do that, we don’t have sales”*.

Second subtheme relates to operations and resource management showing successful navigation through crisis reallocation of resources from traditional channels to new opportunities. It also clearly showed that SMEs systematically examined their cost structures to make long-term competitive advantages possible. The operational flexibility further showed that rather than cutting supplier relationships during crisis, successful SMEs invested in managing these relationships. Add to this a flexible inventory management leading to stock keeping and closer integration with suppliers. Supporting evidence for this includes Participant 11: *“The key strategy was really to keep your supplier happy and make him able to survive also”*. The operational flexibility was clearly defined by Participant 4 who said: *“Because I was kind of like a very small business, so it’s easier for me to adjust everything, so we very flexibility on changing everything in the company”*.

A third subtheme relates to customer relationship adaptations where the first prominent code was relationship deepening showing an intensive focus on existing customer base. Findings show that this affected communication methods in positive ways so SMEs successfully could maintain personal relationships through digital channels while at the same time expanding reach. This further led to an improved value proposition and

ways for SMEs to develop new trust building mechanisms that suited digital relationships better. Interviews supported this theme through Participant 17: *“Strong relationships were strengthened during the pandemic, leading to increased trust and business volume”*. Participant 4 similarly resonate that: *“I will kind of like deepen relationship with the best customer, with all the return customers”*.

The fourth and final subtheme relates to strategic learning and resilience with key findings show that SMEs view crisis experiences as educational opportunities. This led to enhanced adaptive capacity and more flexibility. The crisis experience also helped SMEs develop better scenario planning into daily operations. Strategic learning is also supported through SMEs ability to use crisis knowledge into permanent operational capabilities. This is supported in the interviews by Participant 6: *“If you don’t like change, don’t bother being in this market, because its always change. If you cannot accept that things go wrong, go bad, go good, then don’t be there, because it’s gonna be messy always”*. Participant 3 discusses similar ideas: *“Definitely not going back, because then, you know, when you go along, you notice that the way you did it before, in an environment which has changed, it doesn't work anymore. So, you need to go with the flow and be agile to trends, markets and the industry as a whole”*.

There is evident cross-subtheme integration with findings showing that digital transformation success relied on customer relationship capabilities, while operational flexibility helped both relationship management and digital adaptation. It appears that adaption capabilities and learning from previous crisis improved this capacity further with results being faster and more effective responses to VUCA environments.

4.4.4 Alignment with literature

The ability to learn from previous crises and permanently improve organizational capabilities stands out amongst gem and jewelry SMEs. It shows this not only relates to survival but to developing opportunities. This finding has developed implications for understanding how VUCA environments can improve organizational development rather than merely surviving the challenges.

The findings support the theoretical framework in crisis management. The transformative nature of how to respond to crisis align with Weick and Sutcliffe's (2007) concept of high reliability organizing where crisis experience enhances firms' response capabilities. Findings also support the claim by Boin et al. (2017) that crisis develop a window of opportunities for transformation which may not have happened under normal circumstances.

Findings also support Lengnick-Hall et al.'s (2011) resilience framework which explains that organizational resilience emerges through systematic learning from adverse experiences. Vogus and Sutcliffe (2007) concept that resilience comes from an evolution from reactive to proactive adaptation.

The rapid digital transformation seen among many gem and jewelry SMEs can also be explained with Verhoef et al.'s (2021) framework that crisis periods accelerate digital transformation.

4.4.5 Alignment with Research Questions

The findings provide interesting insights that initial crisis response often is ad hoc and reactive in nature. Successful SMEs showed systematic learning integration that resulted in thoughtful strategic capabilities

Research Question 1 (RQ1) on temporal lived experience reveals a learning process that over time led to organizational capabilities. This is in line with Participant 17: *“The financial crisis made people think about new levels of business, and I capitalized on the low market prices”*. Prices on the market did indeed fall during the financial crisis and some established businesses with huge, accumulated inventory had the ability to match this market. Participant 10 remembers: *“I was in the same position then. I had a very large inventory, more than most dealers, and being small and a little quiet, I was able to weather that storm very well”*.

Research Question 2 (RQ2) can be answered by the fact that adaptation strategies developed during previous crises directly influence current competitive strategies showing the clear link between past learning and present strategic capabilities. A general manager of a 102-year-old business speculate on competitive strategies based on previous experience, participant 8 say: *“Being shrewd, tough, understanding the market and understanding your clients is the only way to really be successful”*. On the conversation on the extremely competitive gemstone industry, participant 8 continues: *“Everything you have the potential to buy, there's already somebody who offered less on it”*.

Research Question 3 (RQ3) is addressed through participants' forward-looking perspectives. That crisis learning show confidence in future VUCA navigation. Participant 6 explain this perfectly: *“If you don't like change, don't bother being in this market, because it's always change”*. Strategies to navigate the future depends on what you can make out of the past. Participant 1 explains: *“Luxury goods have to take the route on simplicity, where you cannot make a very, very expensive or grand pieces, or showpieces, hoping people will buy, I think people now like simple stuff”*.

4.5 Theme 4: Future Outlook and long-term Viability

The final out of four major themes that came out of the interview material is about the long-term outlook for the industry. It covers industry evolution, emerging opportunities, and long-term survival of gem and jewelry SMEs. This theme directly addresses Research Question 3 (RQ3).

This theme aligns with Ansoff's (1980) strategic management framework that focuses on future environmental evaluation as fundamental to strategic planning. Data from interviews show that participants demonstrate strategic perspectives while thinking about the industry's transformation. This theme synthesizes insights from all three previous themes to provide a understanding of SMEs strategic position to be competitive in the future.

4.5.1 Word Impact Analysis: Future Outlook and long-term Viability

Word	Length	Count	Weighted Percentage	Similar Words
diamonds	8	20	3.23%	diamond, diamonds
lab	3	19	3.06%	lab
grown	5	17	2.74%	grown
market	6	15	2.42%	market, marketing, markets
generation	10	11	1.77%	generation, generational

big	3	11	1.77%	big
online	6	11	1.77%	online
jewelry	7	8	1.29%	jewelry
new	3	8	1.29%	new
stones	6	8	1.29%	stone, stones
think	5	7	1.13%	think
changed	7	7	1.13%	change, changed
sell	4	7	1.13%	sell, selling
like	4	7	1.13%	like, likely
biggest	7	6	0.97%	biggest
much	4	6	0.97%	much
people	6	6	0.97%	people
buy	3	6	0.97%	buy, buying, buys
focus	5	6	0.97%	focus, focused

Table 5: Word Impact Analysis: Future Outlook and Longterm Viability

Word Impact Analysis: Future Outlook and Longterm Viability

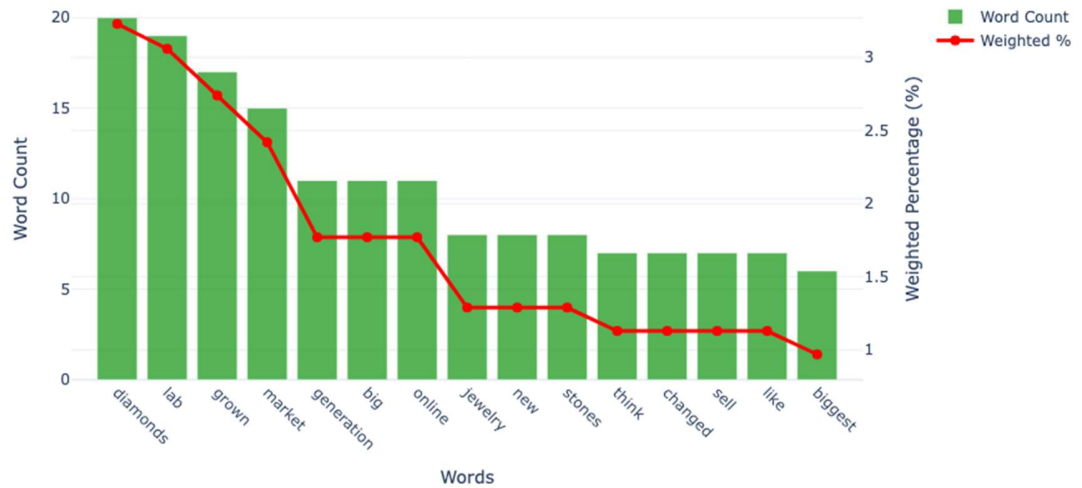


Figure 9: Word Impact Analysis: Future Outlook and Longterm Viability

The word impact analysis shows clear patterns in how participants explain their future oriented strategies. “Diamonds”, “lab”, and “grown” dominate the word frequency with 20, 19 and 17 word counts respectively (3.23%, 3.06% and 2.74% weighted percentage). This creates a dominant cluster around lab-grown diamond market disruptions concern. There is also significant concentration in the top tier for words like “market” (15 word counts, 2.42% weighted percentage). A second-tier cluster is formed around words like “generation”, “big” and “online” (each with 11 word counts, 1.77% weighted percentage). This pattern indicates that future strategic thinking is dominated by technological disruption (lab-grown technologies), alongside fundamental evolution such as generational shifts and digital transformation. There is a steep decline towards more industry standard terms such as “jewelry”, “stones”, “sell” among others.

4.5.2 Word Cloud Analysis on Future outlook and long-term viability

The word Cloud Analysis shows insights into future-oriented vocabulary discussed by participants on long-term strategic positioning. The dominance of “diamonds”, “lab”, “grown” and “market” in larger fonts show their central importance in future strategic decisions-making. The cluster gives a clear visual of the most central future challenges.

Mid-tier terminology such as “generation”, “big”, “online”, “new”, “stones” reveal appears as drivers of future concerns. The big visual picture show how technological disruptions (“lab”, “grown”, “synthetic”) integrates with market evolution (“generation”, “online”, “changed”) and industry traditional terminology (“jewelry”, “stones”, and “sell”). Worth paying attention to is that the word cloud show both opportunity and threat-oriented language with terms like “new”, “focus”, “sustainability”, “ethical”, and “future” indicating future opportunities whereas terminology such as “challenge”, “fake”, “synthetic”, and “threat” suggest a defensive position. The word cloud effectively shows this dual nature of future outlook where technological disruptions can be seen as both opportunity and threat.

of market share for lab-grown diamonds will likely lead to a value chain reconstruction. This technological disruptor forces SMEs to find a position and approach in this new reality. Support for this comes from Participant 2: *“Totally change the diamond market. Yeah, because now the customer accepts lab-grown diamonds and the jewelry”*. Another quote that will live on came from Participant 17: *“Diamonds have gone from ‘diamonds are forever’ to ‘diamonds are for everyone’”* indicating a democratization of luxury that now also reached the traditional diamond industry. At the same time, Participant 18 clearly show a sentiment that some people in the trade feels: *“If we want to really crush the synthetic diamond trade, is for diamond retailers to start offering, if the sell a half carat natural, we’ll give you a half carat synthetic free, and that’ll end the whole issue about synthetic diamonds and natural diamonds being the same”*.

A second subtheme relates to the generational market evolution regarding consumer behavior. The findings show shifts in attitudes towards owning luxury items versus, for example, experiences something that is a challenge for traditional jewelry business models. Here we notice trends that younger generation value sustainability, ethics, social responsibility over traditional luxury markers such as rarity, prestige and investment potential. Consumer behavior in these segments showcase an increased price sensitivity alongside higher transparency in sourcing and production. Here we see a need for jewelers to market their products as a experience with meaning rather than only possessing objects. Supportive evidence here can be identified in the interviews for instance by Participant 13: *“People don’t want anything anymore. The new generation wants freedom, flexibility”*. Participant 4 notice a trend: *“Most of my customers, they are age 40-60. So, I think they still like, prefer the real gemstone. But for the younger generation, they kind of don’t really care about real gemstones. They just want beauty. They want it in the lower price”*. Across income segments lab-grown stones also appear accepted with participant 14 (a third-

generation jeweler) noticing: *“Even among wealthy people, the perception of lab-grown diamond is positive because they think about sustainability”*.

A third subtheme here relates to the digital marketplace with findings that digital platforms have the ability of turning local products global. This eliminates traditional geographic and relationship-based competitive advantages leading to the need to develop a wider array of differentiation. This global access and information transparency is something the industry needs to learn to manage as the traditional relationship-based business model needs a more hybrid approach in the future. Supportive evidence of this comes from Participant 14” *“The market is so open that people can discover everything through their mobile phone. There are no secrets anymore”*. Participant 7 noticed that: *“if I don’t post my goods, are you buying from me? No, the customer who’s complaining is also not buying on a regular basis, and the market is evolving a lot”*.

The fourth and final subtheme relates to strategic differentiation. It shows that authenticity becomes increasingly valuable, sustainability and ethical sourcing becoming part of the value proposition, the need to specialize, find a niche, become greater than ever and SMEs need to leverage on new opportunities while at the same time maintaining their authentic differentiation. In support of this Participant 6 said: *“If you have something that everybody else has, then you are somewhere in the cloud, and it’s really, really hard to go through, but suddenly, if you have a great Padparadscha Sapphire, unheated, over 10 carats, then you have power”*. Participant 19 states that: *“if you want your niche, how you can differentiate yourself. Because that’s what people want. There is too much of everything”*.

There is clear cross-theme integration showing that future success of SMEs requires simultaneous embrace of digital transformation at the same time maintaining authentic traditional values, acceptance of lab-grown diamond market while at the same time

defending the historical advantages of natural diamonds and global market engagement while still preserving a personal relationship-based business model.

4.5.4 Alignment with literature

These findings support established frameworks in strategic management. The recognition that technological disruptions as permanent part of the evolving marketplace aligns with Christensen's (1997) in the disruptive innovation theory which highlights that technological innovations restructure industry value chains.

The generational market evolution validates Strauss and Howe's (1991) generational theory that demographic transition fundamentally restructures value chains.

4.5.5 Alignment Research Questions

The fourth theme shows that SMEs recognize ongoing VUCA as significant threats to traditional business models, they also identify substantial opportunities for competitive repositioning where threats tend to lead to innovation rather than just creating defensive responses.

Research question 1 (RQ1) shows that previous VUCA experiences help SMEs apply adaptive capabilities to face future challenges.

Research question 2 (RQ2) is addressed through recognition that current VUCA challenges represent early indications of a permanent industry transformation which requires strategic re-positioning rather than just tactical adjustments

Research question 3 (RQ3) is addressed through an analysis of future perceptions. The findings show forward looking integration with technology, the demographic transition, marketplace evolution and strategic planning. Participant 1 insightfully expressed: *"jewelry industry, it won't be extinct, it's always gonna be, it's always gonna*

be needed. It's just about the time, or we have to just go through the tough time, but after that, it should be good". A trend worth noticing is the increasing demand for ethical and sustainable certification. Many end-consumers demand to know that the jewelry with gemstones or diamonds that they are purchasing are clean both in terms of mining and manufacturing. There is, however, a complex and expensive membership process in organizations such as the Responsible Jewellery Council (RJC). Many smaller dealers, manufacturers or small-scale miners simply cannot complete all requirements to become members something Participant 5 discusses: *"You can't force another country's perspective on the people that are living in those countries. When you integrate those people into the process, that's when the big change happens".* Participant 18 discusses a similar thought: *"I hate the word sustainable. Should never be used in the context of any mining. The industry has bastardized the definition of sustainable to warp it into being able to apply to trade".*

4.6 Coding Matrix results

In Coding Matrix 1 (Figure 11) below we see the relationship between 'Crisis Response and Adaptation Strategies' on the left and 'Current VUCA Related challenges' on the right. The middle section proves that nearly all participants talk about both past crisis responses and current challenges, which is evidence that learning-experience from past crisis directly relates to how SMEs interpret current challenges. Past crisis experiences like 2008-09 Global Financial Crisis and the Covid-19 pandemic taught SMEs lessons that help them understand today's challenges. The network graph shows that crisis learning, and current challenge recognition is connected, not separate topics.

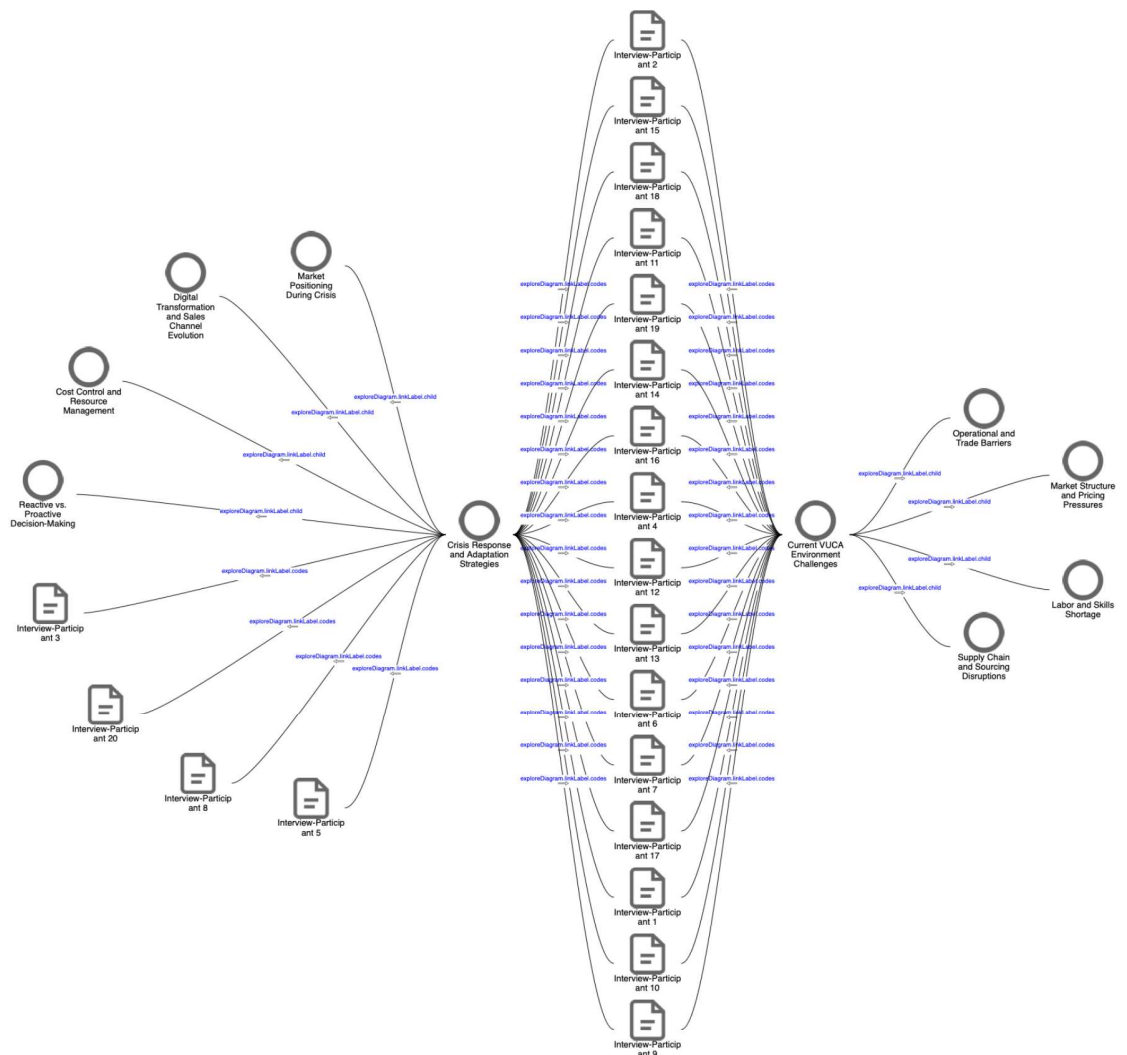


Figure 11: Coding matrix 1

In Coding Matrix 2 (Figure 12) below we find ‘Strategic Responses to Current VUCA’ on the right and ‘Future Outlook and Long-term Viability’ on the left. Nearly all participants are found in the center section of the matrix indicating most participants are connected to both themes. This means that SMEs aren’t just reacting, they are directly linked to future strategies which means strategies companies use today are directly linked

to how they think about the future. This is not random, current actions are based on where they think the industry is going.

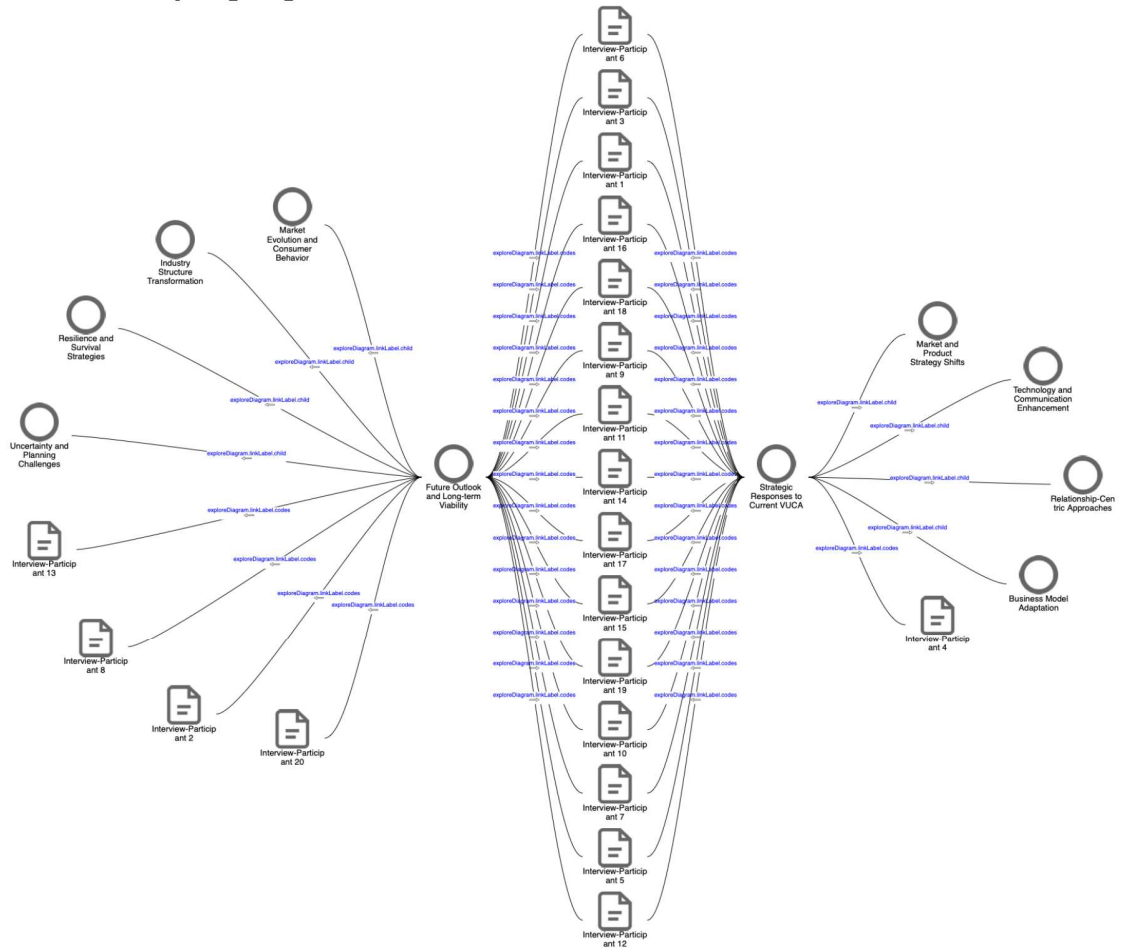


Figure 12: Coding Matrix 2

CHAPTER V: DISCUSSION

5.1 Discussion of Results

Comparative analysis of all four themes shows temporal and strategic progression in how gem and jewelry SMEs navigate VUCA environments. There is a clear thematic relationship that collectively addresses all three research questions. This discussion of themes helps create a comprehensive understanding of gem and jewelry SMEs strategic behavior in VUCA contexts.

5.2 Temporal Progression: The VUCA navigation through themes

A comparative analysis reveals clear temporal progression from Crisis Response and Adaption Strategies (Theme 3) through Current VUCA Environment Challenges (Theme 2) to Strategic Responses to current VUCA (Theme 1) concluding in Future Outlook and Long-term Viability (Theme 4).

Theme 3 → Theme 2 → Theme 1 → Theme 4
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This “progression journey “shows how gem and jewelry SMEs evolve from reactive crisis management towards proactive strategic positioning through accumulated VUCA experience. This progression is based on the findings seen in Matrix 1 and Matrix 2 presented in the results chapter 4.6.

There is a concentration of participants in the middle section of coding Matrix 1 that reveals that SMEs in the gem and jewelry industry actively integrate past crisis experiences with their interpretation of current VUCA challenges. The findings mean that organizational learning from major disruptions such as Global Financial Crisis 2008-2009 and the Covid-19 pandemic create a framework that helps SMEs respond to new uncertainties. It is the integration of past and present along with the nature of crisis learning

that creates competitive capabilities as well as an ability to make more proactive and informed responses to VUCA environments.

Coding Matrix 2 reveals equally important insights about SME strategic thinking. The high concentration of participants connecting Strategic Responses to Current VUCA with Future Outlook and long-term Viability shows that successful SMEs link what they do today with where they want to be tomorrow. The findings show long-term temporal planning that indicates they use today's uncertainty to long term strategic positioning. Current strategic responses are therefore designed with future viability in mind which means there is a strong understanding that survival depends on building capabilities that will serve them into the future.

When analyzed together, all four themes are integrated and reveal that successful responses to uncertainty are characterized by a temporal integration. They explain the ability to connect past learning, present action and future vision into clear and aligned responses. This further suggests that resilience in VUCA environments depends not only on adaptive capabilities but also on the ability to maintain a strategic direction over time. This integration is a form of organizational capability that helps SMEs transform challenges into opportunities.

5.3 Relations to Research Question 1 (RQ1)

Research Question 1 is comprehensively addressed through Theme 3's analysis of how SMEs interpreted and responded to previous VUCA environments. The findings reveal that the 2008-2009 Financial Crisis and Covid-19 pandemic served as critical learning laboratories that developed organizational capabilities extending far beyond immediate crisis survival. As participant 3 reflected: *"I think it was a good time, a bad time at the same time, because we actually faced difficulties immediately, which taught us how*

to run a company in an effective way". The evolution from Theme 3 towards Theme 1 in the "progression journey" demonstrate how crisis derived learning transforms into current strategic capabilities. The digital transformation was initially pushed upon the gem industry during the Covid-19 pandemic later evolved into adaptation and became a dominant strategic response mechanism identified in Theme 1. This transformation validates the literature assertion that crisis experience creates "windows of opportunity" for organizational development that would be difficult or delayed under normal circumstances (Boin et al., 2017).

5.4 Relations to Research Question 2 (RQ2)

Research question 2 is addressed through the dynamic relationship between Theme 2's challenge identification and Theme 1's strategic responses. The comparative analysis performed reveals that SMEs perceive current VUCA scenarios as interconnected challenge systems rather than isolated problems which require integrated strategic responses not just tactical short-term adjustments. The four most challenging ongoing VUCA scenarios identified in this study were found to be:

- Supply chain vulnerabilities and operational disruptions (Theme 2) address through digital transformation and agile adaptation (Theme 1).
- Generational market shift and changes in value perceptions (Theme 2) countered by customer relationship and trust building innovation (Theme 1).
- Economic pressures and profit margin compression (Theme 2) managed through innovation capabilities and operational flexibility (Theme 1).
- Digital marketplace intensification (Theme 2) leveraged through market adaptation and competitive positioning (Theme 1).

5.5 Relations to Research Question 3 (RQ3)

Research question 3 is addressed through Theme 4's analysis of a perceived future business environment. Gem and jewelry SMEs demonstrate sophisticated scenario planning that integrates technological disruptions (lab-grown diamonds), demographic transition (generational shifts), and marketplace evolution (digital transformation) into clear strategic frameworks. Participant 1's forward-looking perspective exemplifies this strategic awareness: *"Jewelry industry, it won't be extinct, it's always gonna be, it's always gonna be needed. It's just about the time, or we have to just go through the tough time, but after that, it should be good"*. This statement demonstrates levels of confidence based on a strategic analysis rather than just wishful thinking.

5.6 Strategic thinking beyond reactive responses

The visual connection between themes shows how gem and jewelry SMEs develop sophisticated strategic approaches through VUCA experience accumulation. Theme 3's crisis learning provides the foundation for Theme 1's strategic responses which later lead to Theme 4's future positioning strategies. This progression applies mainly to initial VUCA encounters with the following experiences enable more accurate strategic approaches. Participant 6 explain this evolution: *"Be aware of the difference between knowledge and information. There is a big difference between the two and knowledge generally is king... It is the serious ones with deep knowledge that survive and thrive, not the ones that are based on information"*. This quote clearly demonstrates a sophisticated strategic thinking that goes beyond simple reactive responses.

5.6 Capability as an evolution

Theme 4's findings reveal that strategic anticipation capabilities extend far beyond reactive threats valuations. The progression from current challenges (Theme 2) to future

positioning (Theme 4) shows this strategic anticipation capability which can be described as an ability to convert current VUCA pressures into future opportunities. This capability is an evolution far beyond just reactive planning.

5.7 VUCA Competence Development Model

This research makes several contributions to both VUCA and SME strategic management literature. Most notable is the development of a VUCA Competence Development Model which represents a theoretical framework that explains how resource constrained organizations systematically develop strategic capabilities through accumulated VUCA experience. This four-step model, progressing from Crisis Learning integration through Challenge Recognition, to Strategic Response Implementation leading into Future Strategic Positioning, expands existing theory that VUCA environments serve as organizational catalysts rather than merely survival challenges. This model (figure 13) provides a temporal framework that explains how initial reactive responses evolve into sophisticated strategic capabilities:

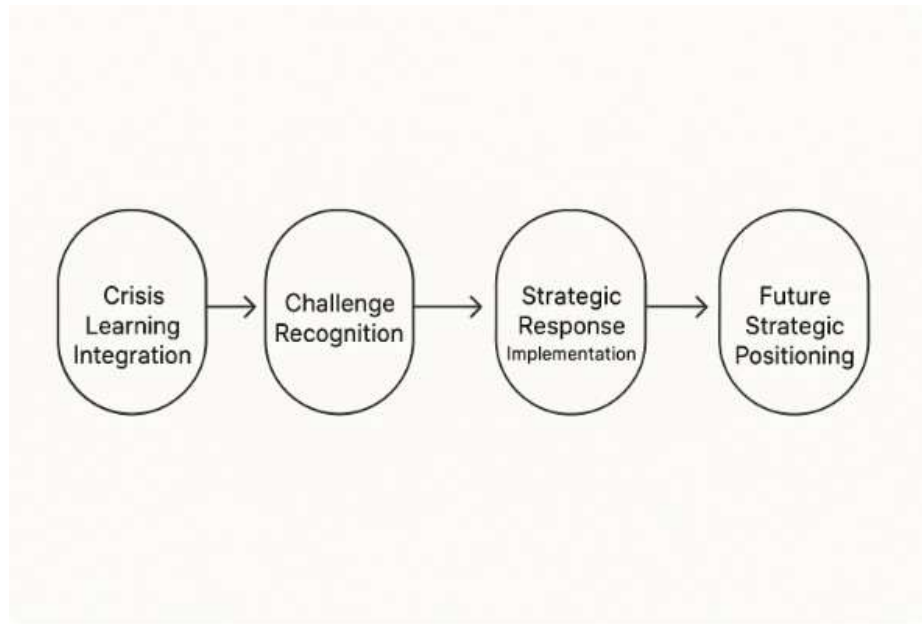


Figure 13: VUCA Competence Development Model

5.8 Industry development

This research suggests that traditional SME support mechanisms focused on crisis survival may be insufficient for developing long-term competitive capabilities. Evidence indicates a need for systematic development of competences including knowledge sharing, strategic learning, capability building rather than just crisis relief. Industry associations such as TGJTA, GIT, ICA among others should consider developing integrated frameworks that accelerate VUCA learnings across industry SMEs to help build collective industry resilience because this research suggests that successful VUCA navigation represents both improved organizational capability as well as collective industry competence.

CHAPTER VI:

SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

6.1 Summary

SMEs in the export dependent gem and jewelry industries are different from many other industries in the way they almost entirely rely on an international market base, their products are discretionary by nature which tend to mean they are the first products consumers cut in economic difficult times. Moreover gemstones/natural diamonds are produced by nature, not a factory, making inventory management and planning more complex. This research was conducted in Thailand with SME owners and directors operating either in gems/diamonds, jewelry brands, or laboratories which provided a rich representation of the industry. Not all participants physically live in Thailand, but all participants have a strong connection to the Thai gem and jewelry industry either with a physical office/factory here, outsourced manufacturing of jewelry in Thailand or frequent visits to for gem purchasing purposes in Bangkok or Chanthaburi. Thailand's gem and jewelry industry provide a rich context for VUCA research due to its unique characteristics of 90%+ SME composition and 80% export dependence at the same time companies operate after a traditionally relationship-based business model. These factors provided environments amplifying both challenges and learning opportunities. The research reveals industry-specific VUCA manifestations including supply constraints, traditional knowledge preservation challenges, slow digital transformation, and generational market evolution pressures. At the same time, the industry's relationship-centric nature, craftsmanship heritage, cultural authenticity provides unique competitive advantages that enable success through stressful VUCA environments, if properly managed.

6.2 Implications

The findings have significant implications for strategic management theory related to SMEs exporting discretionary products. It shows that they can develop sophisticated strategic capabilities through systematic VUCA experience integration. This challenges traditional assumptions about resource constraints common for SMEs limiting their ability to compete long term. This research suggests that VUCA competency means an ability dealing with the constantly changing business world is a skill that SMEs can develop and improve over time, rather than something they either have or don't have from start. For practitioners, this thesis provides guidance for capability building amongst gem and jewelry SMEs. It shows that rather than just surviving crisis, SMEs systematically develop strategic actions from VUCA experiences through intentional learning integration.

Further implications include the benefit of using temporal thematic sequencing in understanding a learning process over time. Progression from past crisis experiences, through present challenges and strategic responses towards future positioning provide many beneficial insights. The integration used included word frequency analysis, word impact assessments, word cloud visualization and a thematic integration combining all subthemes. The criterion-based purposeful sampling strategy delivered deep insights into the nature of decision-making amongst gem and jewelry SMEs view of operating in VUCA environments.

6.3 Recommendations for Future Research

This study highlights how gem and jewelry industry is undergoing profound transformation spurred by technological disruption (lab-grown diamonds and gems),

demographic shifts, and a digital marketplace evolution. Findings suggest that these forces, despite being disruptive, also present opportunities for strategic repositioning that capitalizes on the industry's relational and cultural strengths. Future research with a clear research gap would be a longitudinal study on Strategic Adaptation how gem and jewelry SMEs evolve over time in response to these disruptions. It would help in generating knowledge if applied adaptation capabilities lead to measurable competitiveness, resilience and market reach.

6.4 Conclusion

This comprehensive thematic analysis provides unprecedented theoretical contributions into how gem and jewelry Small and Medium-sized Enterprises navigate volatile, uncertain, complex and ambiguous business environments. Through systematic analysis of 20 in-depth interviews with veterans possessing up to 55 years industry experience this research reveals sophisticated adaptive capabilities that challenge traditional assumptions about SMEs strategic limitations in uncertain environments. The research makes several significant contributions including a VUCA Competence Development Model which explains how resource constrained, export dependent, SMEs systematically develop strategic capabilities through VUCA experiences. This 4-stage model progresses from (1) Crisis Learning Integration, to (2) Challenge Recognition and (3) Strategic Response Implementation before it concludes a (4) Future Strategic Positioning. This proves that SMEs in the gem and jewelry industry, despite its industry specifics, prosper from a learning process and agile mindset. The model provides a temporal framework that explains how initial reactive responses evolve into sophisticated strategic capabilities. These strategic capabilities enable SMEs to convert current VUCA pressures into future competitive opportunities. This capability stretches beyond traditional

crisis management approaches suggesting that successful VUCA navigation requires capability development rather than just reactive flexibility and it will be crucial in future considering the fundamental transformation that is waiting over the next decade.

The industry is clearly heading into a future shaped by serious VUCA challenges. As Participant 17 put it, “*Diamonds have gone from ‘diamonds are forever’ to ‘diamonds are for everyone’*”—a sign of just how much the market has changed in the recent years. The big question now is - will the gem and jewelry SMEs learn from the past to stand strong in the future?



INTERVIEW GUIDE

Thank you for participating in this interview. As agreed, your responses will remain anonymous. If you wish to make any edits after the interview, you will have the opportunity to do so. This process ensures the validity and reliability of the collected data.

This interview is about ‘VUCA’ and its effects on the gem- and jewelry industry over time.

Before each interview starts, I’ll provide all participants with a clear and complete, yet brief, explanation of the VUCA acronym, along with relevant examples. This is to ensure that everyone has the same understanding and context going into the interview.

I quote “VUCA describes an environment characterized by Volatility, Uncertainty, Complexity, and Ambiguity. It highlights challenges businesses face due to rapid changes, lack of predictability, interconnected systems, and unclear future outcomes. It makes decision-making complex and uncertain. VUCA highlights the increasing difficulty of planning and strategizing due to constantly shifting conditions, lack of clear information etc. (Bennett and Lemoine, 2014).

Examples of major VUCA events include the Global Financial Crisis (2008–2009) and the COVID-19 pandemic. Other examples can be regulatory changes, such as new taxation policies, import duties, or financial regulations. Market-related shifts, such as fluctuations in exchange rates and interest rates, supply chain disruptions, or changes in the price of raw materials, also contribute to a VUCA environment.

Additionally, technological and social changes—such as evolving consumer trends (e.g., the rise of lab-grown stones), shifting spending patterns (generational spending differences), and the emergence of new sales platforms (online etc). Rising operational costs (rent, shipping, and exhibition fees), difficulties in hiring skilled workers, and limited access to financing are also relevant factors.

Finally, geopolitical tensions, conflicts, or wars may further increase volatility and uncertainty.-----

First some background questions:

1. What is your current position in the company?
2. How long has your company been in business?
3. What is your highest level of education and in what field?
4. What are the primary products your company exports?
5. How many employees does your company have?
6. Do you participate in international trade shows, if so where?
7. What are your connection to Thailand as a gemstone and jewellery hub?
8. What other sales channels does your company primarily use for exports?
(wholesale, direct retail partnerships, e-commerce, trade shows, agent/brokers, direct B2B, social media sales, B2C)
9. If you're comfortable sharing, may I ask your age?

Major VUCA events.

1. How did your company experience and respond to major VUCA events such as the 2008-2009 Financial Crisis and the COVID-19 pandemic? What specific impact did these events have on your business?
2. What key strategies or actions did your company take to navigate these crises? Which proved most effective?
3. Were these strategies planned, or did your company develop them reactively?
4. Did any opportunities arise from these crises that positively impacted your business? If so, how did you capitalize on them?

Current VUCA Environment5. What are the biggest challenges your business faces today? How would you describe the most pressing difficulties in the current business environment?

6. What steps is your company taking to remain competitive in today's fast-changing and unpredictable market?

Opportunity vs. Threat Perception⁷.

7. How would you describe the current global market for gems and jewelry?
8. What opportunities (if any) do you spot for your company? Can you provide examples?
9. What major threats or risks do you anticipate in the coming years?
10. What specific actions have you taken to ensure the long-term competitiveness and resilience of your company?

Best Practices and Recommendations

11. Based on your experience, what advice or best practices would you share with other SMEs navigating a VUCA business environment?

APPENDIX B
INFORMED CONSENT



Dear Participant,

Subject: Consent to Participate in Research Study

I am Jonas Hjoernered, a doctoral candidate at SSBM Geneva, conducting research on the Gem and Jewelry Industry. As part of my research, I am conducting interviews with individuals who have extensive experience in the gem and jewelry industry. The purpose of this study is to understand how SMEs deal with VUCA uncertainties.

I invite you to participate in this research study. Your participation is voluntary, and you may withdraw or edit at any time. The interview will take approximately 30-50 minutes and will be conducted face to face either in person or via teams or zoom.

Confidentiality:

Your responses will be kept confidential and will be used solely for academic purposes. The data collected will be anonymized, and no personally identifiable information will be disclosed in any publications or presentations resulting from this research.

Benefits and Risks:

There are no direct benefits to you for partaking in this study. However, your insights will contribute to a better understanding of this research topic. There are no anticipated risks associated with your participation.

Consent:

By signing this consent form, you agree to participate in the research study and allow the use of your responses for academic purposes.

If you have any questions please contact me at jonasbkk@gmail.com or +66847232866.

Thank you for considering this request.

Sincerely,

Jonas Hjørnered

Doctorate Candidate SSBM Geneva

Consent Statement:

I,have read and understood the information provided
above. I voluntarily agree to participate in this research study.

Participant's Signature

Date

REFERENCES

- Ahmad, N. R., Mohd Shariff, M. N., & Hafeez, M. H. (2017). Determinants of SMEs Performance of the Gem and Jewelry Industry in Thailand: A Pilot Study. *Asian Journal of Social Science Studies*, **2**(3), 12. doi:10.20849/AJSSS.V2I3.173
- Akram, U., Fülöp, M. T., Tiron-Tudor, A., Topor, D. I., & Căpușneanu, S. (2021). Impact of digitalization on customers' well-being in the pandemic period: Challenges and opportunities for the retail industry. *International Journal of Environmental Research and Public Health*, **18**(14), 7533.
- Alkhaldi, K. H., Austin, M. L., Cura, B. A., Dantzler, D., Holland, L., Maples, D. L., ... Marcus, L. J. (2017). Are you ready? Crisis leadership in a hyper-VUCA environment. *Journal of Emergency Management*, **15**(3). Retrieved from <https://www.wmpllc.org/ojs/index.php/jem/article/view/606>
- Ansoff, H. I. (1980). Strategic issue management. *Strategic Management Journal*, **1**(2), 131–148. doi:10.1002/smj.4250010204
- Araújo, M., Reis, L., & Morais, I. (2021). Innovation Strategies for Adaptation of Organizations in a VUCA World. In *Proceedings of the 16th European Conference on Innovation and Entrepreneurship (ECIE)* (Vol. 2, pp. 1245–1253).
- Arunmas, P. (2022, September 12). Gems, jewellery exports tipped for 20% expansion. *Bangkok Post*. Retrieved from <https://www.bangkokpost.com/business/2389480/gems-jewellery-exports-tipped-for-20-expansion>
- Baran, B. E., & Woznyj, H. M. (2020). Managing VUCA: The human dynamics of agility. *Organizational Dynamics*.
- Baranoff, E., Brockett, P. L., & Kahane, Y. (2009). *Risk Management for Enterprises and Individuals*. Saylor Foundation. Retrieved from <https://connect.e-ssbm.com/blog/books/risk-management-for-enterprises-and-individuals/>

- Bartscht, J. (2015). Why systems must explore the unknown to survive in VUCA environments. *Kybernetes*, **44**(2), 253–270.
- Belk, R. W. (2020). Post-pandemic consumption: portal to a new world? *Cadernos EBAPE. BR*, **18**, 639–647.
- Bennett, N., & Lemoine, G. J. (2014). What a difference a word makes: Understanding threats to performance in a VUCA world. *Business Horizons*, **57**(3), 311–317.
- Bensoussan, B. E., & Fleisher, C. S. (2013). *ANALYSIS WITHOUT PARALYSIS 12 TOOLS TO MAKE BETTER STRATEGIC DECISIONS* (Second Edition). Upper Saddle River: Pearson Education Inc.
- Bjerke, B., & Hultman, C. (2002). *Entrepreneurial Marketing: The Growth of Small Firms in the New Economic Era*. Cheltenham: Edward Elgar Publishing Limited.
- Retrieved from
https://books.google.co.th/books?hl=en&lr=&id=V8RGAAQBAJ&oi=fnd&pg=PR1&ots=TG0oBVBuF&sig=Nut_JXwcbPpVQVEbEpyaSmCC9hs&redir_esc=y#v=onepage&q&f=false
- Boin, A., Hart, P., Stern, E., Stern, E., & Sundelius, B. (2017). *The politics of crisis management*. Cambridge University Press. Retrieved from
https://books.google.co.th/books?hl=en&lr=&id=P9dsDQAAQBAJ&oi=fnd&pg=PR7&dq=The+politics+of+crisis+management:+Public+leadership+under+pressure.&ots=yMq4LtdJlO&sig=jiAqKSq815j2180KR2hNe7bR39k&redir_esc=y#v=onepage&q=The%20politics%20of%20crisis%20management%3A%20Public%20leadership%20under%20pressure.&f=false
- Botelho, G., Hancocks, P., & Olarn, K. (2014, May 22). Thai military takes over in coup – again. *CNN*. Retrieved from <https://edition.cnn.com/2014/05/22/world/asia/thailand-martial-law/index.html>

- Bourletidis, K., & Triantafyllopoulos, Y. (2014a). SMEs Survival in Time of Crisis: Strategies, Tactics and Commercial Success Stories. *Procedia - Social and Behavioral Sciences*, **148**, 639–644. doi:10.1016/J.SBSPRO.2014.07.092
- Bourletidis, K., & Triantafyllopoulos, Y. (2014b). SMEs Survival in Time of Crisis: Strategies, Tactics and Commercial Success Stories. *Procedia - Social and Behavioral Sciences*, **148**, 639–644. doi:10.1016/J.SBSPRO.2014.07.092
- Brandenburger, A. (2019). Strategy needs creativity: an analytic framework alone won't reinvent your business. *Harvard Business Review*, **97**(2), 59–66.
- Bratianu, C., & Bejinaru, R. (2021). COVID-19 induced emergent knowledge strategies. *Knowledge and Process Management*, **28**(1), 11–17. Retrieved from <https://onlinelibrary.wiley.com/doi/epdf/10.1002/kpm.1656>
- Buckley, P. (2019). *International business in a VUCA world: The changing role of states and firms*. Emerald Group Publishing.
- Choi, Y. R., Ha, S., & Kim, Y. (2022). Innovation ambidexterity, resource configuration and firm growth: is smallness a liability or an asset? *Small Business Economics*, **58**(4), 2183–2209.
- Chowdhury, A. R., & Lawson, L. (2022). Women in Thailand's gem and jewellery industry and the Sustainable Development Goals (SDGs): Empowerment or continued inequity? *Environmental Science and Policy*, **136**, 675–684. doi:10.1016/j.envsci.2022.07.018
- Christensen, C. M. . (1997). *The innovator's dilemma : when new technologies cause great firms to fail*. Harvard Business School Press.
- Clegg, L. J., Voss, H., & Chen, L. (2019). Can VUCA help us generate new theory within international business? In *International business in a VUCA world: The changing role of states and firms* (Vol. 14, pp. 55–66). Emerald Publishing Limited.

- Codreanu, A. (2016). A VUCA action framework for a VUCA environment. Leadership challenges and solutions. *Journal of Defense Resources Management (JoDRM)*, **7(2)**, 31–38.
- Cousins, B. (2018). Design thinking: Organizational learning in VUCA environments. *Academy of Strategic Management Journal*, **17(2)**, 1–18.
- Danziger, P. N. (2022, March 21). Jewelry Market Must Prepare For A Steep Drop And Signet Jewelers Is Ready. *Forbes*. Retrieved from <https://www.forbes.com/sites/pamdanziger/2022/03/21/jewelry-market-must-prepare-for-a-steep-drop-but-signet-jewelers-is-ready/?sh=35279ffb330f>
- Donthu, N., & Gustafsson, A. (2020). Effects of COVID-19 on business and research. *Journal of Business Research*, **117**, 284–289. doi:10.1016/J.JBUSRES.2020.06.008
- Drucker, P. (1980). *Managing in turbulent times*. New York: Harper & Row.
- Eaton-Magaña, S., Hardman, M. F., & Otake, S. (2024). LABORATORY-GROWN DIAMONDS: AN UPDATE ON IDENTIFICATION AND PRODUCTS EVALUATED AT GIA. *Gems & Gemology*, **60(2)**.
- Eggers, F. (2020). Masters of disasters? Challenges and opportunities for SMEs in times of crisis. *Journal of Business Research*, **116**, 199–208. doi:10.1016/J.JBUSRES.2020.05.025
- Eka, A. P. B., Effendi, M., & Herlianti, E. (2021). How Did Small Business Against VUCA In Pandemic Era? *Webology (ISSN: 1735-188X)*, **18(2)**.
- Feversani, D. P., De Castro, V., Marcos, E., Piattini, M. G., & Martín-Peña, M. L. (2022). Towards a lightweight framework for service management evaluation in SMEs. *Information Systems and E-Business Management*, 1–42.

- Freeman, J., Carroll, G. R., & Hannan, M. T. (1983). The Liability of Newness: Age Dependence in Organizational Death Rates. *American Sociological Review*, **48**(5), 692. doi:10.2307/2094928
- Gimenez-Fernandez, E. M., Sandulli, F. D., & Bogers, M. (2020). Unpacking liabilities of newness and smallness in innovative start-ups: Investigating the differences in innovation performance between new and older small firms. *Research Policy*, **49**(10), 104049.
- Gu, S., Ślusarczyk, B., Hajizada, S., Kovalyova, I., & Sakhibieva, A. (2021). Impact of the covid-19 pandemic on online consumer purchasing behavior. *Journal of Theoretical and Applied Electronic Commerce Research*, **16**(6), 2263–2281.
- Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods*, **18**(1), 59–82.
- Hansen, M. (2009). *Collaboration: How leaders avoid the traps, build common ground, and reap big results*. Harvard Business Press.
- Horney, N., Pasmore, B., & O'Shea, T. (2010). Leadership agility: A business imperative for a VUCA world. *Human Resource Planning*, **33**(4), 34–38.
- Horowitz, B. (2014). *The Hard Thing About Hard Things: Building a Business When There Are No Easy Answers*. HarperCollins.
- Hossain, M. R., Akhter, F., & Sultana, M. M. (2022). SMEs in Covid-19 Crisis and Combating Strategies: A Systematic Literature Review (SLR) and A Case from Emerging Economy. *Operations Research Perspectives*, **9**, 100222. doi:10.1016/J.ORM.2022.100222
- Kale, S., & Arditi, D. (1998). Business failures: Liabilities of newness, adolescence, and smallness. *Journal of Construction Engineering and Management*, **124**(6), 458–464.

- Korwatanasakul, U., & Paweenawat, S. W. (2020). *TRADE, GLOBAL VALUE CHAINS, AND SMALL AND MEDIUM-SIZED ENTERPRISES IN THAILAND: A FIRM-LEVEL PANEL ANALYSIS*. Tokyo. Retrieved from <https://www.adb.org/publications/trade-global-value-chains-and-sme-thailand-firm-level>
- Kottika, E., Özsomer, A., Rydén, P., Theodorakis, I. G., Kaminakis, K., Kottikas, K. G., & Stathakopoulos, V. (2020). We survived this! What managers could learn from SMEs who successfully navigated the Greek economic crisis. *Industrial Marketing Management*, **88**, 352–365.
- Kraaijenbrink, J. (2019, June 4). What Does Strategy Really Mean? *Forbes.Com*. Retrieved from <https://www.forbes.com/sites/jeroenkraaijenbrink/2018/12/19/what-does-vuca-really-mean/?sh=61bee08917d6>
- Lawrence, K. (2013). Developing leaders in a VUCA environment. *UNC Executive Development*, **2013**, 1–15.
- Lengnick-Hall, C. A., Beck, T. E., & Lengnick-Hall, M. L. (2011). Developing a capacity for organizational resilience through strategic human resource management. *Human Resource Management Review*, **21**(3), 243–255.
- Lukács, E. (2005). The economic role of SMEs in world economy, especially in Europe. *European Integration Studies*, **4**(1), 3–12.
- MacPhail, C., Khoza, N., Abler, L., & Ranganathan, M. (2016). Process guidelines for establishing Inter-coder Reliability in qualitative studies. *Qualitative Research*, **16**(2), 198–212. doi:10.1177/1468794115577012
- Malnight, T. W., Buche, I., & Dhanaraj, C. (2019). Put purpose at the core of your strategy. *Harvard Business Review*, **97**(5), 70–79.
- Mankins, M. C., & Steele, R. (2005). Turning Great Strategy into Great Performance. *Harvard Business Review*, **July-August**. Retrieved from www.hbr.org

McGrath, Rita Ghunther. (2013). Transient Advantage. *Harvard Business Review*, ISSN 0017-8012, Vol. 91, N° 6, 2013, Págs. 62-70, **91(6)**, 62–70. Retrieved from <https://dialnet.unirioja.es/servlet/articulo?codigo=4311941&info=resumen&idioma=ENG>

McGrath, Rita Gunther. (2013). Transient advantage. *Harvard Business Review*, **91(6)**, 62–70.

McKinsey & Company. (2024). *The diamond industry is at an inflection point*. San Francisco. Retrieved from <https://www.mckinsey.com/~/media/mckinsey/industries/metals%20and%20mining/our%20insights/the%20diamond%20industry%20is%20at%20an%20inflection%20point/the-diamond-industry-is-at-an-inflection-point.pdf?shouldIndex=false>

McPheat, S. (2020). *How Managers Can Deal With A VUCA Environment*. Retrieved from <https://www.mtdtraining.com/blog/how-managers-can-deal-with-a-vuca-environment.htm>

Merriam, S. B., & Tisdell, E. J. (2016). *Qualitative Research A Guide to Design and Implementation* (Fourth Edition, Vol. Fourth Edition). New York: John Wiley & Sons Inc.

MICE INTELLIGENCE CENTER. (2022). *CREATIVE INDUSTRY REPORT- CREATIVITY SHOULD BE ENHANCED TO CREATE SUSTAINABLE GROWTH*. Bangkok. Retrieved from https://intelligence.businesseventsthailand.com/files/keyindustries/keyindustries_document_20e4a0f29e43bca8f445e4d4a7dcf4c4.pdf

Miklian, J., & Hoelscher, K. (2022). SMEs and exogenous shocks: A conceptual literature review and forward research agenda. *International Small Business Journal*, **40(2)**, 178–204.

Mintzberg, H. (1978). Patterns in Strategy Formation. *Management Science*, **24**(9), 934–948. doi:10.1287/mnsc.24.9.934

Mintzberg, H. (1987). The Strategy Concept II: Another Look at Why Organizations Need Strategies. *California Management Review*, **30**(1), 25–32. doi:10.2307/41165264

Mintzberg, H. (1994). The fall and rise of strategic planning. *Harvard Business Review*, **72**(1), 107–114.

Morris, M. H., Kuratko, D. F., Audretsch, D. B., & Santos, S. (2020). Overcoming the liability of poorness: disadvantage, fragility, and the poverty entrepreneur. *Small Business Economics*, 1–15.

O'Connor, C., & Joffe, H. (2020). Intercoder reliability in qualitative research: debates and practical guidelines. *International Journal of Qualitative Methods*, **19**, 1609406919899220.

Olsson, H., & Sörensen, S. (2007). *Forskningsprocessen: kvalitativa och kvantitativa perspektiv*. Liber.

Organisation for Economic Co-operation and Development (OECD). (2009). *The Impact of the Global Crisis on SME and Entrepreneurship Financing and Policy Responses*. Centre for Entrepreneurship, SMEs and Local Development Contribution to the OECD Strategic Response to the Financial and Economic Crisis. Retrieved from <https://www.oecd.org/cfe/smes/theimpactoftheglobalcrisisonsmeandentrepreneurshipfinancingandpolicyresponses.htm#obtain>

OSMEP. (2022). White Paper on MSME 2022. *Office of Small and Medium Enterprises Promotion*.

Oxford Analytica. (2024). *Diamond sanctions will have a modest impact on Russia*. <https://doi.org/10.1108/OXAN-DB285470>

- Patel, K. C. R., & Spilsbury, P. (2010). The UK National Health Service approach to the economic crisis. *Journal of the Royal Society of Medicine*. SAGE Publications Sage UK: London, England.
- Patton, M. Q. (2002). *Qualitative research and evaluation methods* (Vol. 3). Sage.
- Piette, C., & Zachary, M.-D. (2015). Sensitivity to the crisis of SME financing in Belgium. *Economic Review, National Bank of Belgium*, (3), 31–45. Retrieved from https://www.nbb.be/doc/oc/repec/ecrart/ecoreviii2015_h2.pdf
- Price, R., Waema, T. M., & Baiya, E. (2022). *Optimizing Strategy For Results: A Structured Approach to Make Your Business Come Alive*. Greenleaf Book Group. Retrieved from https://books.google.co.th/books?hl=en&lr=&id=vCdiEAAQBAJ&oi=fnd&pg=PT10&dq=ron+price+vuca&ots=VmwV_pC7kj&sig=I6U9-nxVfaaAi1BrYYgwvdL2kJI&redir_esc=y#v=onepage&q=ron%20price%20vuca&f=false
- Rath, C. R., Grosskopf, S., & Barmeyer, C. (2021). Leadership in the VUCA world - a systematic literature review and its link to intercultural competencies. *European J. of Cross-Cultural Competence and Management*, 5(3), 195. doi:10.1504/EJCCM.2021.116890
- Ravichandran, T. (2018). Exploring the relationships between IT competence, innovation capacity and organizational agility. *The Journal of Strategic Information Systems*, 27(1), 22–42.
- Reeves, M., & Deimler, M. (2012). Adaptability: The new competitive advantage. *Own the Future: 50 Ways to Win from the Boston Consulting Group*, 19–26.
- Reeves, M., Legrand, J., & Fuller, J. (2018). YOUR STRATEGY PROCESS NEEDS A STRATEGY. *Boston Consulting Group*.

- Reeves, M., Love, C., & Tillmanns, P. (2012a). Your strategy needs a strategy. *Harvard Business Review*, **90(9)**, 76–83.
- Reeves, M., Love, C., & Tillmanns, P. (2012b). Your strategy needs a strategy. *Harvard Business Review*, **September**, 76–83.
- Renneboog, L., & Spaenjers, C. (2012). Hard assets: The returns on rare diamonds and gems. *Finance Research Letters*, **9(4)**, 220–230.
- Rialti, R., Zollo, L., Ferraris, A., & Alon, I. (2019). Big data analytics capabilities and performance: Evidence from a moderated multi-mediation model. *Technological Forecasting and Social Change*, **149**, 119781. doi:10.1016/j.techfore.2019.119781
- Ries, E. (2011). *The lean startup: How today's entrepreneurs use continuous innovation to create radically successful businesses*. Currency.
- Rindita, F. S., Majlaton, E. G. I., Singh, A., Namazov, I., & Tick, A. (2021). The Impact of Coronavirus (COVID-19) Pandemic on E-commerce. *Management, Enterprise and Benchmarking in the 21st Century*, 105–124.
- Rittapirom, T. (2021, August 30). Making Thai gems and jewellery shine again. *Bangkok Post- Asia Focus*. Retrieved from <https://www.bangkokpost.com/business/2173319/making-thai-gems-and-jewellery-shine-again>
- Robbins, D. K., & Pearce II, J. A. (1993). Entrepreneurial retrenchment among small manufacturing firms. *Journal of Business Venturing*, **8(4)**, 301–318.
- Robbins, S. P., & Judge, T. A. (2014). *Essentials of Organizational Behaviour* (Twelfth Edition). Upper Saddle River: Pearson Education Inc.
- Rogers, P., & Blenko, M. (2006). Who Has the D? How Clear Decision Roles Enhance Organizational Performance. *Harvard Business Review*, **January**. Retrieved from www.hbrreprints.org

- Santoso, A. S., Soh, P.-H., Larso, D., & Chen, J. (2020). Strategic entrepreneurship in a VUCA environment: Perspectives from Asian emerging economies. *Int. J. Entrepreneurial Venturing*, **12**(4), 343–354.
- Scheers, L. Van. (2011). SMEs' marketing skills challenges in South Africa. *African Journal of Business Management*, **5**(13), 5048–5056. doi:10.5897/AJBM10.007
- Schoemaker, P. J. H., Heaton, S., & Teece, D. (2018). Innovation, dynamic capabilities, and leadership. *California Management Review*, **61**(1), 15–42. Retrieved from https://escholarship.org/content/qt6447t130/qt6447t130_noSplash_ad59acb59fe15c0e4ea283b9acb8960d.pdf
- Scott, N. (2024). Lab-Grown Diamond Prices Are Falling. Here's Why That's Not a Bad Thing. *Robb Report*. Retrieved from <https://robbreport.com/style/jewelry/lab-grown-diamond-prices-falling-1235821332/>
- Shih, W. (2022, January 30). From Just-In-Time To Just-In-Case: Is Excess And Obsolete Next? *Forbes*. Retrieved from <https://www.forbes.com/sites/willyshih/2022/01/30/from-just-in-time-to-just-in-case-is-excess-and-obsolete-next/?sh=deab74a4daf7>
- Silverman, D. (2018). *Doing Qualitative Research* (5th Revised Edition). London: SAGE Publications Ltd.
- Simón-Moya, V., Revuelto-Taboada, L., & Ribeiro-Soriano, D. (2016). Influence of economic crisis on new SME survival: reality or fiction? *Entrepreneurship & Regional Development*, **28**(2), 157–176. doi:10.1080/08985626.2015.1118560
- Sinha, D., & Sinha, S. (2020). Managing in a VUCA world: Possibilities and pitfalls. *Journal of Technology Management for Growing Economies*, **11**(1), 17–21.
- Som, A., & Blanckaert, C. (2015). *The road to luxury: The evolution, markets, and strategies of luxury brand management*. John Wiley & Sons.

- Strauss, W., & Howe, N. (1991). *Generations: The history of America's future, 1584 to 2069. (No Title)*.
- Sullivan, J. (2012, October 22). Talent Strategies for a Turbulent VUCA World - Shifting to an Adaptive Approach. *Ere Media*. Retrieved from <https://www.ere.net/talent-strategies-for-a-turbulent-vuca-world-shifting-to-an-adaptive-approach/>
- Sun, Y., Jiang, S., & Wang, S. (2024). The environmental impacts and sustainable pathways of the global diamond industry. *Humanities and Social Sciences Communications*, **11(1)**, 1–12.
- Taskan, B., Junça-Silva, A., & Caetano, A. (2022). Clarifying the conceptual map of VUCA: a systematic review. *International Journal of Organizational Analysis*, (**ahead-of-print**).
- Teece, D., Peteraf, M., & Leih, S. (2016). Dynamic Capabilities and Organizational Agility: Risk, Uncertainty, and Strategy in the Innovation Economy. *California Management Review*, **58(4)**, 13–35. doi:10.1525/cmr.2016.58.4.13
- The Gem and Jewelry Institute of Thailand (Public Organization). (2008a). *Analysis of Thailand's Gems and Jewelry Import and Export Performance in 2006*. Bangkok.
- The Gem and Jewelry Institute of Thailand (Public Organization). (2008b). *Analysis of Thailand's Gems and Jewelry Import and Export Performance in 2007*. Bangkok. Retrieved from <https://infocenter.git.or.th/storage/files/Im-Ex%20Analysis%2007.pdf>
- The Gem and Jewelry Institute of Thailand (Public Organization). (2009). *Analysis of Thailand's Gems and Jewelry Import and Export Performance in 2008*. Bangkok.
- The Gem and Jewelry Institute of Thailand (Public Organization). (2010). *Thailand's Gems and Jewelry Import-Export Performance in 2009*. Bangkok.
- The Gem and Jewelry Institute of Thailand (Public Organization). (2011). *Thailand's Gems and Jewelry Import-Export Performance in 2010*. Bangkok.

The Gem and Jewelry Institute of Thailand (Public Organization). (2012). *Thailand's Gem and Jewelry Import-Export Performance in 2011*. Bangkok.

The Gem and Jewelry Institute of Thailand (Public Organization). (2013). *Thailand's Gem and Jewelry Import-Export Performance in 2012*. Bangkok. Retrieved from www.kitco.com

The Gem and Jewelry Institute of Thailand (Public Organization). (2014). *Thailand's Gem and Jewelry Import-Export Performance 2013*. Bangkok. Retrieved from www.kitco.com

The Gem and Jewelry Institute of Thailand (Public Organization). (2015). *Thailand's Gem and Jewelry Import-Export Performance 2014*. Bangkok. Retrieved from www.kitco.com

The Gem and Jewelry Institute of Thailand (Public Organization). (2016). *Thailand's Gem and Jewelry Import-Export Performance 2015*. Bangkok.

The Gem and Jewelry Institute of Thailand (Public Organization). (2017). *Thailand's Gem and Jewelry Import-Export Performance 2016*. Bangkok.

The Gem and Jewelry Institute of Thailand (Public Organization). (2018). *Thailand's Gem and Jewelry Import-Export Performance 2017*. Bangkok.

The Gem and Jewelry Institute of Thailand (Public Organization). (2019). *Thailand's Gem and Jewelry Import-Export Performance 2018*. Bangkok. Retrieved from <http://www.kitco.com>

The Gem and Jewelry Institute of Thailand (Public Organization). (2020). *Thailand's Gem and Jewelry Import-Export Performance 2019*. Bangkok.

The Gem and Jewelry Institute of Thailand (Public Organization). (2021). *Thailand's Gem and Jewelry Import-Export Performance 2020*. Bangkok.

The Gem and Jewelry Institute of Thailand (Public Organization). (2022). *Thailand Gem and Jewelry Import-Export Performance January-December 2021*. Bangkok.

The Gem and Jewelry Institute of Thailand (Public Organization). (2023). Thailand's Gem and Jewelry Import and Export Performance January-December 2022, 1–4.

The Gem and Jewelry Institute of Thailand (Public Organization). (2024). *Thailand's Gem and Jewelry Import and Export Performance January-December 2023*. Retrieved from

<https://infocenter.git.or.th/storage/files/kut2j8fPmrP4xmMY8E79OPN1ie6rP3bkFF1IaZm4.pdf>

The Gem and Jewelry Institute of Thailand (Public Organization). (2025). *Thailand's Gem and Jewelry Import and Export January-December 2024*. Bangkok.

The Nation. (2024, June 10). Thai Gem & Jewellery Exports Sparkle Amidst US Tariff Fears, Gold Shines. <https://www.nationthailand.com/Business/Trade/40051010>.

Thorgren, S., & Williams, T. A. (2020). Staying alive during an unfolding crisis: How SMEs ward off impending disaster. *Journal of Business Venturing Insights*, **14**, e00187. doi:10.1016/j.jbvi.2020.e00187

Troise, C., Corvello, V., Ghobadian, A., & O'Regan, N. (2022a). How can SMEs successfully navigate VUCA environment: The role of agility in the digital transformation era. *Technological Forecasting and Social Change*, **174**, 121227.

Troise, C., Corvello, V., Ghobadian, A., & O'Regan, N. (2022b). How can SMEs successfully navigate VUCA environment: The role of agility in the digital transformation era. *Technological Forecasting and Social Change*, **174**.

doi:10.1016/j.techfore.2021.121227

U.S. Small Business Administration. (2019). *SBA'S SIZE STANDARDS METHODOLOGY*.

- US Small Business Administration. (2019). *Small Businesses Generate 44 Percent of U.S. Economic Activity*. Washington D.C. . Retrieved from <https://advocacy.sba.gov/2019/01/30/small-businesses-generate-44-percent-of-u-s-economic-activity/>
- US Small Business Administration. (2022). *Small Business Facts: Small Business Job Creation*. Washington D.C. Retrieved from <https://advocacy.sba.gov/2022/04/26/small-business-facts-small-business-job-creation/>
- Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Dong, J. Q., Fabian, N., & Haenlein, M. (2021). Digital transformation: A multidisciplinary reflection and research agenda. *Journal of Business Research*, **122**, 889–901. Retrieved from <https://www.sciencedirect.com/science/article/pii/S0148296319305478>
- Vogus, T. J., & Sutcliffe, K. M. (2007). Organizational resilience: Towards a theory and research agenda. In *2007 IEEE international conference on systems, man and cybernetics* (pp. 3418–3422). IEEE.
- Weber, Y., & Tarba, S. Y. (2014). Strategic agility: A state of the art introduction to the special section on strategic agility. *California Management Review*, **56**(3), 5–12.
- Weick, K., & Sutcliffe, K. (2007). Managing the Unexpected Resilient Performance in an Age of Uncertainty, **8**.
- Wenzel, M., Stanske, S., & Lieberman, M. B. (2020). Strategic responses to crisis. *Strategic Management Journal*, **41**(7/18), 3161.
- Whiteman, W. E. (1998). *Training and Educating Army Officers for the 21st Century: Implications for the United States Military Academy*. Army War Coll Carlisle Barracks PA.
- Wignall, H., & Silvester, K. (2018). *ADAPTIVE LEADERSHIP IN A VUCA WORLD WHAT PSYCHOSYNTHESIS ALREADY BRINGS TO THE CONVERSATION*. Retrieved

from <https://www.psychosynthesiscoaching.co.uk/wp-content/uploads/2018/11/ADAPTIVE-LEADERSHIP-IN-A-VUCA-WORLD-Final-11.18.pdf>

World Gold Council. (2022). *Jewellery market structure: India gold market series*. World Gold Council. Retrieved from <https://www.gold.org/goldhub/research/jewellery-market-structure-india-gold-market-series#footnote-6>

Worthington, M. (2013). *Differences between Phenomenological Research and a Basic Qualitative Research Design*.

Yan, I. (2021, February 1). Lab executive sees Thailand growing as a gemstone and jewelry trading hub. Retrieved January 17, 2023, from <https://jewelleryoutlook.com/lab-executive-sees-thailand-growing-as-a-gemstone-and-jewelry-trading-hub/>

Yin, R. K. (2015). *Qualitative Research from Start to Finish* (Second Edition). New York: Guilford Publications.

Yoder-Wise, P. S. (2021). From VUCA to VUCA 2.0: Surviving Today to Prosper Tomorrow. *Nursing Education Perspectives*, **42**(1), 1–2.

doi:10.1097/01.NEP.0000000000000774