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AN INVESTIGATION INTO CONSUMERS' INTENTION TO ADOPT VIRTUAL WINE TOUR AND TASTING

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A dissertation submitted in partial fulfilment of the requirements for the
Degree of Master of Commerce (Marketing)
in the School of Business Sciences,
at the University of the Witwatersrand

Supervisor:
Prof. Tinashe Chuchu

September 2025

DECLARATION

- The work in this dissertation is my own original work.
- All of the sources which were used or referred to have been documented and recognised.
- This dissertation has not been previously submitted in full or partial fulfilment of the requirements for an equivalent or higher qualification at any other recognised education institution.



Lee-Andra Beatrix Bruwer

22 September 2025

ACKNOWLEDGMENTS

Many people have assisted and supported me throughout this research to ensure that it is the best it can possibly be. It would be impossible to thank everyone personally, but I would like to thank them all. Particular thanks to my family and partner for supporting me and giving me the time and opportunity to undertake this postgraduate study. I would also like to thank my friends that supported me, and all the participants who participated in the research. Special thanks to my supervisor Prof Tinashe Chuchu, thank you for your guidance and patience, without you this dissertation would not have been completed.

ABSTRACT

This research explores the acceptance of virtual wine practices as alternatives to traditional physical wine tasting events, particularly when in-person gatherings are not feasible. This study investigates consumer perceptions of virtual wine tasting experiences and employs an adapted version of the Unified Theory of Acceptance and Use of Technology (UTAUT) to examine the determinants influencing the adoption of virtual reality (VR) wine tours. Originally developed by Venkatesh, the UTAUT framework integrates core constructs from eight established technology acceptance models, offering a comprehensive approach to understanding user acceptance and utilization of technological innovations. Its applicability across diverse sectors, particularly in hospitality and tourism, has made it a valuable tool for examining emerging trends such as digital transformation in wine tourism. Through applying this theoretical model, the study seeks to elucidate the motivational factors and perceived barriers that affect the adoption of VR wine tours among key stakeholders, including wineries, tour operators, and consumers. The growing prevalence of VR technology has revolutionised the tourism sector, offering innovative ways to engage consumers, especially in niche markets such as wine tourism. Using non-probability sampling, 340 active wine enthusiasts familiar with the Cape Town wine tasting industry participated in an online survey, offering their perceptions of virtual wine events. Descriptive statistics and hypothesis testing revealed that hedonic motivation, facilitating conditions, habits, and performance expectancy significantly influence the intention to adopt virtual reality technology for wine events. Conversely, facilitating conditions, price, and social influence showed no significant impact, challenging initial assumptions. Habits emerged as the strongest driver of adoption for virtual reality wine events. Through the application of a modified Unified Theory of Acceptance and Use of Technology model, this study enhances the understanding of consumer behaviour in virtual reality tourism, particularly in the under-researched area of virtual reality wine tourism. This pioneering study offers valuable insights into the use of Unified Theory of Acceptance and Use of Technology within this unique context, contributing to the broader literature on virtual reality and tourism.

The application of the UTAUT framework within the wine industry demonstrates that a winery's adoption of virtual reality (VR) wine tours is influenced by internal organizational evaluations, such as perceived performance benefits, usability, and return on investment as well as external factors, including customer demand and the availability of supporting technological infrastructure. Recognizing these determinants enables industry stakeholders to develop more

effective strategies to facilitate VR adoption. Such strategies may include providing training programs, financial incentives, or accessible tools for VR content development, thereby fostering innovation and enhancing the global reach and competitiveness of the wine tourism sector.

Keywords: *consumers, intention to adopt*, *VR technology, wine tourism, UTAUT*

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CHAPTER 1: BACKGROUND OF THE STUDY

1.1 Introduction

The global rise in e-commerce and digital tourism underscores the increasing relevance of virtual wine tourism, aligning with evolving consumer preferences for accessible, convenient, and experience-driven interactions (Kim & Hall, 2019). Virtual wine tourism, which integrates virtual reality (VR) technology into wine-tasting and vineyard exploration, allows wineries to differentiate themselves in a competitive and digitally transforming market (Tussyadiah, Wang, Jung & tom Dieck, 2018b). Through offering immersive, digitally mediated experiences, wineries can connect with consumers through novel, informative, and engaging content that could enhance their brand identity and customer loyalty (Buhalis & Foerste, 2015). Research highlights that as digital tourism grows, consumers are drawn to virtual experiences that provide a sense of escapism, interaction, and educational value, which virtual wine tourism fulfills through simulated tours, tastings, and cultural insights (Guttentag, 2010; Tussyadiah et al., 2018a).

The importance of virtual wine tourism is amplified by the fact that it taps into experiential marketing strategies, which emphasise memorable, interactive, and emotion-driven engagements with brands. Jung, tom Dieck, and Lee (2021) argue that consumers are increasingly seeking "experience economies" in which memorable and meaningful interactions shape their perceptions of value. Virtual wine tourism capitalises on this trend by creating an environment in which users can explore wines and simultaneously participate in dynamic, sensory-rich learning experiences from the comfort of their homes (Williams et al., 2015). This digital transformation in tourism aligns with the shift toward e-commerce, where consumers expect seamless and enriching online engagements, especially within sectors like wine tourism that traditionally rely on in-person, sensory experiences (Kim et al., 2019).

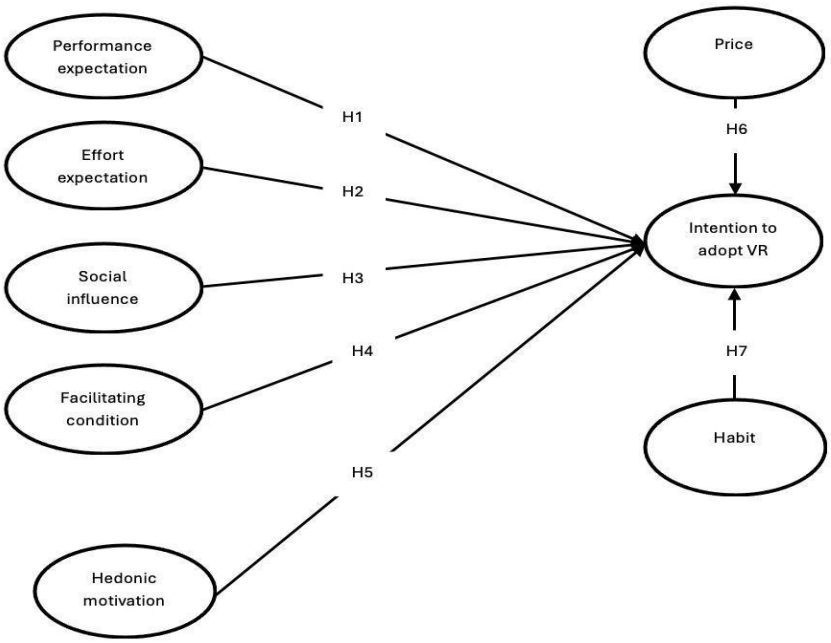
While VR has demonstrated significant potential across various applications in tourism, such as destination marketing, cultural tourism, and experiential travel (Jung, tom Dieck, Lee. & Chung, 2016; Tussyadiah & Wang, 2016), there is still a gap in understanding the factors that drive its adoption within the niche market of wine tourism. Unlike traditional tourism, wine tourism encompasses a unique blend of sensory engagement, cultural education, and social interaction that influences consumers' expectations and perceptions (Nowak, Newton, & Yang., 2020). This study seeks to address this gap by investigating the determinants of VR

adoption specific to wine tourism, aiming to provide insights into the motivations and barriers faced by wine consumers when engaging with virtual experiences.

The research framework for this study is grounded in the Unified Theory of Acceptance and Use of Technology (UTAUT) model, which identifies core factors—performance expectation (PE), effort expectation (EE), social influence (SI), and facilitating conditions (FC)—as central to technology adoption decisions (Venkatesh et al., 2003). However, to capture the full spectrum of consumers' intentions within the context of wine tourism, this study goes beyond UTAUT to include additional factors such as HM and price (PR) sensitivity, which are particularly relevant in experience-driven sectors. Hedonic motivation, defined as the enjoyment or pleasure derived from using a technology, has been shown to significantly impact VR adoption, as consumers are more likely to engage with VR if it offers entertainment and sensory appeal (Brown & Venkatesh, 2005; Tussyadiah et al., 2018). This factor is especially pertinent in wine tourism, where the immersive nature of VR can provide an exciting and memorable experience that appeals to both wine enthusiasts and casual users.

Moreover, PR sensitivity is a critical factor influencing adoption decisions, particularly in digital tourism contexts where VR experiences may come with additional costs, such as subscription fees, VR headset rentals, or premium content access (Gefen, Karahanna & Straub., 2003; Nowak et al., 2020). For wineries aiming to reach a broad consumer base, understanding how PR impacts consumer interest in VR experiences is essential. If PR-sensitive consumers perceive VR offerings as high-value or uniquely rewarding, they may be more inclined to invest in these virtual experiences despite additional costs. Conversely, VR experiences perceived as high-cost without commensurate value may deter adoption among more budget-conscious users (Davis & Golicic, 2010). This study employed a quantitative research design, which is commonly utilized to identify key predictors of outcomes and to determine the most relevant variables for analysis through objective, data-driven methods. To ensure the reliability and generalizability of the findings, the sample size was calculated using two distinct formula-based approaches. These methods were applied to confirm that the sample was sufficiently large to support the validity and robustness of the study.

The adapted theoretical model



1.1.1 Evolution of Wine Tourism in the Digital Era

Historically, wine tourism is rooted in sensory and cultural experiences, but it has in recent years evolved as wineries have adopted digital technology to attract new audiences and enhance customer engagement. Traditionally, wine tourism encompasses tasting and vineyard exploration, learning about winemaking processes, and experiencing the ambiance unique to wine-producing regions (Alonso et al., 2013). However, with the rise of digital technology, particularly VR, wineries are now able to extend these experiences beyond their physical locations, making wine tourism accessible to a global audience (Nowak et al., 2020). Virtual wine tourism introduces a new dimension to the industry, allowing consumers to explore wineries, participate in tastings, and connect with winemakers from the comfort of their homes (Buhalis & Foerste, 2015). This approach addresses some of the barriers associated with traditional tourism, such as geographic limitations, time constraints, and travel costs, providing wineries with an innovative avenue for engaging with diverse consumer groups.

1.1.2 The Role of Virtual Reality in Transforming Tourism Experiences

Virtual reality has emerged as a transformative technology in tourism, offering immersive experiences that closely mimic real-life environments and interactions. In tourism, VR allows users to engage with destinations in ways previously impossible, creating a sense of presence and immersion that enhances users' overall experience (Guttentag, 2010). For example, VR

can simulate walking through vineyards, viewing panoramic landscapes, and even participating in guided tastings, all through a headset or digital device. According to Tussyadiah et al. (2018), within the tourism industry, VR's ability to create realistic and interactive simulations has made it a powerful tool for marketing and customer engagement. This technology allows potential visitors to experience a 'preview' of a destination, thereby influencing their travel decisions and potentially increasing brand loyalty through positive digital interactions (Pantano & Servidio, 2012).

The application of VR in wine tourism specifically, leverages these benefits, offering an alternative way for consumers to engage with wine brands and to explore the wine industry. Wine tourism relies heavily on sensory engagement—such as tasting, smelling, and seeing—which VR approximates through visually rich and engaging environments (Jung, tom Dieck, Lee & Chung, 2016). With the integration of VR, wineries can simulate vineyard tours, guided tastings, and educational sessions on wine production, thereby expanding the traditional wine tourism model to accommodate digital interactions. For consumers who may be constrained by location, time, or budget, VR offers a flexible and interactive experience, potentially increasing participation in wine tourism activities (Gómez, Pratt & Molina, 2018).

1.1.3 Virtual Wine Tourism: Enhancing Consumer Engagement and Education

One of the key advantages of VR in wine tourism is its potential to enhance both consumer engagement and education. The VR platforms facilitate wineries showcasing their unique attributes, such as vineyard landscapes, winemaking processes, and cultural heritage, in a visually compelling format (Brunner-Sperdin & Peters, 2009). These elements engage consumers and provide educational value, offering insights into the complexities of wine production and the factors that influence wine quality and taste. Research shows that educational elements can deepen consumer appreciation for wines, fostering greater loyalty and a stronger emotional connection with the brand (Babin, Darden & Griffin, 1994; Gómez et al., 2018). For wineries, VR serves as a medium through which they can communicate their brand story and convey the distinct qualities of their wines in an engaging, memorable way.
Furthermore, VR enables wineries to reach consumers who may not be familiar with wine culture but are interested in learning more. According to Williams et al. (2015), wine tourism educational and interactive experiences can attract a broader demographic, particularly younger audiences who value experiential learning and digital engagement. This aligns with research on consumer behaviour, which suggests that immersive, experience-driven marketing can

enhance consumer satisfaction and increase brand loyalty (Pine & Gilmore, 1998). By providing an accessible platform for learning and exploration, VR wine tourism has the potential to attract new consumers and deepen engagement with existing customers.

1.1.4 Frameworks for Understanding Technology Adoption in Wine Tourism

To analyse consumer adoption of VR in wine tourism, it is essential to consider theoretical frameworks that explain how individuals accept and use new technology. The (UTAUT, developed by Venkatesh, Morris, Davis, and Davis (2003), offers a comprehensive model for understanding technology adoption, focusing on constructs such as PE, EE, SI, and FCs. These factors provide insights into consumers' motivations, perceived benefits, and potential barriers to using VR in wine tourism. For instance, PE considers whether consumers believe that VR will enhance their wine-tasting experience, while EE addresses the perceived ease of using VR platforms (Kim & Hall, 2019). Social influence examines the role of peer and societal validation, which is particularly relevant in social contexts like tourism (Venkatesh et al., 2003).

The UTAUT model has been widely applied in tourism research to explore technology adoption in various settings, including hotel booking platforms, destination marketing, and cultural tourism (Buhalis & Foerste, 2015; Tussyadiah, Wang & Jia, 2018a). In virtual wine tourism, UTAUT helps to identify how factors such as convenience, social endorsement, and infrastructure support impact consumers' willingness to engage with VR experiences. This theoretical foundation provides a structured approach for examining the drivers and barriers to VR adoption in the wine tourism sector, informing strategies that can enhance user satisfaction and increase participation (Venkatesh et al., 2003).

1.1.5 Relevance and Potential of Virtual Wine Tourism in the Global Market

The adoption of virtual wine tourism is particularly relevant in today's globalised market, where consumers increasingly seek unique and accessible experiences. Virtual wine tours and tastings offer a convenient and engaging way for consumers to explore wineries, even if they are geographically distant or unable to travel due to time or financial constraints (Nowak et al., 2020). Research on virtual tourism suggests that consumers are attracted to digital experiences that allow them to connect with destinations on a personal level, providing a sense of escapism and novelty (Guttentag, 2010; Jung, tom Dieck, Moorhouse & tom Dieck, 2021). For wine enthusiasts and novices alike, VR offers an interactive platform for discovering wines, learning about winemaking, and building connections with wine brands.

Moreover, the global rise of e-commerce and digital media has increased consumer familiarity with online interactions, making them more open to engaging in virtual tourism experiences (Kim & Hall, 2019). For wineries, virtual wine tourism presents an opportunity to tap into international markets and expand their customer base, reaching audiences that may not otherwise be accessible through traditional tourism models (Tussyadiah et al., 2018a). By leveraging VR as a marketing tool, wineries can differentiate themselves in a competitive market, attract tech-savvy consumers, and build brand loyalty through innovative, experience-driven engagement strategies (Buhalis & Foerste, 2015).

1.2 Research Problem and Research Gap

While VR has demonstrated significant potential in the broader tourism industry, the specific factors that influence the adoption of VR in wine tourism remain underexplored. Although studies have shown that VR can enhance user engagement and purchase intentions in wine tourism settings (Wen & Leung, 2021), research is limited in understanding the unique motivations, challenges, and preferences of wine tourists when it comes to virtual experiences. Existing literature on VR adoption has primarily focused on general tourism applications, such as virtual destination previews and cultural site explorations (Tussyadiah & Wang, 2016; Kim et al., 2018). However, the sensory and cultural dimensions that characterise wine tourism may shape consumer perceptions of VR differently, necessitating an industry-specific investigation into VR adoption factors.

This study sought to address this gap by examining the key drivers that influence consumers' intentions to adopt VR for wine tourism. Using the UTAUT framework as a foundation, the research explored additional factors such as HM, PR sensitivity, and habitual behaviour to provide a comprehensive view of consumer attitudes toward VR wine experiences. By identifying the barriers and facilitators of VR adoption in wine tourism, this study sought to contribute to both theoretical understanding and practical applications within the industry. The findings offer insights into effective strategies for wineries to leverage VR technology, enhancing customer satisfaction and engagement through immersive, accessible wine tourism experiences.

1.2.1 Research Aim, Questions, and Objectives

Research aim:

The aim of this study was to examine factors influencing the adoption of virtual wine tours and wine tasting.

Research questions:

- What are the factors that influence the adoption of virtual wine tours and virtual wine tastings?
- Does SI influence the adoption of virtual wine tours and virtual wine tastings?
- Which one of these factors (i.e. EE, HM, PR, FCs, habit (HBT) has a more significant influence on a user's intention to adopt virtual reality (IVR) in wine tasting and tours?
- How does non-traditionally digital consumers behave when digital aspects interact with wine tourism?

1.2.2 Research objectives:

The research sought to investigate:

- The factors that influence the adoption of virtual wine tours and virtual wine tastings;
- The influence of SI on the adoption of virtual wine tours and virtual wine tastings; and
- which of these factors (i.e. EE, HM, PR, FCs, HBT) have the most or least impact on a user's intention to adopt virtual wine tasting and tours.
- Does technology influence how non-traditional consumers behave when interacting with the technology?

1.3 Summary

The evolution of wine tourism has embraced digital innovation, with VR emerging as a transformative tool that allows wineries to engage with a broader audience beyond traditional, in-person experiences. Virtual wine tourism leverages VR's immersive capabilities to replicate the ambiance of vineyards, offering consumers a visually rich and interactive environment where they can explore, learn about, and experience wine culture remotely. This shift addresses key limitations of physical tourism, such as geographic and financial constraints, making wine tourism more accessible to global audiences. Research shows that VR enhances the wine tourism experience by providing consumers with both educational and sensory engagement, creating a deeper connection to the wine brand and increasing customer satisfaction. This has positioned VR as a valuable asset for wineries seeking to attract new demographics, particularly younger consumers who are digitally savvy and appreciate experiential, immersive forms of engagement.

To understand consumer adoption of VR in wine tourism, theoretical frameworks like the UTAUT are instrumental, as it facilitates technology adoption by examining factors such as PE

s, EEs, SIs, and FCs. These constructs provide insight into the motivations and potential barriers that consumers experience with VR, especially in contexts that rely on sensory engagement like wine tourism. Virtual reality allows wineries to convey brand stories, cultural heritage, and product knowledge, effectively translating the multi-sensory and cultural dimensions of wine tourism into a digital format. For many consumers, VR provides a unique opportunity to explore wineries, participate in virtual tastings, and learn about winemaking without the need to travel. This not only enhances consumer education but also increases engagement, encouraging loyalty and a stronger brand connection.

CHAPTER 2: THEORETICAL GROUNDING

2.1. Introduction

As the tourism industry increasingly integrates digital technologies, understanding the factors that influence consumers' adoption of these innovations is essential. The UTAUT provides a comprehensive framework for analyzing technology acceptance, offering valuable insights into users' behaviour and motivations. Developed by Venkatesh et al. (2003), UTAUT examines four primary constructs, namely PEs, EEs, SIs, and FCs that collectively shape an individual's intention to adopt new technology. In the context of virtual wine tourism, where VR technology offers immersive and interactive wine-tasting experiences, UTAUT serves as an ideal model to explore factors driving consumer engagement.

This section interrogates each component of the UTAUT model as it applies to virtual wine tourism, addressing how these factors influence consumers' likelihood of adopting VR for wine experiences. Through examining performance and EEs, SIs (SIs), and FCs, understanding the key motivators and potential barriers that influence users' adoption of virtual wine tours improves. Additionally, extended factors such as HM, PR, and HBTs to provide a more holistic perspective on consumer intentions in this experiential context are explored.

According to a recent report by Grand View Research (2024), the global wine tourism market is projected to reach a valuation of USD 106.74 billion by 2030, growing at a compound annual growth rate (CAGR) of 12.9% between 2024 and 2030. This growth is primarily attributed to increasing consumer demand for immersive and unique travel experiences, the expansion of global wine culture, and the rising popularity of wine-related activities such as tastings and vineyard tours. Additionally, advancements in digital platforms and the widespread availability of online booking systems have enhanced accessibility and convenience for travelers, further accelerating market expansion. Millennials, in particular, represent a significant segment driving this trend, as they tend to prioritize experiential and value-driven wine tourism. Despite financial limitations, they actively engage in wine-related travel, often leveraging digital tools for trip planning.

The *Global Report on COVID-19's Impact on Wine Tourism* highlighted the substantial disruption caused by the pandemic across the wine tourism sector. A majority of wineries

reported significant financial losses and a sharp decline in international visitors. In 2020, over 80% of wineries experienced revenue reductions, with 47% reporting a drop of more than 90% in international tourist numbers. Despite these challenges, industry sentiment remained optimistic, with 90% of wineries anticipating a return to pre-pandemic tourism levels by 2022. Many also indicated plans to sustain or increase investment in wine tourism, reflecting confidence in the sector's long-term recovery and growth potential.

Winery visits and the 30-40 age demographic are projected to contribute over 65% of global wine tourism revenue from 2025 onward (Future Marketing Insights, 2025). Additionally, winery visits alone account for 38.7% of the market share, while individuals aged 30-40 represent 26.8%, largely due to their preference for experiential travel and strong digital engagement (Future Marketing Insights, 2025). The same report notes increasing adoption of digital technologies to enhance the visitor experience, including virtual tours, online booking systems, and the strategic use of social media storytelling to attract international audiences.

2.2 The Unified Theory of Acceptance and Use of Technology

The UTAUT, developed by Venkatesh et al. (2003), serves as a robust framework to facilitate understanding the factors that drive technology adoption. The model, widely applied across diverse contexts, identifies four main constructs: PE; EE; SIs; and FCs. These constructs predict individuals' intentions to adopt and use technology, offering a comprehensive view of the motivators and barriers affecting consumer behaviour. In virtual wine tourism, UTAUT provides insight into how consumers perceive the value, usability, and social aspects of VR experiences, helping researchers understand factors that could drive or inhibit the adoption of virtual wine tours.

The UTAUT is a comprehensive framework designed to understand and predict factors that influence users' acceptance and use of technology. It was introduced by Venkatesh et al. in 2003. UTAUT synthesises elements from eight prominent models of technology acceptance, making it one of the most widely used theories in the field of information systems and technology adoption.

According to Venkatesh et al. (2013), the core constructs of the Unified Theory of Acceptance and Use of Technology (UTAUT) include Performance Expectancy (PE), which refers to the degree to which individuals believe that adopting a technology will enhance their job

performance. This construct closely aligns with the concept of perceived usefulness in the Technology Acceptance Model (TAM). Additional key constructs identified by Venkatesh et al. are Effort Expectancy (EE), Social Influence (SI), and Facilitating Conditions (FC). Effort Expectancy pertains to the perceived ease associated with using the technology, similar to TAM's notion of perceived ease of use. Social Influence reflects the extent to which individuals perceive that important others, such as colleagues or supervisors, believe they should adopt the technology. Facilitating Conditions refer to the availability of organizational resources, infrastructure, and support necessary to enable effective technology use.

Venkatesh, Thong, and Xu (2012) claim that individual variables such as age, gender, experience, and extent of voluntary use, influence these four components and serve as moderators that affect the degree of correlation between the core constructs and technology-use behaviour. The degree to which each of the components (PE, EE, SI, and FC) affects both a user's intention to use technology and their actual usage behaviour is determined by these moderators. For instance, age and experience may influence how much intention to use a technology is influenced by effort anticipation, or ease of use (Venkatesh et al., 2012)

2.2.1 Performance Expectation

Performance expectation refers to an individual's belief that using a specific technology will enhance their performance or provide valuable outcomes (Venkatesh et al., 2003). In the context of virtual wine tourism, this factor captures the extent to which consumers perceive VR as capable of enhancing their wine-tasting experience. Wine tourists often seek immersive and educational experiences that offer exclusive access to vineyards and in-depth knowledge of wine production (Huang, Backman, Backman & Moore, 2013). With VR, consumers can explore distant vineyards, interact virtually with winemakers, and experience the ambiance of wine cellars without the constraints of physical travel. This unique capability appeals to consumers, particularly those interested in the sensory and cultural aspects of wine tourism, as it replicates elements of in-person experiences (Jung et al., 2021). Research indicates that when consumers perceive technology as valuable or beneficial, they are more likely to adopt it (Davis, 1989). For younger, tech-savvy demographics, the ability to share these experiences on social media adds an element of social value, amplifying the perceived benefits of VR adoption. As VR technology advances, with improvements in visual fidelity and sensory integrations,

PEs of VR in wine tourism are likely to increase, further encouraging VR adoption (Venkatesh et al., 2003).

Venkatesh et al. (2012) state that both customers' and wine businesses' intentions to utilise VR for wine tours are influenced by various elements, namely user experience, PEs, and the perceived advantages VR can offer the wine tourist experience. The expected quality, usefulness, and results of utilising VR technology for virtual wine tours are referred to in this context as PEs. It's crucial to examine how technology can meet customer needs, improve corporate performance, and enhance the overall experience to fully grasp this concept.

Tourist expectations serve as a critical reference point in assessing the quality of an experience. When the actual experience aligns with or surpasses expectations, it tends to result in visitor satisfaction, thereby increasing the likelihood of positive word-of-mouth and repeat visitation. Conversely, a gap between expectations and reality often leads to dissatisfaction. Within the context of wine tourism, virtual reality (VR) can replicate various experiences such as vineyard tours, wine production processes, and tasting sessions. When tourists anticipate a VR experience that is immersive, realistic, and informative, they are more inclined to engage with the technology and may be more likely to visit the physical destination (Díaz-Carrión, Álvarez-García, & del Río-Rama, 2021). For instance, a tourist who participates in a high-resolution VR tour of Napa Valley may be motivated to plan an actual visit based on the quality of the virtual encounter.

Table 2.2.1: For VR-based wine tours, PE encompasses several aspects (Kim & Hall, 2021)

Aspects that influence PEs and facilitate the adoption of VR	
Realistic Experience	The ability of VR to produce an emotionally and visually engaging experience is essential. Customers anticipate having the "feel" of being at the vineyard, witnessing wine production, and speaking to professionals. Virtual wine tours perform better when they include high-quality graphics, sound, and interactivity.

Educational Value	One of the primary benefits of virtual wine tours is the chance to learn about terroir (all the natural elements that contribute to the unique character of a product), regional details, and the wine-making process from the comfort of one's own home. This PE involves VR's capacity to convey intricate wine-related information in an interesting and understandable manner.
Convenience and Accessibility	Virtual reality provides a handy and accessible virtual substitute for customers who are unable to visit wine areas. It is anticipated that VR will provide a top-notch experience that isn't greatly hampered by the absence of a consumer's physical presence.
Entertainment and Engagement	Virtual tours need to be fun as well as educational. There is a rising expectation that users will be engaged through gamification, interactive aspects, and virtual encounters with winemakers or sommeliers. A satisfying VR tour must have interactive elements such as the ability for consumers to select wine pairings or explore the vineyard at their own pace.

Table 2.2.3: Factors that influence both the adoption of VR and the performance for wine tours (Kim and Hall 2021; Zhoe, Zhang & Wei, 2021).

Technological Readiness	Virtual reality adoption is influenced by the accessibility of top-notch VR gear and content creation resources. Virtual reality

	technology is more likely to be widely adopted as it becomes more accessible and user-friendly.
Cultural Acceptance of Technology	Adoption is likely to be influenced by the overall perception of VR, particularly when it comes to recreational pursuits like wine tourism. It is possible that some societies are more willing to try new technologies than others.
Market Trends	The rise of virtual travel experiences, particularly following the COVID-19 pandemic, has led to increased interest in virtual tourism. According to Zhao et al.'s 2021 study**,** virtual tourism has become a viable alternative for the tourism sector, providing businesses with new ways to engage with customers who are physically unable to travel.
Consumer demographics	Age, income level, and tech-savviness influence the likelihood of adopting VR. VR wine tours are likely to be mostly adopted by Millennials and Gen Z, who are more accustomed to digital and immersive technologies.

Zhoe et al (2021) state that PEs that focus on providing a highly engaging, educational, and realistic experience, influence consumers' intentions to use VR for wine tours. Furthermore, Kim and Hall (2021) state that VR offers customers a fun, accessible, and instructive wine-tasting experience. Adopting VR offers companies the chance to stand above their competition, connect with a worldwide audience, and interact with potential clients in a contemporary, immersive manner. Virtual reality technology is expected to become more widely used in the wine tourism industry as it develops and becomes more reasonably priced, opening new and creative ways to explore wine areas across the globe.

2.2.2 Effort Expectations

Effort expectations refer to the ease of using a technology and how this perception affects user engagement (Venkatesh et al., 2003). In VR wine tourism, consumers' willingness to adopt VR depends heavily on their comfort with the technology, particularly in terms of navigation and interaction. User-friendly designs and accessible interfaces can significantly reduce the technical barriers associated with VR, making the technology accessible to consumers without prior experience in immersive environments (Davis, 1989). Simplified interfaces, tutorials, and guided VR tours can enhance user confidence, making it easier for individuals to engage in virtual wine tasting without feeling overwhelmed by technical complexity (Tarafdar et al., 2013).

For many potential users, initial ease of use creates a positive first impression, which can encourage ongoing engagement with VR platforms. Conversely, high complexity or usability issues may discourage adoption, particularly among demographics less familiar with VR (Milon et al., 2021). Therefore, VR platforms that prioritise intuitive user experiences and provide support for first-time users are more likely to foster positive perceptions of EE, encouraging broader adoption in the wine tourism sector (Gupta, Yousaf & Mishra, 2020).

Huang and Hsu (2021) state that because it affects consumers' views of how simple or complex a technology is to use, EE is a crucial factor in the adoption of new technologies, particularly VR. Furthermore, Huang and Hsu (2021) claim that according to the UTAUT and the Theory of Planned Behaviour (TPB), intentions to embrace new technologies are directly influenced by perceptions of ease of use (EE).

When virtual reality (VR) systems, such as vineyard tours or virtual wine tastings, are perceived as easy to use and intuitive, tourists are more inclined to interact with them, whether as a preliminary experience prior to visiting or as part of the visit itself. For example, a straightforward VR headset accompanied by guided narration illustrating the grape harvesting process is likely to foster greater user engagement compared to a more complicated system that demands extensive setup.

Table 2.2.4: Effort expectation in VR adoption (Choi & Hwang, 2020).

Factors that influence VR adoption

Ease of use	Despite becoming more user-friendly, VR technology still necessitates considerable expertise with software and hardware interfaces. Depending on the apparent ease of use, this element may either promote or inhibit adoption. People may be less likely to employ VR technology for a wine tour if they believe it is too complicated or requires a lot of effort to use it.
Perceived Value of VR	Users may be more inclined to adopt VR if they think that the time and effort required to understand and interact with it will result in a more rewarding or pleasurable experience. For instance, the initial learning curve may be justified by the immersive aspect of a VR wine tour, which allows users to visit numerous wineries in different areas or even nations from the comfort of their homes.
Technological Familiarity	Expectations for effort are also influenced by familiarity with VR technology. The adoption barriers for virtual wine tours may be lower for people who have previously used VR games, educational resources, or other VR applications. On the other hand, because they are not familiar with the technology, novices could perceive higher effort is required.

Table 2.2.5: The IVR in wine tours can be influenced by multiple factors. (Choi & Hwang, 2020; Venkatesh et al., 2003).

Multiple factors that can influence the adoption of VR in wine tours	
Perceived Enjoyment and Engagement	Enjoyment is a key consideration for prospective wine tour participants. Virtual wine tours can be more widely adopted and valued if they are made to be interactive, entertaining, and informative (for example, by providing wine tasting experiences, vineyard stories, and interactive winemaking processes).
Social Influence	The idea that other people are utilising VR technology for comparable reasons, or SI, could make adoption more likely. If a certain wine tour company becomes well-known for providing VR experiences, people could be more likely to give it a try.
Performance Expectations	The idea that utilising the technology would improve the user's experience is known as PE. In terms of wine tours, this could involve the ease of seeing several vineyards without travelling to them, the opportunity to revisit specific areas of a wine region or even participating in virtual wine tasting events.
Lifestyle Compatibility	Users' decisions to use virtual wine tours may be influenced by how well VR technology fits with their lifestyles, such as by providing a convenient virtual substitute for actual travel. Virtual reality technology may be especially appealing to customers looking for more eco-friendly or convenient travel options.

One important consideration in the decision to use VR technology for wine tours is the EE. Users are more inclined to adopt VR wine tours if they believe the technology is user-friendly

and rewarding. However, to make VR wine tours available to a wider audience, obstacles like technological complexity and unfamiliarity must be overcome. Wine tour companies may increase users' adoption rates and give wine lovers a more engaging, cutting-edge experience by lowering the perceived effort required and highlighting the special advantages of virtual wine tourism.

2.2.3 Social Influence

Social influence within the UTAUT model highlights how the opinions and behaviours of others impact an individual's intention to adopt new technology (Venkatesh et al., 2003). In virtual wine tourism, SI can manifest through various channels, including recommendations from friends, endorsements by wine influencers, and the visibility of VR wine experiences on social media. Social media platforms, especially those popular for sharing lifestyle content such as Instagram and YouTube, serve as important sources of social validation for VR wine tourism, where users often look to other people's experiences before making a commitment (Park et al., 2019). Studies demonstrate that people are more likely to adopt technologies endorsed by respected individuals within their social networks, amplifying the reach and appeal of VR wine tourism, particularly among younger demographics (Rogers, 2003). By partnering with influencers or hosting live virtual tasting events, VR wine tourism providers can leverage SI to attract consumers, making VR a more socially validated and desirable experience (Tussyadiah et al., 2018).

'Social influence' is the term used to describe how people's ideas, emotions, or actions are influenced by the actual, perceived, or suggested presence of other people. Peers, relatives, coworkers, and social networks are all examples of SI in the context of adopting new technology, and they can all have an impact on a person's decision to accept or reject new developments (Venkatesh et al., 2003).

According to Davis's (1989) TAM, perceived utility and ease of use are the main determinants of technology acceptance. Several model extensions (such TAM2 and UTAUT) include the idea of social impact as an external predictor of technological acceptance, even if TAM places an emphasis on individual cognitive aspects.

In the UTAUT, Venkatesh et al. (2003) contend that SI plays a significant role in forecasting a person's behavioural intention to utilise technology. When it comes to VR adoption for wine

tourism, people can find the technology more enticing or helpful if they perceive other people in their social circle or well-known wine industry personalities support it.

Table 2.2.6: Several factors shape how SI operates in the wine tourism sector (Djafarova & Trofimenko, 2019; Liu, Liang & Li, 2020; Bigné, Andreu & Gnoth, 2021).

Peer Recommendations	People may be more inclined to use VR wine tours in the context of wine tourism if they receive good feedback from friends or coworkers, or if they observe others utilising VR to visit wineries and vineyards (Liu et al., 2020). Positive word-of-mouth and shared experiences through social media platforms such as Instagram and YouTube play a crucial role.
Role of Social Media Influencers	By displaying VR experiences, social media influencers with a focus on wine, food, or travel frequently influence customer behaviour. An influencer's followers might be more likely to try a virtual wine tour if they portray it as an innovative and thrilling experience (Djafarova & Trofimenko, 2019).
Cultural and Social Norms	Different cultures and geographical areas experience different levels of social acceptance for VR in the context of wine tourism. While people in more traditional areas may be more skeptical or slow to adopt VR experiences, SI may promote better acceptance of VR experiences in more technologically advanced societies (Bigné et al., 2021).

People's perceptions of the usefulness of VR experiences also influence their desire to use VR for wine tours. People are more inclined to engage in virtual wine tours if they think they're a new, entertaining, and practical way to visit wineries without having to physically travel to them (López et al., 2021). Depending on the experiences and support of others, in this case SI has the potential to either strengthen or weaken this perspective.

Virtual reality adoption in tourism, especially its potential for wine tourism, has been the subject of several studies. In their 2017 study, Yung and Khoo-Lattimore investigated how VR might improve travellers' experiences in wine regions. They found that SI, especially through digital media was crucial in influencing travellers' opinions about VR as a competitive alternative to traditional travel. In a similar vein, Parsons et al. (2021) discovered that VR technology can greatly boost its chances of being adopted in the wine tourism sector when potential users' peers or reliable influencers suggest it.

2.2.4 Facilitating Conditions

Facilitating conditions refer to the availability of resources, infrastructure, and support necessary to use a technology effectively (Venkatesh et al., 2003). For virtual wine tourism, FCs encompass access to VR-compatible devices, reliable internet connections, and support resources, which are essential for providing a seamless VR experience. Research shows that consumers are more likely to engage with new technologies when they feel they have the requisite resources and technical support to use them successfully (Marinova et al., 2020). In VR wine tourism, FCs play a crucial role because VR systems require specialised equipment, such as headsets and high-speed internet. Without these resources, even highly interested consumers may face barriers to engagement. Offering accessible solutions, like mobile VR platforms or rental headsets at tasting events, can mitigate these obstacles. Furthermore, support resources such as FAQs, video tutorials, and live customer assistance make VR more approachable, enhancing users' confidence in their ability to participate in virtual wine experiences (Venkatesh et al., 2012).

Zhang and Kaufmann (2017) state that the infrastructure, support networks, and resources that make it possible for people to embrace new technology or engage in a specific behaviour are referred to as FCs. Furthermore, Zhang and Kaufmann (2017) claim that when it comes to virtual wine tours, favourable circumstances are important in determining whether or not

customers will choose to use VR-based experiences. A variety of frameworks and theories, such as the TAM and the UTAUT, can be used to determine which factors are likely to affect the adoption of VR for wine tours.

Kuo and Chen (2015) found that strong technical infrastructure, such as top-notch VR headsets and well created VR experiences that highlight vineyards, wine-making procedures, and tasting experiences are necessary for VR wine tours. Customers would require assurance that the technology would function flawlessly and that they would have the resources they need to use it efficiently.

Bigné et al. (2008) claim that in the context of virtual wine tours FC would improve consumers' perceptions of usability and reduce adoption hurdles. Consumers are more likely to embrace VR as a means of participating in wine tours if they believe that VR experiences are accessible, use top-notch gear, and offer technical assistance.

Users may be able to visit wineries, tour vineyards, and participate in tastings from the comfort of their homes with VR's immersive and engaging experiences for wine tourism. However, the following variables will determine if such experiences are successfully adopted:

1.VR headset availability (affordability and accessibility at the consumer level);

2. reliable internet infrastructure to facilitate streaming of high-quality videos;

3. VR systems with good design and easy-to-use navigation;

4. accessibility of VR-ready material locally (such as virtual wine tours via VR apps); and

5. reasonably priced VR content models for customers.

Table 2.2.7: Impact on Consumer Adoption of VR Wine Tours (Venkatesh et al., 2012; Kuo & Chen, 2015).

Impact on Consumer Adoption of Virtual Reality Wine Tours	
Ease of Access and Usability	Virtual reality technologies' usability and accessibility are among the most important consumer enabling factors. Customers might be less likely to test VR gear if they think it's too costly or difficult. Thus, VR equipment producers should prioritise developing devices that are simple to use and reasonably priced. Similar to this, the VR software for wine tours should include an intuitive interface and simple setup procedures to reduce user annoyance.
Perceived Enjoyment and Experiential Value	If consumers think virtual wine tours will be fun and provide value (e.g. a more engaging or instructive wine tour than traditional methods), they may be more inclined to use them. Realistic visuals, engrossing soundtracks, and interactive elements are examples of variables that might improve the perceived worth of virtual wine tours.
Cost- Effectiveness	One major obstacle may be cost. The PR of VR headsets and the content itself (such as virtual wine tours) must be considered affordable for their popularity in the wine tourism industry to increase. Customers are more willing to accept technology if they believe the quality of the experience justifies the financial expenditure.

For VR to be successfully implemented in wine tourism, favourable conditions are crucial. They include elements that influence consumers' intentions to utilise virtual wine tours, such as technological infrastructure, user-friendly design, and the availability of support systems. Developers and marketers can create experiences that lower entry barriers and improve the value proposition of VR as a tool for improving wine tourism experiences by taking these factors into consideration.

2.2.5 Extensions to UTAUT in Virtual Wine Tourism

While the original UTAUT model includes core constructs relevant to technology adoption, additional factors like HM, PR, and HBTs provide a more nuanced understanding of consumer behaviour in experience-driven sectors such as wine tourism.

1. **Hedonic Motivation**: Defined as the enjoyment derived from using technology, HM is highly relevant to virtual wine tourism, where consumers seek immersive and entertaining experiences (Brown & Venkatesh, 2005). Studies have shown that HM can significantly influence adoption, as the enjoyment of VR wine tours enhances the appeal of the experience, making it more memorable and engaging (Tussyadiah et al., 2018). Hedonic motivation has been identified as a significant predictor of technology adoption, particularly in contexts where experiential and emotional benefits are emphasized (Venkatesh et al., 2012). When virtual reality (VR) experiences in tourism are enjoyable, immersive, and emotionally captivating, users demonstrate a greater willingness to engage with the technology, even if they lack prior familiarity. This intrinsic enjoyment reduces perceived obstacles to adoption, such as the effort required to learn the technology, by shifting the focus toward pleasure. For instance, a VR tour showcasing the vineyards of Tuscany with vivid visuals and interactive tasting simulations can emotionally engage users, thereby increasing their propensity to visit the actual location. Supporting this, Tussyadiah (2018) noted that the enjoyment derived from VR experiences positively influenced users' intentions to visit the physical destination.

2. **Price**: The perceived value for the cost of VR adoption affects consumer intentions, particularly as VR experiences may involve additional expenses, such as VR hardware or subscription fees (Gefen et al., 2003). For PR-sensitive consumers, VR wine tourism

providers can offer value-added options, such as exclusive access to wineries or bundled wine tasting kits, to enhance perceived value (Davis & Golicic, 2010).

3. **Habit**: Habit refers to the extent to which repeated usage influences future behaviour. In VR wine tourism, consumers who have already used VR may find it easier to engage with VR for wine-related activities. Habitual engagement reduces cognitive load and increases adoption likelihood, particularly among digitally native demographics (Limayem, Hirt & Cheung, 2007). According to Venkatesh et al. (2012), habitual use of a technology, such as virtual reality (VR), increases the likelihood of continued usage with minimal conscious effort. Users who regularly engage with VR for purposes such as entertainment, education, or shopping are more predisposed to adopt it within the context of wine tourism, including virtual vineyard tours and wine tastings. For example, a wine enthusiast who frequently participates in VR-based events or virtual museum visits may be more inclined to explore VR wine tasting experiences or virtual winery tours.

2.3 Summary

In summary, the UTAUT offers a valuable framework for understanding consumers' intentions to adopt VR in wine tourism. Each of the primary UTAUT constructs, PE, EE, SI, and FCs, play a distinct role in shaping consumers' perceptions and behaviours toward VR experiences. Performance expectation highlights the value that consumers place on the unique, immersive benefits that VR brings to the wine-tasting experience, appealing to those who seek engaging and educational content. Effort expectation underscores the importance of user-friendly designs and support features that make VR accessible, especially for users less familiar with the technology. Social influence emphasises the impact of social networks and endorsements on adoption, while FCs focus on the need for reliable infrastructure and resources, both of which ensure a seamless and enjoyable VR experience.

Beyond these core constructs, additional factors such as HM, PR, and HBTs further deepen our understanding of consumer motivations in VR wine tourism. Hedonic motivation appeals to consumers' desire for novel and enjoyable experiences, while PR captures the perceived value

relative to cost, and HBTs examine the role of past technology use in shaping future behaviours. Together, these extended factors offer a more comprehensive view of the experiential nature of VR adoption in wine tourism, catering to both consumers' practical and emotional needs. As VR technology evolves and becomes more widely accessible, understanding these factors within the UTAUT model will be essential for virtual wine tourism providers aiming to attract diverse consumer groups and enhance satisfaction through innovative, technology-driven experiences.

CHAPTER 3: LITERATURE REVIEW

3.1 Introduction

This chapter explores the key factors influencing consumers' intentions to adopt VR in wine tourism, using the UTAUT as a guiding framework. It begins by discussing VR in tourism, highlighting how VR technology is transforming traditional tourism experiences, followed by a specific focus on VR in wine tourism, where immersive VR experiences offer unique ways to explore vineyards and wine-making processes remotely. The chapter then delves into consumers' intentions to adopt virtual wine tasting and tours, examining the motivations and perceived benefits that drive adoption. This is followed by an in-depth analysis of the UTAUT model's components as applied to VR in wine tourism. Furthermore, a review of PE is provided, which emphasises the value and benefits that VR brings to the wine experience. Effort expectation, which considers the ease of use and accessibility, and SI which highlights the impact of recommendations and social validation, are explored. Facilitating conditions, which examine the supportive infrastructure necessary for seamless VR adoption are discussed. Finally, the chapter explores extensions to the UTAUT model, including HM, PR, and HBTs, providing a broader understanding of consumer motivations within virtual wine tourism. Each section offers insights into how these factors collectively shape consumer engagement, ultimately enhancing the wine tourism experience through technology.

3.2 Virtual Reality in Tourism

Virtual reality is transforming the tourism industry by enabling prospective travellers to virtually immerse themselves in destinations prior to physical visits. Virtual reality allows tourism operators to showcase destinations through realistic and interactive simulations, which can replicate the essence of visiting a location and create a sense of anticipation and engagement (Guttentag, 2010). Virtual tourism experiences have become more sophisticated with advances in VR hardware and software and simulate physical sensations and environments with high fidelity. Research highlights that such immersive experiences help to forge a mental connection with destinations, potentially boosting tourism demand and enhancing destination image (Pantano & Servidio, 2012; Tussyadiah et al., 2018). Additionally, VR has been found to significantly influence travel decisions by reducing destination uncertainty, thus acting as a risk-mitigation tool for consumers hesitant about

visiting unknown places (Slater & Sanchez-Vives, 2016). By offering a preview of what a destination has to offer, VR not only helps consumers to make more informed travel decisions but also encourages them to feel more connected to the location.

Some researchers argue that VR will soon be considered a necessary feature in tourism marketing, especially as demand for unique and individualised experiences grows (Cheong, 1995). As VR becomes more accessible and cost-effective, tourism providers are increasingly using it to enhance visitor engagement and satisfaction, creating lasting impressions that may influence potential travellers to choose one destination over another (Kim & Hall, 2019). By reducing sensory distance, VR provides a more accessible and interactive means for tourism destinations to connect with potential visitors, fostering a more robust pre-travel engagement and building emotional anticipation that aligns with actual visits (Tussyadiah et al., 2018).

3.2.1 Virtual Tours and Destination Previews

Tussydiah and Fesenmaier (2009) state that when using VR technology, prospective tourists can experience places before going there. By using virtual tours, users can choose places based on sensory and visual information in a 360-degree immersive experience. For instance, the Google Earth VR software gives users a unique perspective of cities and landmarks while allowing them to explore the globe through a VR headset.

3.2.2 Immersive Cultural Experiences

Guttentag (2010) claims that even if a visitor/tourist is unable to visit a destination in person, VR can provide them the chance to experience its culture. Furthermore Guttentag (2010) states that in order to provide immersive narrative and intricate historical reconstructions, museums, historic sites, and other cultural organisations are embracing VR. The British Museum, for instance, has introduced a VR tour that allows visitors to virtually examine artefacts and exhibits, offering a comprehensive and engaging cultural experience.

3.2.3 Virtual Reality for Destination Marketing

Li and Li (2020) posit that VR allows travel companies to showcase their destinations in a manner that is impossible to replicate merely with still photos and movies. They further claim that tourists are more likely to visit when they can interact with promotional content and have

a better idea of what to expect, for example, during trade events the New Zealand Tourism Board allows attendees to experience the Lord of the Rings movie *Hobbiton* via VR goggles. As a result of this promotion, tourism to the country has increased.

3.2.4 Education and Training for Travel Professionals

Buhalis and Law (2008) found that tour guides, hotel employees, and event coordinators are just a few of the travel industry professionals who might benefit from VR training. Virtual reality-based training programs enable practice in a controlled, yet realistic, setting by simulating real-world situations training for hospitality personnel, for instance, it enables them to practice customer service techniques or model emergency response scenarios in an airport or hotel environment.

3.2.5 Reducing Overcrowding through Virtual Visits

Stone (2015) states that VR offers virtual alternatives, as it presents a potential solution to the overpopulation of some tourist destinations. People can take a virtual tour of a well-known place instead of going there in person, which eases the strain on real places (Stone, 2015), for example, VR tours have been marketed as a means of visiting locations like Venice and Machu Picchu without adding to the problem of overcrowding and stressing already vulnerable places or artefacts.

3.2.6 Personalised Virtual Travel Experiences

Pan and Li's (2013) study found that due to developments in VR, people/ tourists can now have customised experiences. For example, VR platforms can imitate the feeling of customised travel by using user preference data to recommend customised tours or experiences.

3.2.7 Health and Safety during Pandemics

Xiang and Fesenmaier (2022) found that virtual tourism grew in the travel sector during the COVID-19 epidemic as physical travel became less practical. Furthermore, the same authors found that VR offered a secure way to research places from home, keeping prospective travellers interested. For example, during the epidemic, organisations such as the Louvre

Museum in Paris provided free VR tours, which was immensely popular as people were unable to travel.

3.2.8 Future Trends and Potential of Virtual Reality in Tourism

Jung, Chung and Leue (2015) found that with advances in haptic feedback, AI-driven simulations, and augmented reality (AR) integration bode well for the future of VR in tourism. Virtual reality travel could be combined with traditional travel to create hybrid experiences, for example, by combining GPS data with innovations like the Oculus Quest, consumers may be able to experience VR tours that seamlessly blend virtual and real-world aspects.

3.3 Virtual Reality in Wine Tourism

Wine tourism, traditionally centered on experiencing wineries, landscapes, and the cultural aspects of wine production, can benefit significantly from VR technology, which enables immersive storytelling and provides a unique, interactive experience (Carlsen & Charters, 2006). Wine tourism requires a sensory connection that VR can replicate, allowing users to participate in virtual vineyard tours as well as simulated tastings that convey the feel, taste, and aroma of wines through visual and auditory cues. According to Gómez et al. (2018), VR in wine tourism not only serves as a novel marketing strategy but also cultivates a stronger cultural connection, which is essential for building brand loyalty.

Through offering virtual tours, wineries can reach consumers in remote locations, fostering brand engagement and encouraging future visits (Griffith, 2019). Virtual reality applications in wine tourism are especially appealing to younger consumers who seek novel, tech-driven experiences and may be attracted to VR as a convenient way to access wineries that would otherwise require substantial travel. Virtual reality platforms can also provide an educational experience by showcasing the intricate wine-making process and offering guided tastings that allow consumers to better understand wine characteristics and wine culture (Buhalis & Foerste, 2015).

An inventive idea that blends the immersive experiences of virtual environments with the instructive and hands-on nature of wine tasting is the use of VR technology for wine tours. Even though the practice of taking VR wine tours is still relatively new, there has been an increasing desire to use this technology, particularly in the travel, tourist, and hospitality

sectors. Pertinent sources and an examination of the practices and goals of using VR for wine tours is described hereunder.

Users can experience a place or activity through VR without being there. VR provides an immersive means of exploring wineries, cellars, and wine production processes in the context of wine tourism. Users can participate in virtual tours that give not only a visual experience but also instructional content about winemaking, tasting methods, and even the cultural history of renowned wine regions like Bordeaux, Napa Valley, or Tuscany.

Immersion Wine Experiences: By allowing visitors to interact with vineyards virtually, VR technology has the potential to completely transform wine tourism. For people who are unable to visit these areas because of time, financial, or mobility limitations, this can be especially helpful. Sensory components such as haptic feedback or even interaction with wine pairing apps that recommend wines based on virtual tastings could improve the experience (Miller, 2020).

Engaging with sommeliers or virtual guides, observing wine-making demos, and learning about the many wine varietals and terroirs are all possible with VR wine tours. A more individualised experience than a conventional, static tour could result from this degree of participation, which could also improve engagement and knowledge retention (Barton, 2021).

Even though VR is still relatively new to the wine tourism sector there are noteworthy instances of wineries and travel agencies beginning to experiment with VR experiences.

Businesses like Virtuoso and Travel Leaders Group are also investigating VR as a means of advancing wine tourism. They are creating VR experiences that give potential customers a taste of the wineries they could visit, enabling them to "try before they buy" (Virtuoso, 2022).

Table 1: The IVR for wine tours is influenced by several factors (Pereira, 2021; Barton, 2021; Miller, 2020).

The Intention to Adopt VR for Wine Tours is Influenced by Several Factors	
Convenience and Accessibility	The primary appeal of VR wine tours for customers is their ease of use and accessibility. Users can experience a place or activity from the comfort of their own homes

	using virtual tours, which is especially alluring in the post-pandemic period when virtual experiences have become increasingly popular (Pereira, 2021). People's willingness to attempt novel VR-based travel experiences, including wine tours, has probably increased because of this change.
SI and Engagement	Through multiplayer experiences, wine tourism's social components like touring wineries with loved ones can be partially simulated in VR. For example, social engagement in virtual places is provided via VR platforms such as VRChat and AltspaceVR. As customers search for new methods to interact with people while learning about wine cultures, this social component may boost the uptake of VR wine tours (Barton, 2021).
Technological Familiarity and Perceived Usefulness	Any new technology's adoption is frequently influenced by people's perceptions of its use and their level of familiarity with VR. As VR technology becomes more accessible and user-friendly, younger, tech-savvy generations are probably more receptive to using it for wine tourism. It may still be considered a curiosity by older or less tech-savvy people, nevertheless, rather than a viable alternative to in-person wine tourism experiences (Miller, 2020).

3.4 Virtual Wine Tasting and Tours

Virtual wine tasting offers a new way for consumers to engage with wine brands, allowing them to participate in tastings and guided wine tours without physically visiting the winery. This concept has gained popularity, especially during times when travel is restricted, as it offers an accessible way for consumers to enjoy wine experiences from their homes (Nowak et al., 2020). Virtual tastings are often supported by live or pre-recorded sessions with winemakers, creating an educational component that fosters customer loyalty and strengthens brand relationships (Martins, Gonçalves & Branco, 2021). Through offering a level of interactivity, virtual wine tastings can replicate the social and sensory elements of traditional tastings, which are essential for a meaningful wine experience (Carmichael, 2021).

These virtual experiences have expanded the audience for wine tourism, allowing wineries to reach customers who may have physical or economic limitations that prevent travel. Wine companies have leveraged these experiences to engage a global audience, enhance brand value, and provide a distinctive, memorable experience that encourages brand loyalty (Brunner-Sperdin & Peters, 2009). Additionally, incorporating sensory elements such as sight and sound increases the authenticity of virtual tastings, enhancing customer satisfaction (Carmichael, 2021).

3.5 Consumers' Intentions to Adopt Virtual Wine Tasting and Tours

The concept of consumers' intentions to adopt virtual wine tasting and tours is grounded in the understanding of psychological motivations, technological acceptance, and SIs. According to the (TPB), intention to adopt a new behaviour is a strong predictor of actual adoption, shaped by consumers' attitudes toward the behaviour, subjective norms, and perceived behavioural control (Ajzen, 1991). For virtual wine experiences, attitudes are influenced by the perceived enjoyment and educational value of engaging in a tasting from the comfort of one's home. The convenience offered by VR, especially in reducing travel costs and logistical barriers, increases its appeal for wine enthusiasts who may otherwise face geographical constraints (Guttentag, 2010).

Moreover, SIs significantly shape consumers' attitudes toward adopting virtual wine tours. With the rise of digital platforms and the impact of social media, peer reviews, online communities, and influencers' endorsements play a key role in influencing individuals to try virtual experiences (Huang & Hsu, 2009). The presence of positive reviews and testimonials can mitigate hesitations associated with VR's sensory limitations, such as the inability to

directly taste or smell the wine (Nowak et al., 2020). Additionally, subjective norms the perceived social pressure to engage in or avoid a particular behaviour have a notable impact, as consumers are more likely to try virtual wine tours if they observe friends, family, or influencers endorsing them (Tussyadiah & Wang, 2016).

Despite the advantages, certain challenges impact consumers' intentions. The sensory nature of wine tasting is difficult to replicate virtually, which may deter some consumers who value the full sensory experience, including aroma and taste (Kim et al., 2020). Additionally, perceived behavioural control, or consumers' perception of their ability to use VR technology, can influence their likeliness to adopt VR wine tours, especially older consumers or those unfamiliar with VR. Studies have shown that ease of use, coupled with adequate customer support and tutorials, can significantly enhance the likelihood of VR adoption in tourism (Kim et al., 2018).

Due to severe disruptions created by the global COVID-19 epidemic, many wineries and wine companies have shifted to virtual experiences in an effort to sustain sales and consumer engagement. In a socially remote setting, this transition to virtual wine tasting and tours opened up new avenues for wine consumption, education, and enjoyment. With the pandemic over, the question remains: will consumers still be drawn to virtual wine tasting and tours, and what elements will affect their decision to use such experiences? Wineries, travel companies, and digital marketers must comprehend consumer intentions in this area in order to better customise their products and marketing tactics.

Table 2: Key drivers of consumers' intentions to adopt virtual wine tasting and tours (Wine Intelligence, 2021).

Key Drivers of Consumers' Intentions to Adopt Virtual Wine Tasting and Tours	
Convenience	The ease that virtual wine tasting and tours provide is one of their main benefits. Customers don't have to travel or make any other logistical arrangements in order to participate–they may do so from the comfort

	of their own homes. This feature is especially appealing to people who are physically or geographically unable to visit wineries.
Novelty and Technological Innovation	Technology is used in virtual wine tours and tastings to improve the customer experience. Virtual wine events frequently incorporate interactive elements like live video, chat, and VR because of the growth of platforms like Zoom, Google Meet, and specialised applications. Customers may become more inclined to try new things because of the enthusiasm that these formats' novelty can generate.
Social Interaction and Community	Even though they are conducted virtually, wine tastings give customers an opportunity to socialise. Many online wine tasting events are constructed as social gatherings where guests can talk to the host (such a winemaker or sommelier), ask questions, and interact with other attendees. It has been determined that this sense of community has a significant role in attracting customers to virtual events.
Cost-Effectiveness	While travel, lodging, and eating expenses are frequently associated with attending in-person wine tastings, virtual wine tastings usually present a more cost-effective alternative. Some virtual wine tasting packages, which can be less costly than going to a winery in person, feature a carefully chosen assortment of wine delivered to the customer's home.

Wine Education and Discovery	Customers get the chance to learn more about wine through virtual tastings, whether it is about various types, wine production, or food combinations. Virtual tours frequently include educational content, which enhances the experience and draws in both wine connoisseurs and newcomers.
Experience Customisation	Customisation options, such as selecting wines or themes for a tasting session, are available for many virtual wine tasting events. Customers that appreciate distinctive and customised experiences will find this degree of personalisation enticing.

Table 3: Barriers to adoption (Mintell, 2021)

Barriers to Adoption	
Lack of Sensory Experience	The lack of the tactile and sensory experiences that live events offer is a major deterrent to the adoption of virtual wine tasting and tours. The experience of tasting wine is intrinsically multisensory, encompassing not only taste but also sight, smell, and even touch. The immersive experience of visiting a winery or vineyard cannot be completely replicated by virtual events, however they can mimic some of these sensations.
	Technical obstacles like poor internet connections, trouble using digital platforms, or discomfort with virtual meeting software

Technical Issues	can deter some customers. For some customers who are less tech-savvy, the dependence on technology may be a turnoff.
Limited Wine Selection	Pre-packaged wine selections are frequently sent to participants' homes as part of virtual wine tasting events. Customers who enjoy perusing wine lists in person at wineries or who would rather have a more individualised or extensive range of wines might not find this model appealing.
Limited Social Engagement	Virtual wine tastings can provide a certain amount of social engagement, but they are not the same as the in-person ties that can be formed at events. Customers who appreciate the social component of wine tasting may be turned off by the absence of direct, unplanned social interaction.

E-consultancy (2020) claims that as distancing regulations loosened, in-person wine tourism would likely return, but virtual wine tours and tastings would probably continue to play a big role in the wine industry, especially as consumer preferences adapted to more hybrid experiences.

Mintel (2021) claims that virtual wine tastings' future success hinges on its capacity to develop and to overcome obstacles like the requirement for more individualised experiences and the absence of complete sensory engagement. Future developments, like more complex VR experiences or AR could make virtual wine tasting even more alluring.

Wineries may be able to offer a more comprehensive and adaptable wine tourism experience if they can effectively combine virtual wine sampling with live events. Future wine marketing will probably be greatly influenced by the ongoing development of direct-to-consumer sales strategies, including virtual experiences (Sustainability Journal, 2022)

3.6 Performance Expectation

Performance expectation is one of the most influential factors in determining users' adoption of new technologies, referring to the degree to which an individual believes that using a technology will provide beneficial outcomes (Venkatesh et al., 2003). In virtual wine tourism, performance expectation plays a key role in shaping consumer intentions, as users are drawn to VR not only for its novelty but also for the unique value it offers in enhancing users' wine-tasting experiences. For example, in wine tourism VR allows users to explore exclusive vineyards virtually, engage in interactive tastings, and learn directly from wine experts, all from the comfort of their homes (Huang et al., 2013). Consumers who believe that VR will provide an enriched wine experience-comparable or even superior to traditional in-person tours are more likely to adopt the technology.

Research indicates that when users perceive a technology as beneficial, especially in terms of entertainment and educational value, they exhibit higher intentions to adopt (Davis, 1989). In the context of wine tourism, VR provides multifaceted experiences that combine visual immersion, interactive learning, and social engagement. This multi-dimensional benefit aligns with consumers' PEs as VR enables them to experience winery culture and gain knowledge about wine production without needing to travel. The unique aspects of VR, such as the ability to 'visit' multiple vineyards worldwide in a short period, enhance the technology's perceived utility, catering to both leisure and educational objectives (Kim & Hall, 2019).

For younger and more tech-savvy consumers, the PE of VR extends beyond mere functionality to include aspects of social value and digital engagement. Many studies have found that younger consumers, who are more familiar with digital innovations, often view VR as a platform that allows them to share their experiences on social media, thus further amplifying its value. This perceived social value, coupled with the immersive quality of VR, reinforces the belief that VR offers a superior experience, thereby increasing adoption likelihood. Furthermore, as VR technology continues to advance with higher-resolution visuals and potential sensory integrations, consumer PEs are likely to increase, further driving adoption within the tourism and wine industry.

3.7 Effort Expectation

Effort expectation refers to the degree of ease associated with using a technology, impacting users' willingness to engage to the experience's perceived complexity or simplicity (Venkatesh et al., 2003). In VR wine tourism, EE is a significant factor, as consumers are more inclined to

adopt VR if they perceive it to be user-friendly and accessible, particularly for those unfamiliar with VR systems. Research on technology acceptance consistently finds that lower perceived effort increases the likelihood of adoption, as users feel more confident and comfortable when interacting with an intuitive and straightforward interface (Davis, 1989). Thus, for virtual wine tours, the design of the VR platform is crucial, as user-friendly navigation, clear instructions, and responsive interfaces can help reduce cognitive load and make the experience enjoyable rather than intimidating for consumers.

For many first-time VR users, the learning curve associated with the technology can be a barrier, impacting their perception of effort. Studies have shown that users often associate ease of use with satisfaction, especially when engaging with technology for leisure activities such as virtual wine tastings (Tarafdar et al., 2013). Developers can mitigate this barrier by offering simplified interfaces, user tutorials, and guided experiences that reduce the need for technical knowledge. For instance, incorporating voice guidance, interactive prompts, or even live customer support can make the VR experience more accessible, particularly to older demographics who may not be as familiar with digital technologies.

Additionally, technological advances in VR hardware, such as lightweight, wireless VR headsets and simplified controls, further enhance the ease of use, positively impacting EEs. As VR becomes more streamlined and less cumbersome, users are less likely to feel overwhelmed by the technology and more likely to perceive it as a feasible way to engage with wine tourism content. The reduced setup complexity encourages a broader demographic to explore VR wine tourism, driving adoption among users who prioritise convenience and ease of access (Jung et al., 2021).

3.8 Social influence

Social influence is a critical component in the UTAUT model, describing the degree to which an individual's decision to adopt a technology is influenced by the opinions, endorsements, or behaviour of others (Venkatesh et al., 2003). In the realm of VR wine tourism, SI can manifest through various channels, including recommendations from friends, reviews by online influencers, or endorsements by wine industry experts. Given the novelty of virtual wine tours, many consumers look to social validation to determine whether engaging in a VR wine experience is worth the investment (Rogers, 2003). Positive endorsements, particularly on

social media, can amplify interest in VR, as consumers increasingly rely on digital platforms to discover and evaluate experiences.

Social media plays an instrumental role in shaping perceptions around virtual wine tourism. Platforms like Instagram, Facebook, and YouTube are widely used by consumers to share VR experiences, and influencers or digital sommeliers often provide firsthand reviews of virtual tastings, making them more credible to prospective users (Park et al., 2019). The impact of SI in this context is significant, as it can turn VR wine tourism into a trend within certain consumer circles, particularly among younger audiences who value unique, shareable experiences. Studies demonstrate that consumers are more likely to adopt new technologies when they see them endorsed by those within their social networks, thereby enhancing the perceived value of VR in wine tourism.

Furthermore, VR wine tourism providers can leverage SI by partnering with industry influencers or arranging live virtual tastings with wine experts, offering participants the chance to interact directly with experts. This social engagement creates a sense of exclusivity and belonging, fostering a community around the virtual wine experience (Tussyadiah et al., 2018). As more people engage in and endorse VR wine tours, a network effect may emerge, where the technology's perceived value grows as more users join, creating a reinforcing cycle of adoption.

3.9 Facilitating Conditions

Facilitating conditions refer to the degree to which an individual perceives that the necessary resources and support are available to use a new technology effectively (Venkatesh et al., 2003). In VR wine tourism, FCs encompass access to VR-compatible devices, reliable internet connectivity, and supportive technical infrastructure that makes the VR experience smooth and uninterrupted. Research in technology adoption emphasises that consumers are more inclined to try new technologies when they feel they have the necessary resources and support to do so (Marinova et al., 2020).

For VR wine tourism, FCs are essential, because unlike traditional digital experiences, VR requires specific hardware, such as headsets or controllers, and high-speed internet to function optimally. If consumers lack access to these resources, they are unlikely to engage with VR, even if they are otherwise interested in the experience. The cost and technical complexity associated with VR can act as barriers to adoption, particularly for users who may not have

access to VR equipment or who experience technical difficulties. Providers can address these barriers by offering accessible options, such as mobile VR or providing headsets at local tasting events (Kim & Hall, 2019).

In addition to hardware and connectivity, user support is another crucial FC. Many consumers require guidance on how to navigate VR interfaces or troubleshoot technical issues, especially when using VR for the first time. Wine tourism providers can enhance FCs by offering dedicated support channels, step-by-step tutorials, and FAQs, which can alleviate users' concerns about the complexity of VR (Venkatesh et al., 2012). These supportive elements contribute to a smoother user experience, thereby increasing the likelihood that consumers will view VR wine tourism as a viable and enjoyable option.

Furthermore, as VR technology advances, FCs are expected to improve, potentially lowering barriers to adoption. Virtual reality hardware is becoming more user-friendly and accessible, with innovations aimed at reducing costs and enhancing portability. As VR becomes more mainstream, the infrastructure supporting it, such as 5G networks, will likely expand, enabling seamless streaming of VR content for experiences like virtual wine tours. These advancements may contribute to a larger consumer base for VR wine tourism, as improved FCs make the technology more practical and appealing.

3.10 Extending UTUAT

The UTAUT model has been expanded to address additional factors relevant to leisure and experience-based technologies, particularly in tourism. Researchers have incorporated elements like HM, PR value, and HB Tto better understand consumer adoption in contexts where enjoyment and routine play significant roles. Hedonic motivation, or the pleasure derived from using VR, is highly pertinent to wine tourism, as consumers often seek experiences that offer novelty and excitement (Venkatesh et al., 2012). Studies show that HM positively correlates with technology adoption, as individuals prioritise enjoyable and memorable experiences in tourism contexts (Babin et al., 1994).

Price value reflects the consumer's evaluation of the cost-benefit ratio of adopting VR. For virtual wine tourism, PR considerations may involve device affordability, subscription fees, and the cost of specialised VR content (Gefen et al., 2003). Lastly, HBT, which refers to the extent to which past behaviours influence current intentions, also influences the adoption of VR, as frequent exposure to VR or similar technologies can lead to increased familiarity and a

greater likelihood of adoption (Limayem et al., 2007). These extensions to UTAUT provide a more holistic understanding of consumer motivations, especially in experience-based sectors like wine tourism.

3.10.1 Hedonic Motivation

Hedonic motivation, which is defined as the pleasure or enjoyment derived from using a technology, is a powerful driver of consumer behaviour, especially in experiential and leisure contexts like VR wine tourism (Babin et al., 1994). This motivation plays a crucial role in determining the adoption of VR as it appeals to consumers seeking novelty, immersion, and entertainment. In virtual wine tourism, HM captures the consumer's desire to engage with the technology, not just for its utilitarian benefits but for the intrinsic pleasure it offers. Research shows that HM can strongly influence consumers' intentions to use VR by heightening perceived enjoyment, an aspect crucial for experiences that rely on sensory engagement (Brown & Venkatesh, 2005).

The unique characteristics of VR make it an ideal medium for eliciting HM, as it allows consumers to explore virtual wine cellars, interact with digital representations of sommeliers, and experience winery tours that mimic real-world sensory cues. These features can elicit emotional responses akin to actual winery visits, fostering a sense of enjoyment and fulfilment. Studies show that VR's capacity to offer vivid, interactive experiences aligns well with consumers' desires for escapism and adventure, particularly in the tourism sector (Jung et al., 2021). This intrinsic enjoyment, fostered by the immersive nature of VR, has been shown to create lasting positive associations with brands, enhancing consumer loyalty and encouraging repeat interactions (Huang et al., 2013).

Moreover, in the context of wine tourism, HM may be particularly salient among younger, digitally-savvy consumers who are open to adopting novel technologies for leisure purposes. For this demographic, VR's entertaining and interactive qualities align well with their preferences for experiences that combine convenience with novelty (Tussyadiah et al., 2018). Furthermore, the multisensory aspect of VR allows consumers to appreciate wine tourism from a new perspective, providing a digital alternative that still feels emotionally and sensorially engaging (Kim et al., 2020). As VR technology continues to improve, adding more nuanced sensory features such as scent simulation, the hedonic appeal of virtual wine tastings is likely to grow even stronger, appealing to a broader range of consumers.

Hedonic motivation also aligns with the broader trend in experiential marketing, where brands seek to create memorable experiences that engage consumers on an emotional level (Pine & Gilmore, 1998). In wine tourism, this emotional connection is essential, as it can foster a sense of brand loyalty and a stronger consumer-brand relationship. Consequently, wineries and tourism providers that leverage VR—not only as a utility, but as an enjoyable experience—are more likely to achieve higher adoption rates and customer satisfaction (Li & Chen, 2019).

Hedonic motivation is a key idea that influences how consumers behave, especially when it comes to new technology like VR. The desire for pleasure, delight, and sensory fulfilment makes HM particularly pertinent when examining the intention to utilise VR for wine tours.

The emotional, enjoyable, or experienced rewards that customers look for when choosing a course of action or completing a purchase are referred to as HM. Hedonic motivation is fuelled by intrinsic wants for enjoyment, excitement, novelty, or sensory fulfilment as opposed to utilitarian motivation, which is more concerned with functional or practical rewards.

Hedonic Motivation in Virtual Reality Wine Tours

In the context of VR wine tours, HM can be understood through the following key factors.

Table 11: Key factors in understanding HM (Kim, Ryu & Lee, 2019)

Key Factors of Hedonic Motivation in Adoption of VR Wine Tours	
Sensory Stimulation and Immersion	Experiences that appeal to a variety of senses are frequently sought after by hedonistic customers. This desire can be satisfied by VR's capacity to produce visually exciting environments (such charming vineyards or cellars) and audio immersion (like background noise or sommelier explanations). Although it is still in its early stages, VR's ability to replicate the scent of wine or the tactile experiences of wine tasting can further improve the hedonic appeal.

Novelty and Enjoyment	Customers that appreciate new technology may find VR to be an appealing experience due to its novelty value. Wine travellers can "visit" several wineries worldwide using VR without ever leaving their homes. This feeling of adventure and novelty may serve as a powerful adoption motivation.
Escapism and Fantasy	Hedonic motivation is frequently associated with the desire to break out from everyday routines and engage in unusual experiences. Virtual reality (VR) can offer consumers an escape by taking them to far-flung wine areas or creating a luxurious experience that they might not otherwise be able to have, like a private wine tour of a well-known vineyard.
Social Interaction and Sharing	Shareable hedonic experiences are sought after by many customers. Social features such as virtual wine tastings with friends or the opportunity to share experiences on social media platforms can increase customers' perceived satisfaction and encourage uptake of VR wine tours.

According to the UTAUT paradigm, the desire to accept new technologies is strongly influenced by HM. People who think VR wine tours are entertaining and pleasurable are more likely to use the technology. According to this concept, PE (the experience's utility) and EE (the ease of using VR technology) are related to HM.

According to the TAM, perceived ease of use and perceived enjoyment—components of HM—are the two main elements driving adoption. Customers are more likely to embrace VR for wine tours if they consider the experience to be entertaining and user-friendly.

The impact of HM on VR adoption in various industries has been the subject of numerous research. For instance, research indicates that hedonic elements, like enjoyment and escape,

play a major role in customers' intentions to use VR in tourism (Bigné et al., 2005; Kim et al., 2019). Given that wine tourism frequently depends on emotional and sensory appeal, these findings are very pertinent.

In a study on VR in tourism, Li et al. (2020) found that HMs, including enjoyment, fun, and escapism, were important factors in the uptake of VR for virtual tours. This fits with how VR could be used in wine tourism, where users would be enticed by the prospect of enjoying a 'virtual' wine tasting or vineyard tour.

Mendez et al. (2021) investigated the perceptions of VR in the wine tourism industry. They discovered that high IVR-based wine tours were influenced by VR's capacity to deliver distinctive, sensory, and emotionally captivating experiences, particularly when the technology was user-friendly and offered an authentic experience.

3.10.2 Price

Price is a critical determinant of technology adoption, encompassing the perceived cost of adopting and using VR for virtual wine tours. The perceived value for the PR paid influences consumers' behaviour, with studies indicating that when the value derived from VR wine experiences outweighs the financial investment, consumers are more likely to engage (Gefen et al., 2003). The cost of VR adoption in wine tourism can vary significantly, from purchasing VR equipment to paying for premium content and VR-exclusive experiences. Given these expenses, PR sensitivity is particularly relevant, as it impacts both initial and sustained engagement with virtual wine tasting.

In virtual wine tourism, PR encompasses more than just device affordability, it also includes the costs associated with accessing premium virtual experiences and wine tasting kits delivered to consumers' homes for simultaneous virtual tastings (Dholakia, Darmondy & Zwick., 2020). For consumers who are PR-sensitive, high costs may deter initial engagement, especially if the perceived value of VR wine tasting does not match traditional wine tourism experiences. On the other hand, some consumers are willing to pay premium prices for unique, personalised VR experiences that offer them exclusivity and access to world-renowned wineries (Tussyadiah et al., 2018). This willingness to pay often correlates with income level, age, and digital familiarity, making it essential for wine tourism providers to tailor their VR pricing strategies based on their target demographic.

The influence of PR on adoption is also moderated by the consumers' perceptions of VR as an investment in leisure. For consumers who view VR wine tours as an innovative and enriching alternative to physical travel, the cost may be perceived as worthwhile, especially if it includes elements of luxury or exclusivity (Kim & Hall, 2019). Research on technology adoption highlights that bundling VR experiences with additional benefits, such as behind-the-scenes winery access, live sessions with sommeliers, or custom wine delivery services, can enhance perceived value and mitigate the PR barrier (Davis & Golicic, 2010).

Furthermore, the rapid evolution of VR technology has led to more affordable devices and content options, enabling a broader consumer base to experience VR wine tourism without significant financial strain. This democratisation of VR technology may reduce the PR sensitivity barrier, encouraging wider adoption and positioning VR wine tourism as a viable alternative to traditional experiences. As VR technology becomes more mainstream and costs continue to decline, the PR factor will likely play a diminishing role in consumers' decision-making, with other factors such as content quality and convenience gaining prominence (Venkatesh et al., 2012).

The intricacies involved in developing the experience, the kind of hardware utilised, and the scope of implementation are some of the variables that can greatly affect the cost of implementing VR for wine tours. Additionally, the reasons for incorporating VR into their offers would differ between wineries and tour operators. This has been divided into two primary components: the PR and the plan to use VR for wine tours; and references coming.

Table 11: Benefits driving adoption for VR wine tours and tastings

Benefits Driving Adoption for VR Wine Tours and Tastings.	
Expansion of Market Reach	Wineries can transcend regional boundaries and reach a worldwide audience with virtual wine tours. Wineries in rural areas or those trying to draw in foreign clients will particularly benefit from this.
Enhanced Experience	Wineries may now provide realistic, interactive experiences thanks to VR technology, enabling guests to tour

	vineyards, see how wine is made, and even participate in virtual tastings from the comfort of their own homes.
Sustainability	Virtual tours offer a sustainable substitute for traditional tours, lowering carbon footprints and the requirement for extensive tourist infrastructure, as climate change impacts the wine industry through harsh weather conditions, for example.
Covid-19 and Remote experiences	Wine tours and other virtual experiences rapidly gained popularity during the COVID-19 pandemic. Due to travel restrictions, many wineries resorted to VR as a way to stay in touch with their clientele.
Educational Value	Wine connoisseurs can learn about vineyards, terroir, winemaking techniques, and the history of wine regions using VR, which presents a unique educational opportunity. Rich narratives and interactive features that would be challenging to create in person can be incorporated into VR experiences.

3.10.3 Habit

Habit, defined as the tendency to perform behaviours automatically due to repeated exposure or prior experience, is an increasingly recognised factor in technology adoption (Limayem et al., 2007). In the context of VR, HBT reflects the extent to which users have grown accustomed to utilising VR technologies in other domains, making them more likely to adopt VR for wine tourism. Habit influences consumer behaviour by reducing the cognitive effort required to adopt a new technology, as familiarity with VR lessens perceived complexity and encourages usage continuity across different contexts.

For users who frequently interact with VR technology, adopting it for wine tourism becomes a natural progression. These users, familiar with the functionality and interface of VR, experience fewer barriers and are more inclined to explore new VR applications (Venkatesh et al., 2012). Research suggests that HBT can moderate the relationship between intention and actual use, making habitual VR users more likely to incorporate VR wine experiences into their leisure routines (Limayem et al., 2007). This habitual use is particularly evident among digitally-native demographics, who are open to exploring various VR applications and are less likely to be deterred by novelty.

Moreover, HBT formation in VR usage is driven by the repeated positive experiences and perceived value associated with VR. When consumers experience high satisfaction with VR in one context, such as gaming or virtual travel, they are more likely to try it in new settings, like virtual wine tasting, due to positive behavioural reinforcement. In this way, HBT fosters a continuous cycle of VR engagement, as positive experiences solidify consumer loyalty to VR as a preferred medium (Kim & Hall, 2019). For VR wine tourism providers, understanding the importance of HBT suggests that encouraging repeat use and positive reinforcement through consistent quality experiences may significantly increase the likelihood of sustained consumer engagement.

In addition, research on HBT and consumer behaviour emphasises the role of habitual cues in prompting repeated usage. Virtual reality wine tourism providers can encourage habitual engagement by offering scheduled virtual events, membership perks, and loyalty rewards, which can reinforce users' routines and establish VR as a regular leisure activity (Gefen et al., 2003). By creating a seamless and rewarding experience that becomes part of consumers' leisure routines, VR wine tourism can capitalise on HBT as a powerful predictor of long-term adoption.

Venkatesh et al. (2012) suggest that habitual users of virtual reality (VR) are more likely to seamlessly transition from engaging with virtual wine experiences to visiting the corresponding physical locations, with VR serving as an introductory tool that enhances familiarity and approachability of the wine destination. For instance, an individual who frequently explores South African vineyards through VR might be motivated to plan an actual visit to Stellenbosch. Habitual use plays a critical role in the effective adoption and influence of VR within wine tourism. As consumers grow more accustomed to VR in everyday contexts, their willingness to participate in VR-based wine experiences, such as virtual tastings and vineyard tours

increases. For wineries and tourism marketers, promoting repeated and enjoyable VR interactions can foster sustained engagement, thereby enhancing customer loyalty, visitation rates and sales.

3.11 Conclusion

The adoption of VR in wine tourism is influenced by several key factors that align with the UTAUT model, each playing a distinct role in shaping consumer intentions. Performance expectation emphasises the perceived benefits of VR, where users value its ability to provide an immersive, enjoyable, and informative wine experience that rivals or complements traditional tours. Effort expectation highlights the importance of a user-friendly design, as consumers are more likely to engage with VR if it is accessible and straightforward, with minimal technical barriers. Social influence plays a crucial role, where recommendations from friends, family, and influencers validate the experience, making VR more appealing, especially through the influence of social media. Lastly, FCs underline the necessity of supportive infrastructure, including access to VR-compatible devices, reliable internet connectivity, and technical guidance, which collectively make the technology more practical and enjoyable. Together, these factors create a comprehensive understanding of consumer motivations, with performance and social value driving interest, ease of use reducing barriers, and adequate resources ensuring seamless adoption. As VR technology advances and becomes more accessible, its role in wine tourism is expected to grow, appealing to diverse consumer groups seeking innovative, sensory-rich, and socially engaging experiences.

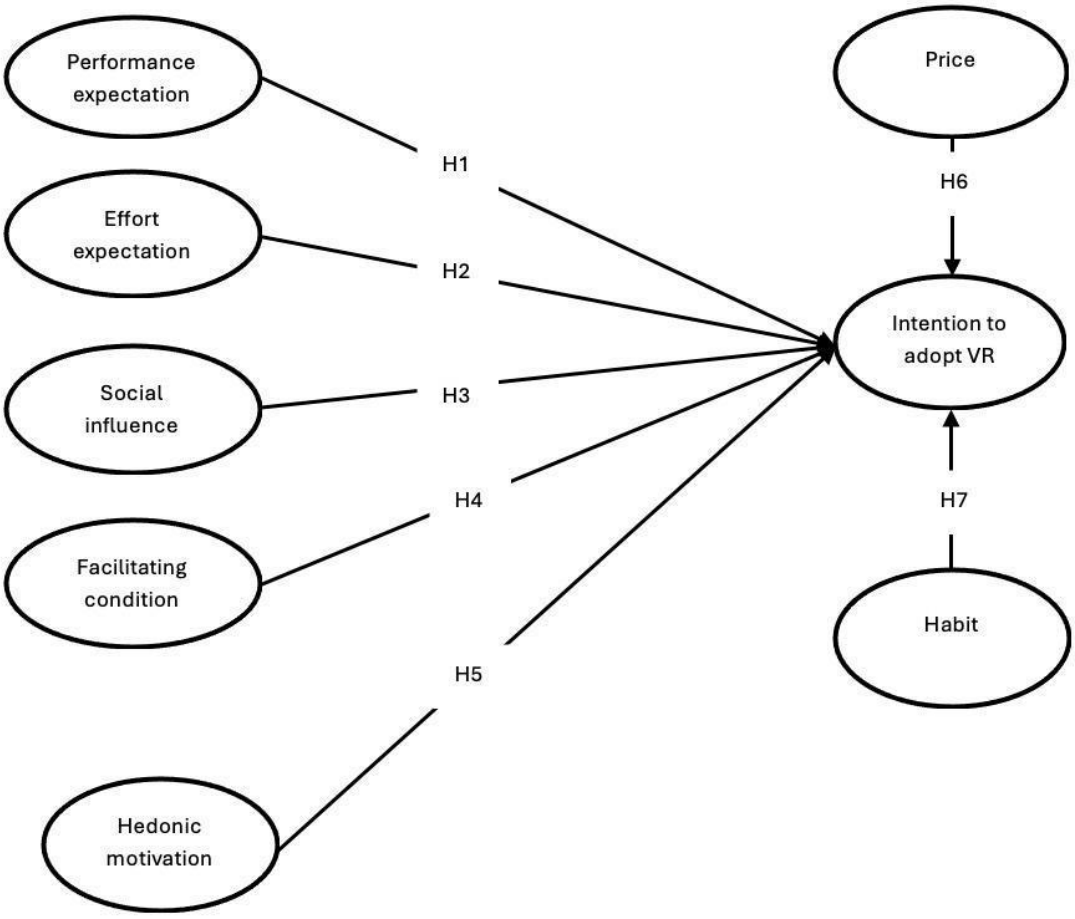
CHAPTER 4

CONCEPTUAL MODEL AND HYPOTHESES DEVELOPMENT

4.1 Introduction

Based on the preliminary literature provided in this study, a hypothetical model and hypotheses were developed. The following model is proposed for the study:

Figure 1: Conceptual Model



Source: Researcher's compilation

4.2 Hypotheses Development

4.2.1 Performance Expectation and the Intention to Adopt Virtual Reality for Wine Tours

Performance expectancy reflects a user's belief that a technology will provide performance-enhancing benefits when accomplishing specific tasks. Derived from Venkatesh et al.'s (2003) UTAUT, this construct emphasises the instrumental value of technology, particularly in achieving desired goals or outcomes. The relationship between PE and adoption is rooted in the principle that users are motivated by perceived advantages, such as increased efficiency or satisfaction. In the context of virtual wine tours, consumers may perceive VR as a tool that offers immersive, sensory-rich experiences that replicate or enhance the physical act of wine tasting. This aligns with insights from the TAM, where perceived usefulness significantly influences adoption intentions, especially for technologies promising tangible, experiential benefits (Venkatesh et al., 2000). Research shows that when VR offers benefits comparable to in-person experiences, users feel more confident in its ability to meet or surpass traditional tours, especially in the post-pandemic era where virtual experiences were widely accepted (Sarkady, Neuburger & Egger, 2021). Furthermore, studies in diverse contexts like mobile payments (Slade Dwivedi, Piercy & Williams., 2015) and health-related apps (Okumus et al., 2018) confirm that PE strengthens technology adoption by framing the technology as a valuable asset. Thus, tourists' perceived value in VR for wine tours is not merely about its utility, but also its potential to recreate an enriching, sensory journey. Based on the abovementioned evidence, the following hypothesis is proposed:

H1: PE has a significant influence on a consumer's IVR for wine tours.

4.2.2 Effort Expectation and the Intention to Adopt Virtual Reality for Wine Tours

Effort expectancy represents the anticipated ease of using a new technology, affecting a user's motivation to engage with it. In digital tourism, PE has emerged as a critical construct due to the relative novelty of VR experiences and their demand for intuitive, user-friendly interfaces. Venkatesh et al. (2003) argue that lower perceived complexity and higher comfort with a technology contribute to its broader acceptance, particularly among users who may be new to immersive digital environments like VR. In virtual wine tours, PE could involve assessing how accessible and intuitive the VR setup and navigation are perceived to be. Consumers with limited technical knowledge may initially approach VR with apprehension, but if the technology proves simple to use, this can create a positive initial impression that facilitates

adoption. Empirical evidence supports this in contexts like smartphone adoption (Milon et al., 2021), where ease of use directly correlates with consumer openness and engagement. Additionally, positive experiences, where ease-of-use aligns with expectations, may reinforce users' trust in VR and foster further exploration of digital tourism platforms (Gupta et al., 2020). Thus, an intuitive, enjoyable first experience can significantly bolster continued adoption, especially in tourism, where personal comfort enhances the overall experience. Based on the abovementioned evidence, the following hypothesis is proposed:

H2: EE has a significant influence on a consumer's IVR for wine tours.

4.2.3 Social Influence and the Intention to Adopt Virtual Reality for Wine Tours

Social influence, a construct encompassing the impact of others' opinions on an individual's intention to use a technology, becomes particularly salient in lifestyle and experience-driven contexts like tourism. Venkatesh et al. (2003) highlight that people are often motivated to adopt technologies when they see others using them, especially when those individuals are respected within their social or professional circles. For VR wine tours, this influence may stem from seeing family members, friends, or social media influencers endorsing the experience. Furthermore, the normative aspect of SI, as noted by Milon et al. (2021), suggests that users are sensitive to social expectations, particularly in settings where tourism and hospitality experiences are viewed as inherently social. Research in tourism has consistently underscored SI as a catalyst for adoption, where peer recommendations and the sense of collective enjoyment foster a shared enthusiasm for the experience (Gupta, Dogra & George, 2018). Additionally, Al-Azawei and Alowayr (2020) argue that SI may affect not only intention, but also enjoyment, as individuals are more likely to appreciate a VR experience if they believe it is socially validated. This makes SI especially powerful in shaping attitudes towards adopting VR in tourism, where experiences are often shared and amplified within social networks. Based on the abovementioned evidence, the following hypothesis is proposed:

H3: SI has a significant influence on a consumer's IVR for wine tours.

4.2.4 Facilitating Conditions and the User's Intention to Adopt Virtual Reality for Wine Tours

Facilitating conditions, defined as the degree to which an individual perceives that technical and infrastructural support is available to use a technology, play a significant role in shaping adoption behaviours. Venkatesh et al. (2008) highlight that these conditions encompass both tangible resources, such as devices and internet connectivity, and intangible support, such as customer service and technical assistance, which help users overcome potential barriers to technology use. Facilitating conditions are crucial for VR adoption, as users may require access to VR-compatible devices and a stable internet connection to ensure a smooth experience, particularly for VR wine tours where uninterrupted, immersive engagement is essential (Çakiroglu & Gökoglu, 2019).

In tourism, where VR applications rely heavily on high-quality visuals and sound to replicate a sensory experience, user-friendly hardware and software configurations can significantly impact users' perceived ease of use and willingness to adopt (Aggelidis & Chatzoglu, 2009). For VR wine tours, this could include providing access to VR headsets at tourism centres or developing accessible apps that can function on various devices, thereby reducing the need for high-end equipment. Furthermore, the presence of comprehensive tutorials or guided interfaces may help users feel supported as they navigate the VR environment, as evidenced by studies in the healthcare sector, which show that FCs boost adoption by reducing user apprehension about technical issues (Massetti, da Silva & Crocetta, 2018).

Additionally, the significance of FCs is supported by findings in educational VR applications, where Çakiroglu and Gökoglu (2019) demonstrate that students were more likely to engage with VR when provided with both instructional resources and access to high-quality VR headsets. This concept also translates to digital tourism, where studies indicate that perceived control over the VR environment through sufficient infrastructure encourages broader engagement with the technology. For VR wine tourism, this could mean offering technical support, such as live assistance or chat support, which helps users troubleshoot common VR issues, enhancing their experience and reducing potential frustration.

In contexts such as neurorehabilitation and educational training, Massetti et al. (2018) find that users' comfort with technology increases when they feel supported, leading to a higher likelihood of continued engagement. Thus, FCs for VR in wine tourism must include not only

the provision of reliable infrastructure but also resources that help users maximise their experiences, such as user guides and tech support. This support system can significantly strengthen user confidence in VR, encouraging them to adopt and consistently use VR wine tours. Consequently, the following hypothesis is proposed:

H4: FCs have a significant influence on the consumer's IVR for wine tours.

4.2.4 Hedonic Motivation and the Intention to Adopt Virtual Reality for Wine Tours

Hedonic motivation, or the pleasure derived from using a technology, is especially influential in contexts where the user experience is integral to perceived value, such as tourism and entertainment (Van der Heijden, 2004). Distinct from utilitarian motivations, which focus on practical benefits, HM captures the enjoyment and novelty a technology offers. In VR wine tours, HM is linked to the immersive sensory experience that VR provides, allowing users to virtually explore vineyards, experience tastings, and interact with wine-related environments. Research in tourism suggests that hedonic factors play a crucial role in driving engagement, as experiences that are enjoyable are more likely to encourage adoption (Shen Xu, Sotiriadis & Wang, 2022).

This motivation becomes particularly relevant in the context of wine tourism, where the experience of exploring new tastes, sights, and sounds is fundamental to consumer satisfaction. Kim and Forsythe (2007) demonstrate that HM is a primary driver in technology-based shopping environments, suggesting that users are more likely to adopt technologies that enhance enjoyment. Additionally, in educational technology, Shen et al. (2022) observe that HMs encourage sustained engagement, as users are drawn back to the platform repeatedly for its entertainment value. This cyclical relationship between enjoyment and adoption implies that VR wine tours offering high sensory engagement will foster repeat use, increasing adoption rates over time.

Moreover, HM in VR can create a unique type of attachment to the experience, as individuals are not only using the technology to achieve a goal but also to derive pleasure from the journey itself (Van der Heijden, 2004). This attachment can result in a self-reinforcing loop, where positive initial experiences increase the likelihood of continued engagement. In the case of VR wine tours, such experiences may provide users with memorable, escapist interactions that they are likely to repeat, particularly if the VR environment successfully recreates or enhances the

appeal of physical wine-tasting tours. Given this relationship between HM and technology adoption, the following hypothesis is proposed:

H5: Hedonic motivation has a significant influence on the consumer's IVR for wine tours.

4.2.5 Price Value and the Intention to Adopt Virtual Reality for Wine Tours

Price value refers to a user's evaluation of the cost of using a new technology relative to the perceived benefits it provides (Venkatesh et al., 2012). Price value is particularly pertinent in VR wine tours, as the cost of VR hardware, app subscriptions, or additional services may influence a consumer's decision to adopt. When the perceived benefits of VR wine tours-such as convenience, immersion, and sensory experience-are considered worth the cost, users are more likely to engage with the technology. Machogu and Okiko (2012) assert that PR sensitivity can either encourage or inhibit technology adoption based on the cost-benefit balance, while Vishwakarma et al. (2020) emphasise that perceived affordability significantly drives adoption, especially in high-cost scenarios.

In the tourism industry, where experience is highly valued, users may be willing to invest in VR if it offers a unique alternative to traditional travel or provides a cost-effective way to explore distant wine regions. Price value is also influenced by user demographics, as younger, tech-savvy consumers may view VR as an attractive investment, while PR-conscious users might weigh the cost more critically. In digital retail, as illustrated by Kim et al. (2021), consumers are more likely to adopt technology if the perceived benefits outweigh the costs. For VR wine tourism, strategic pricing and packaging options can improve perceived value, making the technology more attractive to a wider consumer base.

Moreover, the perceived value of VR wine tours may increase if users are offered exclusive content or features, such as virtual tastings guided by sommeliers or access to limited-release wines. Such offerings can enhance the perceived worth of VR wine tourism, justify the cost and reinforce the consumer's desire to adopt. Given the significance of PR value in technology adoption, the following hypothesis is proposed:

H6: Price value has a significant influence on the IVR for wine tours.

4.2.6 Habit and the Intention to Adopt Virtual Reality for Wine Tours

Habit is an influential factor in technology adoption, representing consumers' tendency to perform behaviours automatically based on learned actions and familiarity (Limayem et al., 2007). In VR wine tourism, HBTcan shape users' likelihood of adoption, particularly if they have previously engaged with VR technology in other contexts, such as gaming or educational platforms. Familiarity with VR systems reduces the cognitive load associated with new technology, making users more receptive to adopting VR wine tours as a natural extension of their existing routines. Escobar-Rodríguez and Carvajal-Trujillo (2014) found that the habitual use of technology increases user attachment, reducing their resistance to adopting new applications.

In educational contexts, Herting, Pros, and Tarrida (2020) demonstrate that students familiar with digital platforms are more likely to adopt VR for learning purposes. This habitual behaviour suggests that users who have prior VR experience are more comfortable exploring similar digital environments, which can facilitate the adoption of VR wine tours. As users engage with VR in tourism or other recreational activities, they may become accustomed to the sensory experiences that VR provides, increasing their openness to similar experiences in wine tourism.

Furthermore, HBTcan reinforce long-term adoption patterns as users integrate VR experiences into their leisure routines. Once established, HBTs tend to reduce resistance to new technology, as users feel confident in their ability to navigate familiar environments. This is particularly relevant in virtual wine tourism, where repeated engagement can create a sustained interest in VR platforms, promoting continued usage over time. Given the role of HBTin technology adoption, the following hypothesis is proposed:

H7: Habit has a significant influence on the consumer's IVR for wine tours.

4.2.7 Behavioural Intentions and Usage Behaviour

Behavioural intention is a key determinant of actual technology usage, capturing an individual's commitment to engage with a technology and serving as a powerful predictor of subsequent behaviour (Venkatesh et al., 2003). The Theory of Reasoned Action (TRA) and the UTAUT both posit that a strong behavioural intention often translates into actual technology use, especially in contexts where the technology provides valuable experiences. In virtual wine

tourism, behavioural intention reflects the consumer's willingness to explore VR as a supplement or alternative to traditional wine tours, particularly motivated by VR's immersive and sensory appeal.

Behavioural intention in digital tourism has been shown to predict engagement frequency, as users motivated by the novelty of VR experiences tend to re-engage with the technology (Sánchez et al., 2021). This is further supported by the TPB, which suggests that intention, when combined with perceived control over the technology, leads to higher engagement rates, as users feel both willing and able to use VR (Gallivan, Spitler & Koufaris., 2014). For VR wine tourism, favourable FCs, such as easy access to VR headsets, could encourage users to act on their intention, translating into actual engagement.

Moreover, habitual interaction with digital platforms can reinforce the relationship between intention and usage behaviour. Escobar-Rodríguez and Carvajal-Trujillo (2014) indicate that habitual engagement can turn consumers' initial intentions into consistent behaviour, as users accustomed to VR interfaces are more likely to integrate VR tours into their leisure activities. This habit-forming potential is particularly valuable in wine tourism, where consumers may seek VR as a preferred tourism medium, reinforcing continued usage. Given these factors, the following hypothesis is proposed:

> *H8: behavioural intention has a significant influence on usage behaviour for VR in wine tours.*

4.2.8 Summary of Hypotheses

The adoption of VR for wine tours is shaped by various factors, each capturing a different aspect of consumer intention and behaviour. In H1, PE , the suggestion is that consumers are motivated by the belief that VR will enhance their wine-tasting experience, offering immersive, sensory-rich interactions. In H2, EE, the emphasis is on ease of use; when VR technology is accessible and intuitive, users feel more comfortable and inclined to adopt it. In H3, SI, highlights the impact of peer and social endorsements on adoption, where recommendations from friends or influencers boost interest in VR wine tours as a desirable lifestyle activity.

In H4, FCs refer to the external resources-like VR-compatible devices and support-that reduce barriers to usage, encouraging a smoother adoption process. In H5, HM underscores the pleasure derived from using VR, which is especially relevant in experience-focused contexts like tourism, where enjoyment drives engagement. In H6, PR value, where the importance of

cost-benefit perception is addressed, consumers are more likely to adopt VR wine tours if they feel the experience justifies the expense. Hypothesis 7, HBT, considers the users' familiarity with VR in other contexts, making them more likely to adopt VR wine tours as a natural extension of their digital routine. Lastly, H8, behavioural intention, serves as a direct predictor of usage behaviour, where strong intent, supported by favourable conditions, translates into sustained engagement. Together, all these hypotheses illustrate how users' perceptions, social dynamics, resources, and experiential appeal interact to influence consumers' adoption of VR in wine tourism, emphasising the need for a balanced, user-centred approach to maximise adoption and engagement.

CHAPTER 5

RESEARCH METHODOLOGY

5.1 Introduction

This section will present the research design and methodology that was followed to achieve the study's objectives. This section also provides an overview of the research process.

5.1.1 Research Design

The study used a cross-sectional design with a survey-based research strategy. It was important for the study to obtain objective findings so the positivist philosophy was adopted as it assumes that if something is true it should be possible to prove it. According to Groenewald (2004), a research design is a conceptual framework that guides the research process; it is the blueprint for data collection, measurement, and analysis. There are three types of research approaches, namely qualitative, quantitative and a mixed method research strategy (Sreejeh, Mohapatra & Anusree, 2014). Quantitative research was used in this study. Quantitative research methods are used to understand the best influencers of outcomes and to identify which variables to study. They also use unbiased approaches and observe and measure information numerically (Creswell, 2014). Descriptive research design was used in this study.

5.1.2 Sampling Design

The sampling design is an outline that is used to determine who should participate in the study (Aaker, Kumar, Leone & Day, 2013). This section provides an overview of the target population, sample size and sampling methods.

5.1.3 Target Population

Otzen and Manteroia (2022) defined the target population as the group of individuals that the intervention intends to conduct research with and draw conclusions from. The target population of this study was broad in scope as it included participants who were 18 years and older, to establish if certain factors were likely to influence the consumer's intention to participate in virtual wine tasting and tours. Lerro, Yeh, Klink-Lehmann, Vecchio, Hartmann, and Cembio (2021) posit that consumers who taste and consume wine fall in the age range of 18 years and older.

Millennials start appreciating wine at a younger age (23 years old on average) than older generations (55 and older), who typically begin to appreciate wine at around 34 years old (Schmall, 2018). Gillespie (2005) noted that while wine consumption was traditionally dominated by baby boomers, and Gen X showed less interest, the larger millennial generation represented the future of the wine industry. Furthermore Gillespie (2005) said that millennials were early adopters of wine as a preferred beverage, and this generation was a driving force behind the rise in popularity of wine in the early 2000s. The industry is now aiming to cater to newer generations (Gen Z and millennials) while also satisfying older consumers with purchasing power (La Tour, Joy & Noujeim, 2020).

5.1.4 Sample Size

For the purpose of this study, the sample size of 385 was deemed suitable. The justification of this sample size has been provided below. However, 340 usable responses were obtained and processed for insights.

5.1.5 Justification for a Sample based on an Unknown Population

Quantitative research was used in this study. Quantitative research methods are used to understand the best influencers of outcomes and to identify which variables to study. They also use unbiased approaches First, Smith's (2013) formula for unknown populations was applied. Second Hair, Black, Babin and Anderson's (2010) recommendation of ten observations per variable was considered.. The norm is to have a minimum of five observations for each variable (5:1), and an acceptable sample size would have 10 observations per variable, according to (Hair et al., 2010). The researcher also used the margin of error (confidence interval) for the mean, which typically falls between 90%, 95%, and 100% confidence. The confidence interval defines a range around the sample mean within which the researcher expects the true population mean to lie.. According to Smith (2013), the computation in cases where the sample size is uncertain is as follows: Smith (2013) which allows for a sample to be calculated based on an unknown population:

$((1.96)^2 \times 0.5(0.5)) / (0.05)^2 = (3.8416 \times .25) / 0.0025 = 0.9604 / 0.0025 = 384.16$ therefore 385 respondents were required.

5.1.6 Sample Method

Sampling methods are classified into two basic categories, namely probability and non-probability sampling (Coghlan & Brydon-Miller, 2014). For this study, the researcher chose

the non-probability sampling method, specifically, convenience sampling because there was no access to an already existing potential sampling frame.

5.2 Data Collection

The study A self-administered online questionnaire was used to collect data. The questionnaire was shared through posts on social media such as Facebook, Instagram. The questionnaire was also shared on platforms such as Whatsapp and Linkedln.

5.3 Measurement Instrument

A questionnaire was utilised to gather data. The measurement items were derived from previous studies on VR adoption. All the variables and items were measured using a five-point Likert scale with anchors of 'strongly disagree' (1) to 'strongly agree' (5). Performance expectation, SI, and FC were adopted from Venkatesh et al. (2003). Habit, HM and PR were taken from Palau-Saumell, Forgas-Coll, Sánchez-García & Robres (2019).

5.4 Data Preparation

According to Talend (2021), data preparation is the process of cleaning and transforming raw data prior to processing and analysis. Ed Burns (2020) describes data preparation as the process of gathering, combining, structuring, and organising data so that it can be used in business intelligence, analytics, and data visualisation applications. Editing and coding are the data preparation methods that were used in this study to ensure that the questionnaire was complete and ready for feedback.

5.5 Data Analysis Approach

Data analysis is a statistical process in which raw data is prepared and structured so that valuable information can be extracted therefrom (Ullah, 2010). Firstly, the collected data was coded in an Excel spreadsheet prior to analysis. To fully understand the attributes of each variable, descriptive statistics analysis was utilised, which are indicated by the mean and standard deviation of each factor.

5.6 Data Cleaning and Coding

Before analysing the collected data, it is essential to perform checks to ensure its legitimacy. The researcher must consider this step to identify and remove any incorrect data entered into the Excel spreadsheet. According to Trochim (2000), immediately after receiving the data, the researcher should screen it for accuracy to detect any potential errors in the sample. Trochim

(2000) suggests addressing following questions to effectively identify discrepancies and inconsistencies:

- Are the responses legible and clear?
- Did the respondent answer all critical questions?
- Was the questionnaire fully completed by the respondent?
- Does the questionnaire include all necessary contextual details, such as the date, time, location, and the researcher's information?

5.7 Descriptive Statistics

Trochim (2000) defines descriptive statistics as a set of methods used to summarise and describe the basic features of a study's data. These statistics help to highlight general patterns in the respondents' behaviour (Hsu & Shine, 2007). Descriptive statistics provide simple sample summaries of the key data aspects. They can be presented in the form of pie charts or tables, which display essential information about the study's main components, such as demographic or biographical details. In this study, descriptive statistics were used to examine the research participants' demographic characteristics. This included the total number of participants, as well as the distribution of gender, age, marital status, educational level, and purchasing behaviour.

5.8 Structural Equation Modeling

Structural Equation Modelling (SEM) has emerged as a widely respected statistical technique for testing theoretical models across various fields (Hair, Anderson, Tatham, & Black, 1998; Schumacker & Lomax, 2004; Nusair & Hua, 2010). In this study, SEM was employed to assess the hypothesised relationships within the research model (Liao & Hsieh, 2013). According to Qureshi and Kang (2015), SEM is a multivariate statistical method primarily used to explore relationships between latent (unobserved) variables and their corresponding observed indicators. This technique enables the evaluation of both measurement models (through factor analysis) and structural models, which examine the relationships between constructs (Nusair & Hua, 2010).

He, Gai, Wu, and Wan (2012) and Hair (2014) highlight that SEM shares similarities with regression analysis but offers a more comprehensive approach, as it can assess causal relationships among constructs while also accounting for measurement errors. The key advantages of SEM include: (1) its ability to simultaneously estimate multiple regression

equations (Nusair & Hua, 2010), (2) the incorporation of latent variables into the analysis while considering measurement error (Hair et al., 1998; Nusair & Hua, 2010), and (3) its capacity to model complex behavioural relationships through both measurement and structural models (Nusair & Hua, 2010; Washington, Karlaftis, & Mannering, 2003).

In order to analyse the collected data, SPSS 29 and AMOS 29 software was utilised for descriptive statistics and SEM respectively. The SEM analysis was conducted using a two-phase approach, as outlined by Anderson and Gerbing (1998) and Hair et al. (1998). In the first phase, confirmatory factor analysis (CFA) was performed to assess the adequacy of the measurement model (Nusair & Hua, 2010). Both construct reliability and item reliability were evaluated (Nusair & Hua, 2010). Once the scale's reliability was confirmed, the construct validity was examined by assessing both convergent and discriminant validity, before final ising and completing the measurement model (Nusair & Hua, 2010). In the second phase, the structural model was assessed (Nusair & Hua, 2010). The overall fit of both the measurement and structural models was evaluated using a range of goodness-of-fit indices (GFI), including the c/df ratio, CFI, NFI, Relative Fit Index (RFI), IFI, and RMSEA (Hair et al., 1998; Jöreskog & Sörbom, 1993; Schumacker & Lomax, 2004; Nusair & Hua, 2010).

5.9 Reliability and Validity

After performing data preparation, it is crucial for the researcher to test the reliability and validity of the measuring instrument (Wiid & Diggines, 2013). The reliability of the questionnaire WAS established by determining the Cronbach alpha coefficients of the variables tested in SPSS 27. Cronbach Alpha of 0.7 and above is considered reliable (Ursachi, Horodnic & Zait, 2015). Middleton (2021) describes validity as the accuracy of a measure, it shows the extent to which the results really measure what they are supposed to measure. Average Variance Extracted (AVE) WAS used to assess convergent validity and factor loadings WERE used to assess construct validity (dos Santos & Cirillo, 2020).

Table 5.9.1 Reliability Test Criteria, Description, and Acceptable Level

Reliability Test Criteria	**Description**	**Acceptable Level**	**Source**
Cronbach's Alpha	Coefficient for determining internal consistency of items	Value must be equal to or greater than 0.7	Nunnally and Bernstein (1994)

Composite Reliability	Method used to measure internal consistency of the measurement model	Value must be equal to or greater than 0.7	Hair et al. (2006)
Average Variance Extracted	Method used to measure reliability and validity of items	Value must be equal to or greater than 0.5	Fraering and Minor (2006)

For purposes of this research, Cronbach's Alpha, Composite reliability (CR) and AVE were conducted so as to assess the reliability of the measures.

5.10 Composite Reliability

Composite Reliability is the measure commonly employed in reliability analysis to evaluate the consistency of a construct across its indicators. Yang and Lai (2010) assert that an acceptable CR value should exceed 0.7 to reflect adequate reliability. In reliability testing, each construct's internal reliability is assessed using the CR index, calculated using the formula:

(CR): $CR_\eta = (\Sigma\lambda yi)^2 / [(\Sigma\lambda yi)^2 + (\Sigma\varepsilon i)]$

CR = (square of the summation of the factor loadings) / {(square of the summation of the factor loadings) + (summation of error variances)}.

The CR coefficient is conceptually similar to Cronbach's α in terms of indicating reliability, but it specifically accounts for the variance captured by each construct's indicators. For basic research purposes, a CR index threshold of 0.5 is considered adequate, while exploratory research generally requires a value of at least 0.6. However, more rigorous standards in applied research recommend a CR of 0.7 or higher, as suggested by Hair et al. (2006). The calculated CR values are presented in Table 10 and demonstrate whether each construct possesses adequate internal consistency, a necessity for further model validation (Hair et al., 2006).

5.11 Validity Tests

Validity refers to the extent to which a test or instrument accurately measures what it is intended to measure, and it is crucial in ensuring that the findings derived from the instrument are meaningful and applicable to the intended domain (Easterby-Smith, Thorp & Lowe, 2002). Validity testing in this study primarily focused on construct validity, examining whether the constructs employed accurately represented the underlying theoretical concepts.

5.12 Construct Validity

Construct validity is of central importance in the social sciences and has been widely recognised as a critical form of validity (Churchill, 1979). Establishing construct validity involves confirming that the measurement reflects the theoretical construct it is meant to capture. Two key components are typically assessed: convergent validity and discriminant validity.

5.13 Convergent Validity

Convergent validity examines whether indicators that are theoretically related to the same construct are highly correlated. Sarstedt, Ringle, Smith, Reams, and Hair (2014) describe it as a measure of the degree to which multiple indicators of a construct converge by explaining the shared variance among them. An AVE value greater than 0.5 is generally considered adequate for establishing convergent validity (Yang & Lai, 2010). Peter (1981) emphasises that a valid item should correlate well with others that measure the same construct, while being distinct from items related to other constructs (discriminant validity).

5.14 Discriminant Validity

Discriminant validity ensures that each construct is empirically unique and not overly similar to other constructs in the model. This type of validity is established by confirming that a measure is distinct from others, thereby indicating heterogeneity among different constructs (Malhotra, 1996). Fornell and Larcker (1981) suggest that discriminant validity can be confirmed when the AVE for a construct is greater than the squared correlation between that construct and any other in the model. This guideline, reaffirmed by Nusair and Hua (2010), ensures that each construct uniquely contributes to the model's explanation of variance.

5.15 Inter-construct Correlation Matrix

An additional method to establish discriminant validity is by evaluating the inter-construct correlation matrix. A recommended practice is to ensure that the correlation between any two constructs does not exceed 0.7, as correlations above this threshold may indicate a lack of discriminant validity, where constructs are too similar to each other (Bagozzi & Yi, 1991; Nunnally & Bernstein, 1994).

5.16 Average Variance Extracted and Shared Variance

The assessment of discriminant validity also involves comparing the average variance extracted (AVE) with the highest shared variance (HSV). According to Fornell and Larcker (1981), discriminant validity is established when the AVE of each construct exceeds its HSV with other constructs. This criterion ensures that each construct is more strongly associated with its own indicators than with those of any other construct.

5.17 Model Fit/Acceptability

Evaluating model fit in CFA and SEM requires multiple fit indices to determine model adequacy. Schumacker and Lomax (2004) note that there is no singular statistical test capable of definitively establishing the model's accuracy, as alternative models could yield similar fit results. Thus, it is recommended to use multiple model fit criteria, collectively assessing global fit and robustness of the model (Hair et al., 1992).

5.18 Confirmatory Factor Analysis

Confirmatory Factor Analysis is employed to verify the factor structure of a set of observed variables, testing whether the proposed measurement model fits the observed data. This statistical method is instrumental in hypothesis testing, allowing researchers to validate that the constructs measured by the instrument align with theoretical expectations (Burton, Ryan, Axelrod, Schellenberger & Richards, 2003). Using CFA, this study calculated standard regression weights, and model fit indicators, including Chi-square/degrees of freedom (χ^2/DF), GFI, NFI, IFI, Tucker-Lewis Index (TLI), CFI, and RMSEA, were used to confirm model adequacy. Eight model fit criteria were utilised to comprehensively assess the overall model fit, with detailed results provided the following table.

5.18.1 Model Fit Criteria and Acceptable Fit Level

Model Fit Criteria	**Description**	**Acceptable level**	**Source**
χ^2/DF	Method used to evaluate the overall fit of the model.	Value must be lower 3	Hooper, Coughlan and Mullen (2008)

GFI	The GFI measures how well the hypothesised model aligns with the observed covariance matrix.	Ranges between 0 and 1, with a threshold of 0.9.	Baumgartner and Hombur (1996)
NFI	The Normed Fit Index (NFI) assesses the difference between the chi-squared value of the hypothesised model and that of the null model.	Value must be higher than 0.9	Bentler and Bonett (1980)
TLI	The TLC employs simpler models and is recognised for addressing the sample size-related issues commonly associated with the NFI.	Value must be equivalent or greater than 0.9	Hooper et al. (2008)
IFI	The IFI is designed to address the issues of parsimony and sample size that are associated with the NFI.	Value must meet or exceed 0.9	Bollen, (1989),
CFI	The CFI assumes that all latent variables are uncorrelated and evaluates the sample covariance matrix in comparison to the null model.	Value must meet or exceed 0.9	Hooper et al. (2008)
RFI	The RFI compares the $\chi 2$ /DF of the hypothesised model to that of a "null" or "baseline" model.	Value must meet or exceed 0.9	McDonald and Ho (2002)
RMSEA	The RMSEA indicates how well the model, with freely chosen but optimally estimated parameters, would fit the population's covariance matrix.	Value must fall below 0.05 and 0.08	Byrne (1998)

5.20 Chi-square

The χ^2/DF fit statistic, as detailed by Nevitt and Hancock (2000), is a robust method for testing the precise fit of a proposed model within a given population. This statistic evaluates the degree to which the hypothesised model reflects the observed data, offering a measure of fit. A χ^2/DF value that is lower than three (χ^2/DF < 3) is typically considered to represent an acceptable fit for the model (Chinomona, 2011). This threshold suggests that the model is close enough to the observed data to be useful, though deviations might occur in very large samples or highly complex models.

5.21 Goodness-of-Fit Index

The GFI serves as one of the key metrics in assessing model fit, as suggested by researchers such as Cheung and Rensvold (2002). The GFI ranges theoretically from 0 to 1 (although in some cases, it might produce values below zero), which would generally indicate a poorly fitting model. A value of 0.90 or higher is commonly accepted as a satisfactory indication of model fit (Bollen, 1990). This threshold reflects the degree to which the model aligns with the data, with values approaching 1.0 signifying a closer fit.

5.22 Normed Fit Index

The NFI assesses model fit by comparing the χ^2/DF values of the hypothesised model with that of a null model (Bentler and Bonett, 1980). A higher NFI value indicates a better fit, with values below 0.90 generally signalling the need for model re-specification to better align the model with the data (Hu & Bentler, 1995). The NFI values closer to 1.0 indicate a well-fitting model, while those under the 0.90 threshold typically require adjustments.

5.23 Tucker-Lewis Index

The TLI is a statistic often used for assessing model fit, particularly valuable in addressing sample size issues that are associated with indices like the NFI. The TLI combines aspects of parsimony and fit, with values of 0.90 or above typically representing an acceptable level of model fit (Hooper et al., 2008; Chinomona, 2011). This index is especially helpful in larger samples or models with complex structures, as it can correct for the inflation of fit measures that might occur with larger sample sizes.

5.24 Incremental Fit Index

Bollen (1989) introduced the Incremental Fit Index (IFI) to address both parsimony and sample size considerations in model fit assessment. This index evaluates model improvement relative to a null model, with values equal to or greater than 0.90 typically indicating an acceptable level of fit (Chinomona, 2011). The IFI provides a balanced perspective on model fit, particularly useful in studies with moderate to large sample sizes where overfitting is a concern.

5.24 Comparative Fit Index

The Comparative Fit Index (CFI) assesses model fit by comparing the hypothesised model with an independent baseline model, correcting for sample size. Gatignon (2010) describes the CFI as a refined version of the NFI, one that adjusts for sample size, making it effective even with smaller samples (Byrne, 1998). Hu et al. (1999) and Chinomona (2011) suggest that a CFI value of 0.90 or higher indicates a model with an adequate fit to the data, showing that the model performs well in balancing fit with sample size considerations.

5.25 Root Mean Square Error of Approximation

The RMSEA, introduced by Steiger and Lind (1980), provides an index for model fit that accounts for the complexity of covariance structure models. The RMSEA is particularly useful when dealing with large samples, as it helps mitigate issues with overly complex models that may falsely appear to fit well. The RMSEA values indicate how well a model with unknown but optimally chosen parameter estimates would fit the population's covariance matrix, with lower values generally indicating better fit (Steiger, 1998).

5.26 Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) is a statistical approach used to verify whether a group of observed variables represents the underlying theoretical constructs as expected. In other words, it tests if the data fits the factor structure that researchers predict. CFA is especially valuable because it checks how well the measurement model reflects the proposed theory. To do this, several goodness-of-fit indices are applied, such as χ^2/DF, GFI, NFI, TLI, IFI, CFI, and RMSEA, which together give a picture of the model's reliability and validity (Burton et al., 2003).

5.27 Model Fit

Evaluating model fit is an essential step in SEM because it shows how closely the proposed model matches the observed data. The chi-square test (χ^2/DF) is commonly reported as part of

this process. According to Galpin (2011), this test compares the differences between the observed covariance matrix and the one predicted by the model. A non-significant chi-square value at the 0.05 level is usually taken as evidence that the model fits well, since it indicates only minor differences between the actual data and the estimated model (Barrett, 2007).

5.28 Path Modeling

Path modeling is used to test and explain the relationships between constructs and their indicators within SEM. After model fit was established through CFA, this study employed AMOS 22 to conduct path modelling. This technique is useful because it can evaluate multiple relationships at the same time, offering a fuller view of how variables interact (Roche et al., 2011). Path modelling has two parts: the measurement model, which specifies how indicators represent each construct, and the structural model, which looks at the relationships between independent and dependent constructs. Together, they make it possible to test the hypotheses while also controlling for measurement error, giving a clearer and more accurate understanding of the results.

5.29 Ethical Considerations

Those participating in the survey were informed of the study's purpose, as well as their voluntary and anonymous right to participate in the study. If participants chose to participate, but later decided to withdraw, they were free to do so at any time, without negative consequences. The cover letter that was sent to possible participants explicitly indicated what was required of participants and what their responses would be used for. Participants were requested to indicate their age to ensure that those who participated were 18 years and older. In addition, this study investigated the adoption of virtual wine tasting, therefore, participants were legally required to be 18 years and above.

CHAPTER 6

DATA ANALYSIS AND INTERPRETATION OF FINDINGS

6.1 Introduction

The previous chapter explored the study's research methodology. It discussed its various aspects, such as the sampling technique, data collection, and analysis approaches adopted for this study. Thus this chapter presents the data analysis and an interpretation of the findings. The following sections provide the sample profile, reliability, and validity checks. Additionally, results from hypothesis testing are also generated through SEM.

6.1 Sample Profile

The sample profile comprises descriptive statistics that include age, gender, place of residence, and participation in wine tasting on farms or tours. Results of loyalty and or wine memberships were also provided and information regarding whether participants consume wine on a regular basis is also presented.

Table 6.1.1 Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-25	55	16,2	16,2	16,2
	26-33	84	24,7	24,7	40,9
	34-41	49	14,4	14,4	55,3
	42-49	35	10,3	10,3	65,6
	50-57	38	11,2	11,2	76,8
	58-65	36	10,6	10,6	87,4
	66 and older	43	12,6	12,6	100,0
	Total	340	100,0	100,0	

The age distribution indicates a broad range of participants, from 18 to over 66 years, with the highest representation in the 26-33 age group (24.7%), followed by 18-25 (16.2%), and 34-41 (14.4%). The diversity in age groups allowed for a comprehensive understanding of how different age brackets perceive virtual wine tours, potentially uncovering insights into whether

younger consumers are more open to digital experiences compared to the older cohort, who might prefer traditional wine tours.

Table 6.1.2 Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	164	48,2	48,2	48,2
	Female	159	46,8	46,8	95,0
	Other	12	3,5	3,5	98,5
	Prefer not to answer	5	1,5	1,5	100,0
	Total	340	100,0	100,0	

Gender distribution shows an almost equal split between males (48.2%) and females (46.8%), with a small percentage identifying as “Other” (3.5%) or preferring not to answer (1.5%). This balanced representation ensured that any gender-specific preferences or adoption trends could be effectively analysed, which was valuable in understanding whether or not virtual wine tours resonate differently across genders.

Table 6.1.3 Place of Residence

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Eastern Cape	17	5,0	5,0	5,0
	Free State	31	9,1	9,1	14,1
	Gauteng	58	17,1	17,1	31,2
	Kwazulu-Natal	12	3,5	3,5	34,7
	Limpopo	6	1,8	1,8	36,5
	Northern Cape	18	5,3	5,3	41,8
	Western Cape	157	46,2	46,2	87,9
	Namibia	18	5,3	5,3	93,2
	Overseas	23	6,8	6,8	100,0
	Total	340	100,0	100,0	

The majority of respondents were from the Western Cape (46.2%), a key wine-producing region, followed by Gauteng (17.1%). This geographic breakdown is significant, as it could provide insight into how familiarity with wine regions influences the adoption of virtual wine tours. The inclusion of international participants (6.8%) and those from Namibia (5.3%) offers an international perspective, enabling a comparison between local and overseas interest in virtual wine tours.

Table 6.1.4 Have you ever participated in a wine tasting at a wine farm?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	320	94,1	94,1	94,1
	No	20	5,9	5,9	100,0
	Total	340	100,0	100,0	

A significant majority (94.1%) had previously participated in a wine tasting at a wine farm, indicating a high level of familiarity with traditional wine-tasting experiences. This familiarity may affect their openness to virtual alternatives, as those who enjoy in-person tastings may have strong expectations for VR to replicate these experiences effectively.

Table 6.1.5 Have you ever participated in a virtual wine tasting or wine tour?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	133	39,1	39,1	39,1
	No	207	60,9	60,9	100,0
	Total	340	100,0	100,0	

Only 39.1% had previously participated in a virtual wine tour or tasting, with the majority (60.9%) not yet having engaged in this digital format experience. This data underscores the potential market for virtual wine experiences, revealing a large segment of consumers who may still need to be introduced to or convinced of the benefits of virtual wine tastings.

Table 6.1.6 Are you a loyalty member / wine club member at any wine farm?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	101	29,7	29,7	29,7
	No	239	70,3	70,3	100,0
	Total	340	100,0	100,0	

About 29.7% of respondents were loyalty or wine club members, indicating a segment of highly engaged wine consumers who might be more inclined to try virtual tours if they were offered as part of their membership benefits. Conversely, the majority (70.3%) were non-members, suggesting that virtual wine tours could also appeal to casual wine enthusiasts.

Table 6.1.7 Do you purchase wine regularly if yes, how regularly?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	18	5,3	5,3	5,3
	Yes, daily	15	4,4	4,4	9,7
	Weekly	79	23,2	23,2	32,9
	Monthly	123	36,2	36,2	69,1
	Once every few months	77	22,6	22,6	91,8
	Twice a year	26	7,6	7,6	99,4
	Did not respond	2	,6	,6	100,0
	Total	340	100,0	100,0	

A significant portion of respondents purchased wine regularly, with 36.2% buying wine monthly and 23.2% weekly. This frequent purchasing behaviour suggests a potentially receptive audience for virtual wine tours, as regular consumers might appreciate digital options for exploring wine selections or enhancing their wine knowledge.

Table 6.1.8 Do you consume wine on a regular basis?

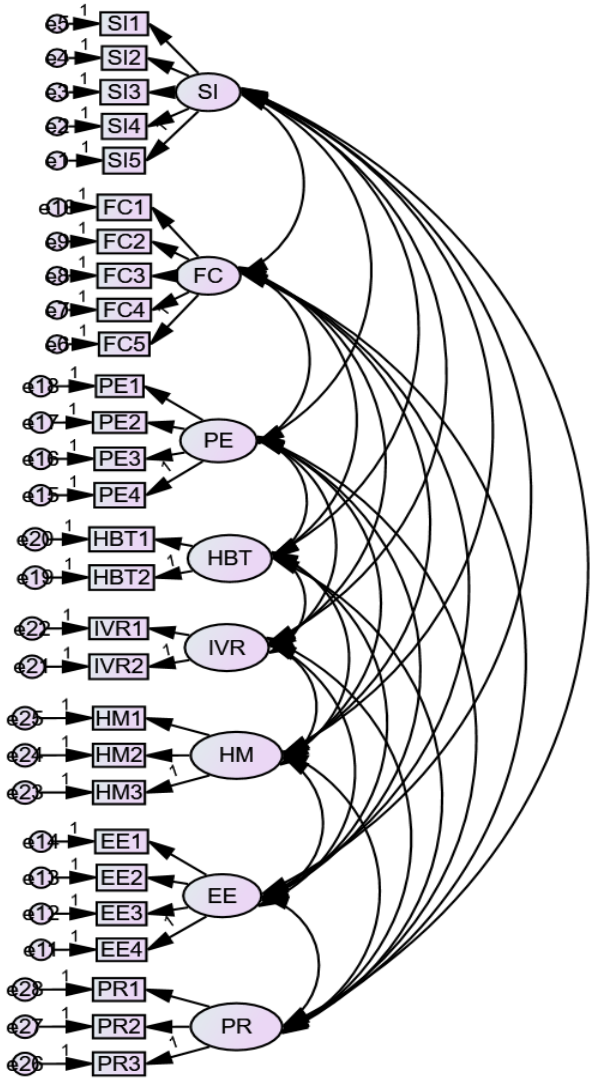
	Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**

Valid	No	15	4,4	4,4	4,4
	Yes, daily	16	4,7	4,7	9,1
	Weekly	163	47,9	47,9	57,1
	Monthly	113	33,2	33,2	90,3
	Once every few months	29	8,5	8,5	98,8
	Twice a year	3	,9	,9	99,7
	Once a year	1	,3	,3	100,0
	Total	340	100,0	100,0	

Nearly half (47.9%) of the participants consumed wine weekly, with an additional 33.2% consuming monthly. This data indicated a strong base of regular wine consumers who might be interested in exploring virtual wine tours to deepen their understanding of wine, discover new products, or connect with wineries in an engaging format.

6.2 Structural Equation Modeling

Confirmatory Factor Analysis



KEY: ***EE****: Effort expectations,* ***HM****: Hedonic motivation,* ***PR****: Price,* ***FC****: Facilitating conditions,* ***HBT****: Habit,* ***PE****: Performance expectations,* ***IVR****: Intention to adopt virtual reality, SI:Social influence*

Table 6.2.1: Model Fit Assessment

CMIN/DF	GFI	NFI	RFI	IFI	TLI	CFI	RMSEA
1.788	0.910	0.949	0.931	0.977	0.968	0.977	0.048

In table 6.2.1 above the model fit assessment shows that all recommended thresholds were met. With the chi-square (CMIN/ DF) being lower than 3 showing robust model fit and GFI, NFI, RFI, IFI, TLI and CFI all being above 0.9 further confirming rigorous model fit. The RMSEA was below 0.06, meeting an acceptable level to confirm model fit. The following section presents the CR calculations in table 5X.

Table 6.2.2: Composite Reliability

			Composite reliability			
				Summation of error terms		**CRη=(Σλyi)2/[(Σλyi)2+(Σεi)]**
			(∑λYi)²	ɛi	∑ɛi	CR
SI	SI1	0.681	15.117	0.536	1.893	0.889
	SI2	0.649		0.579		
	SI3	0.910		0.172		
	SI4	0.689		0.525		
	SI5	0.959		0.080		
FC	FC1	0.790	15.618	0.376	1.131	0.932
	FC2	0.798		0.363		
	FC3	0.780		0.392		
	FC4	0.757		0.427		
	FC5	0.827		0.316		
PE	PER1	0.877	11.445	0.231	1.137	0.910
	PER2	0.858		0.264		
	PER3	0.830		0.311		
	PER4	0.818		0.331		
HBT	HBT1	0.893	3.0835	0.203	0.458	0.871
	HBT2	0.863		0.255		
HM	HM1	0.872	6.6564	0.240	0.781	0.895

	HM2	0.854		0.271		
	HM3	0.854		0.271		
EE	EE1	0.804	11.4921	0.354	1.124	0.911
	EE2	0.846		0.284		
	EE3	0.866		0.250		
	EE4	0.874		0.236		
PR	PR1	0.802	6.1802	0.357	0.939	0.868
	PR2	0.832		0.308		
	PR3	0.852		0.274		
IVR	INT1	0.822	2.7126	0.324	0.644	0.644
	INT2	0.825		0.319		

*KEY: **EE**: Effort expectations, **HM**: Hedonic motivation, **PR**: Price, **FC**: Facilitating conditions, **HBT**: Habit, **PE**: Performance expectations, **IVR**: Intention to adopt virtual reality, SI: Social influence*

It is observed in table 6.2.2 above that all constructs passed the requirement for CR as they all surpassed the recommended threshold of 0.6 as recommended by (Hair et al., 2006). Their values ranged from 0.644 to 0.932. The following section presents the calculation for AVE which is presented in table 5 X.

Table 6.2.3: Average Variance Extracted

		Estimate	**λyi²**	**∑λyi²**	**ε̇i**	**∑ε̇i**	**∑λyi² / (∑λyi² + ∑ε̇i)**
SI	SI1	0.681	0.464	3.107	0.536	1.893	0.621
	SI2	0.649	0.421		0.579		
	SI3	0.910	0.828		0.172		
	SI4	0.689	0.475		0.525		
	SI5	0.959	0.920		0.080		
FC	FC1	0.790	0.624	3.126	0.376	1.874	0.625
	FC2	0.798	0.637		0.363		
	FC3	0.780	0.608		0.392		
	FC4	0.757	0.573		0.427		
	FC5	0.827	0.684		0.316		
PE	PE1	0.877	0.769	2.863	0.231	1.137	0.716

	PE2	0.858	0.736		0.264		
	PE3	0.830	0.689		0.311		
	PE4	0.818	0.669		0.331		
HBT	HBT1	0.893	0.797	1.542	0.203	0.458	0.771
	HBT2	0.863	0.745		0.255		
HM	HM1	0.872	0.760	2.219	0.240	0.781	0.740
	HM2	0.854	0.729		0.271		
	HM3	0.854	0.729		0.271		
EE	EE1	0.804	0.646	2.876	0.354	1.124	0.719
	EE2	0.846	0.716		0.284		
	EE3	0.866	0.750		0.250		
	EE4	0.874	0.764		0.236		
PR	PR1	0.802	0.643	2.061	0.357	0.939	0.687
	PR2	0.832	0.692		0.308		
	PR3	0.852	0.726		0.274		
IVR	IVR1	0.822	0.676	1.356	0.324	0.644	0.678
	IVR2	0.825	0.681		0.319		

*KEY: **EE**: Effort expectations, **HM**: Hedonic motivation, **PR**: Price, **FC**: Facilitating conditions, **HBT**: Habit, **PE**: Performance expectations, **IVR**: Intention to adopt virtual reality, SI: Social influence*

It is observed in table 6.2.3 above that all constructs passed the requirement for average variance extracted as they all surpassed the recommended threshold of 0.5 as recommended by (Fraering & Minor, 2006). Their values ranged from 0.644 to 0.932. The following section presents the calculations for the inter-construct correlation matrix, which is presented in the following table.

Table 6.2.4: Inter-construct Correlation Matrix

	SI	**FC**	**PE**	**HBT**	**IVR**	**HM**	**EE**	**PR**
SI	1							
FC	0.640**	1						
PE	0.672**	0.797**	1					
HBT	0.723**	0.723**	0.820**	1				
IVR	0.695**	0.766**	0.824**	0.877**	1			

HM	0.597**	0.740**	0.835**	0.761**	0,800**	1		
EE	0.476**	0.724**	0.743**	0.652**	0.665**	0.766**	1	
PR	0.562**	0.744**	0.778**	0.740**	0.742**	0.770**	0.723**	1

***. Correlation is significant at the 0.01 level (2-tailed).*

*KEY: **EE**: Effort expectations, **HM**: Hedonic motivation, **PR**: Price, **FC**: Facilitating conditions, **HBT**: Habit, **PE**: Performance expectations, **IVR**: Intention to adopt virtual reality, SI: Social influence*

The inter-construct correlation matrix was utilised to assess the discriminant validity of the research constructs. Correlations among latent constructs were examined to ensure they were less than 1.0. According to Nunnally and Bernstein (1994), a value below 0.7 is recommended to confirm discriminant validity. The values for the constructs presented below are considered marginally acceptable, as they range from 0.476 to 0.835. Table 6.2.4 below illustrates the accuracy analysis statistics.

Table 6.2.5: Accuracy Analysis Statistics

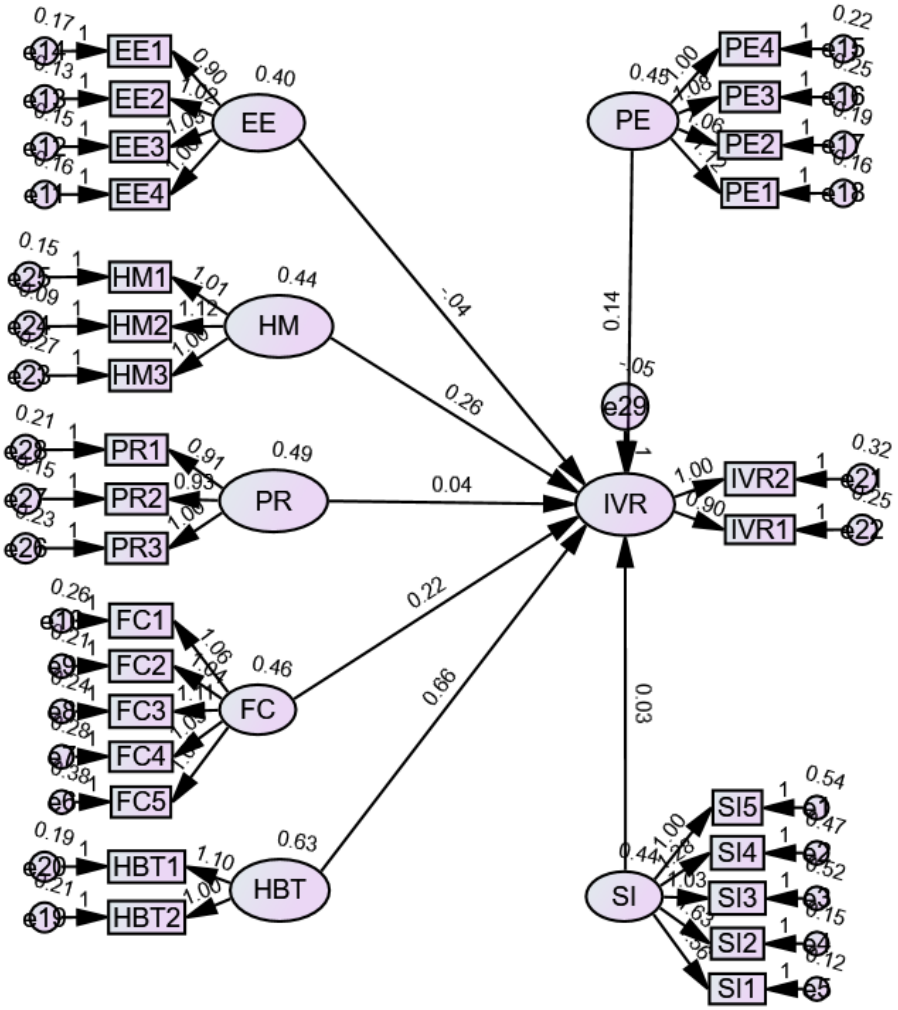
Research Construct		**Descriptive Statistics**				**Cronbach's Test**		**CR Value**	**AVE**	**FL**
		Mean Value		**Standard Deviation**		**Item-total**	**α value**			
SI	SI1	3.600	3.810	1.091	1.064	0.830	0.916	0.889	0.621	0.681
	SI2	3.600		1.147		0.814				0.649
	SI3	4.070		0.996		0.759				0.910
	SI4	3.700		1.096		0.775				0.689
	SI5	4.080		0.991		0.750				0.959
FC	FC1	4.160	4.173	0.886	0.879	0.769	0.902	0.932	0.716	0.790
	FC2	4.170		0.842		0.777				0.798
	FC3	4.140		0.900		0.782				0.780
	FC4	4.220		0.889		0.755				0.757
	FC5	4.170		0.915		0.696				0.827
PE	PE1	4.180	4.228	0.857	0.849	0.822	0.909	0.910	0.716	0.877
	PE2	4.210		0.837		0.796				0.858
	PE3	4.230		0.880		0.781				0.830
	PE4	4.290		0.823		0.778				0.818
HBT	HBT1	4.110	4.140	0.981	0.950	0.775	0.872	0.871	0.771	0.893

	HBT2	4.170		0.919		0.775				0.863
HM	HM1	4.240	4.240	0.769	0.802	0.803	0.893	0.895	0.740	0.872
	HM2	4.230		0.797		0.832				0.854
	HM3	4.250		0.841		0.737				0.854
EE	EE1	4.300	4.318	0.707	0.741	0.762	0.910	0.911	0.719	0.804
	EE2	4.240		0.742		0.823				0.846
	EE3	4.370		0.763		0.809				0.866
	EE4	4.360		0.753		0.790				0.874
PR	PR1	4.160	4.177	0.784	0.796	0.733	0.868	0.868	0.687	0.802
	PR2	4.190		0.756		0.772				0.832
	PR3	4.180		0.847		0.746				0.852
IVR	IVR1	4.130	4.135	0.897	0.950	0.688	0.812	0.644	0.678	0.822
	IVR2	4.140		1.002		0.688				0.825

KEY: ***EE****: Effort expectations,* ***HM****: Hedonic motivation,* ***PR****: Price,* ***FC****: Facilitating conditions,* ***HBT****: Habit,* ***PE****: Performance expectations,* ***IVR****: Intention to adopt virtual reality,* ***SI:*** *Social influence,* ***AVE****: Average Variance Extracted,* ***CR:*** *Composite Reliability,* ***FL:*** *Factor loadings*

It is observed in table 6.2.5 that the mean values for all the constructs revealed evidence of normal distribution as they all ranged in close proximity (3 to 4). This was further confirmed by the standard deviation values, which were all between -2 and +2. The item total values were all above 0.5, suggesting that individual items were well related to each other for all constructs. The Cronbach's alpha α values ranged from 0.812 to 0.916, surpassing the recommended threshold of 0.7. Additionally, the CR values ranged from 0.644 to 0.935 also surpassing the recommended value of 0.6. In terms of validity, the average extracted variance values ranged from 0.621 to 0.771 exceeded the recommended threshold of 0.5. The factor loadings were all above 05 furthermore confirming reliability of the construct.

Figure 2: Structural Model



***KEY: EE**: Effort expectations, **HM**: Hedonic motivation, **PR**: Price, **FC**: Facilitating conditions, **HBT**: Habit, **PE**: Performance expectations, **IVR**: Intention to adopt virtual reality, **SI:** Social influence*

Table 6.2.6: Hypotheses Results

Relationship		**Path Coefficient**	**P-value**	**Outcome**
H1	EE to IVR	-0.04	0.265	Not supported not significant
H2	HM to IVR	0.260	***	Supported and significant
H3	PR to IVR	0.040	0.279	Supported but not significant
H4	FC to IVR	0.220	***	Supported and significant
H5	HBT to IVR	0.660	***	Supported and significant
H6	PE to IVR	0.140	***	Supported and significant
H7	SI to IVR	0.030	0.392	Supported but not significant

***KEY: EE**: Effort expectations, **HM**: Hedonic motivation, **PR**: Price, **FC**: Facilitating conditions, **HBT**: Habit, **PE**: Performance expectations, IVR: Intention to adopt virtual reality, **SI:** Social influence, Level of significance p<0.001 (***).*

6.3 Discussion of Hypotheses Results

6.3.1 Hypothesis 1: Effort Expectations and Intention to Adopt Virtual Reality

The first hypothesis (H1) proposes that EEs positively influence the IVR in wine tourism. However, the results reveal an inverse, albeit insignificant, relationship with a path coefficient of -0.04 and a p-value of 0.265, indicating no statistical significance. Effort expectations, defined as the perceived ease of use associated with a system (Venkatesh et al., 2003), often play a critical role in digital adoption decisions. Nevertheless, in this context, consumers do not perceive ease of use as a significant determinant in their choice to adopt VR for wine tourism, perhaps due to the immersive and experience-oriented nature of VR, which tends to prioritise engagement and enjoyment over simplicity (Luo et al., 2019).

This result aligns with studies indicating that in experiential technology contexts like VR, HM and FCs tend to outweigh effort considerations (Davis et al., 2020). One potential explanation for this inverse relationship is that users familiar with VR may prioritise novelty and immersion over ease of use, finding the value in the experience itself rather than the perceived effort. Conversely, studies by Verhagen, van Dolen, and Merikivi (2019) suggest that for first-time VR users, the perceived effort could initially impact adoption decisions. However, these findings imply that in the context of wine tourism, where consumers are motivated by an enjoyable experience, EEs may hold minimal sway, making factors like HM more influential. This outcome could further imply that as VR technology becomes more common, users may view VR applications as manageable, regardless of complexity.

6.3.2 Hypothesis 2: Hedonic Motivation and Intention to Adopt Virtual Reality

H2 posits that HM significantly impacts consumers' intentions to adopt VR, with a path coefficient of 0.260 and a p-value below 0.001, indicating a strong positive effect. HM is defined as the enjoyment or pleasure derived from using a system (Venkatesh et al., 2012), which, in this case, appears critical to adoption in wine tourism. The high significance of this relationship emphasises that VR's unique ability to deliver engaging and immersive experiences is a driving force in user adoption. Kim et al.'s (2020) research reinforces this finding, showing that experiential tourism technologies that provide sensory and engaging

experiences, such as VR, are highly appealing, as they offer consumers an opportunity to explore destinations interactively.

The positive impact of HM on VR adoption can be attributed to the fact that wine tourism is an experience-driven industry where enjoyment and sensory fulfillment are paramount. Consumers interested in VR wine tourism are likely to seek engaging interactions that emulate the richness of in-person visits, a need effectively met by VR's visual and immersive capacities (Li & Chen, 2019). Additionally, as VR technology evolves, so does its capability to deliver high-quality, multi-sensory experiences, further cementing its appeal among hedonic consumers (Park et al., 2021). For tourism providers aiming to utilise VR, prioritising the development of engaging sensory and entertainment experiences could be key to success.

6.3.3 Hypothesis 3: Price and Intention to Adopt Virtual Reality

The third hypothesis (H3) explores the influence of PR on consumers' intentions to adopt VR. Although supported, this relationship is not statistically significant, with a path coefficient of 0.040 and a p-value of 0.279. Price sensitivity often plays a major role in consumer decision-making, yet in this context, its influence appears minimal, suggesting that consumers might associate higher PRs with quality or superior service (Müller & Han, 2020). This finding could imply that consumers interested in virtual wine tourism do not view cost as a barrier, perhaps due to a perception that VR offers a premium, worthwhile experience, one that might be equated with exclusivity and high-quality service delivery (Chung & Koo, 2015).

The literature suggests mixed views on the role of PR in experiential service adoption. For instance, Wang et al. (2018) argue that experiential technologies that provide unique or memorable experiences tend to be less affected by PR sensitivity, as consumers often prioritise experience quality over cost. Additionally, Hwang and Lee (2021) found that in tourism contexts, consumers' willingness to pay is often linked to the experience's perceived value and uniqueness. Therefore, the absence of PR having a significant influence in this study could be indicative of consumer expectations that VR, as an immersive and innovative tool, inherently justifies a higher cost due to its ability to deliver a unique experience.

6.3.4 Hypothesis 4: Facilitating Conditions and Intention to Adopt Virtual Reality

Hypothesis 4 (H4) posits that FCs have a significant positive effect on the IVR, supported by a path coefficient of 0.220 and a p-value below 0.001. Facilitating conditions encompass the resources, infrastructure, and support available to use a new technology (Venkatesh et al.,

2003). In this study, the positive influence indicates that access to proper equipment, technical support, and a user-friendly setup greatly enhances consumers' intentions to adopt VR for wine tourism. Studies by Lin and Filieri (2020) support this result, showing that the availability of accessible and supportive conditions significantly boosts adoption rates in digital tourism technologies.

The significance of FCs in VR adoption suggests that consumers value seamless access to technology that doesn't require additional effort or adjustments on their part. Virtual reality's inherent technical complexity might still create adoption barriers if appropriate support and infrastructure are absent. By ensuring that consumers can access VR effortlessly, service providers can mitigate potential barriers and foster an environment more conducive to adoption (Han et al., 2019). These findings imply that tourism providers should prioritise creating supportive infrastructure, possibly through collaborations with VR hardware providers, to enhance accessibility and ease of use, thereby increasing VR adoption rates in tourism contexts.

6.3.5 Hypothesis 5: Habit and Intention to Adopt Virtual Reality

The fifth hypothesis (H5) examines the influence of HBT on VR adoption, yielding a highly significant path coefficient of 0.660 and a p-value below 0.001. Habit, which captures users' tendency to perform behaviours automatically due to learned routines (Venkatesh et al., 2012), plays an especially strong role in VR adoption. This significant result implies that prior exposure to or familiarity with VR or similar digital experiences can significantly lower the adoption barrier, as users are already comfortable with the technology and are less likely to be hesitant in adopting VR in wine tourism. According to Limayem and Hirt (2019), HBTs formed through regular digital technology use can increase users' acceptance of new, similar technologies, thus driving higher engagement rates.

The importance of HBT in this study suggests that VR service providers could benefit from targeting users who have previously interacted with immersive digital platforms, as they are more likely to adopt VR seamlessly. Kaushik and Rahman's (2020) research further indicates that repeated exposure to digital tools lowers resistance to new technologies, leading to higher usage frequency. This finding emphasises the role of habitual behaviour in reducing technological adoption barriers and implies that service providers could introduce users to VR incrementally to foster familiarity and lower initial resistance.

6.3.6 Hypothesis 6: Social Influence and Intention to Adopt Virtual Reality

The final hypothesis (H6) posits that SI affects consumers' intentions to adopt VR, yet the relationship, while supported, is not significant (path coefficient of 0.030 and a p-value of 0.392). Social influence refers to the degree to which individuals perceive that important others believe they should use a new technology (Venkatesh et al., 2003). In this study, the limited impact suggests that consumers' VR adoption intentions are not significantly swayed by peer or social pressure, which may be due to VR's novelty in wine tourism. Notably, Kim and Ahn (2020) found that SI often plays a more substantial role in the later stages of technology adoption, where users rely on peer feedback or recommendations.

This result implies that VR adoption in wine tourism might initially be driven by personal interest rather than SI. However, as VR technology gains wider exposure, SI could become more relevant, as users may look to peers or social groups for validation prior to adoption. The findings suggest that although SI currently has minimal effect on VR adoption, this may change as VR becomes more integrated into mainstream tourism practices (Choi et al., 2019).

6.3 Summary

In summary, sample profile tables present a demographic and behavioural profile that reveals a mix of traditional and modern engagement with wine culture, which can guide strategies for promoting virtual wine tours. The data points to a primarily local audience with a solid foundation of wine familiarity, regular consumption, and an openness to new experiences—factors that could support the growth of virtual wine tours, especially if tailored to the preferences and motivations identified in this dataset. The hypotheses results on VR adoption for virtual wine tours indicate several key influences. Effort expectation (H1), typically important in digital adoption, showed no significant impact, suggesting that ease of use is secondary to the immersive experience that VR offers in wine tourism. However, HM (H2) demonstrated a strong positive influence, emphasising that enjoyment and sensory richness are crucial drivers for adoption, as users are drawn to VR's engaging qualities. Price (H3) was found to have an insignificant effect, indicating that consumers may associate VR's cost with a premium experience and thus prioritise the perceived value over PR sensitivity. In contrast, FCs (H4) showed a significant positive impact, highlighting the importance of technical support and infrastructure in making VR accessible and reducing usage barriers. HBT(H5) was also highly influential, with familiarity in digital technology reducing resistance and fostering VR adoption, especially among users accustomed to immersive tools. Lastly, SI (H6) had

minimal impact, implying that adoption is driven more by personal interest than by social validation at this early stage of VR exposure. Overall, HM, FCs, and HBT emerged as primary factors, suggesting that VR providers should focus on creating enjoyable experiences, ensuring strong technical support, and targeting users familiar with VR to boost adoption in wine tourism.

CHAPTER 7: FINDINGS, CONCLUSIONS, IMPLICATIONS AND FUTURE RESEARCH

7.1 Introduction

The previous chapter discussed the study's results in line with the study's hypothesis statements. This chapter will interrogate specific findings from this study, discuss the complications that arose during the study, and the study's implications.
This chapter will also consider future research that can be undertaken.

7.2 Findings

This study's findings reveal intricate relationships between various factors and consumer intentions to adopt VR for wine tourism, shedding light on the determinants most likely to drive VR adoption in experiential tourism contexts. The EEs factor, indicated by a path coefficient of -0.04 and a non-significant p-value, suggests that the perceived ease of VR use is not a primary influence on consumer intent. This finding underscores that for consumers in immersive, hedonic experiences, the appeal of VR lies more in the quality of the experience than in its perceived usability.
Conversely, HM, with a significant path coefficient of 0.260, is a strong positive predictor, indicating that enjoyment and engagement heavily influence the IVR. This suggests that VR's sensory and interactive features enhance user enjoyment, making it an attractive option for consumers in the wine tourism sector, where the experience is a primary draw. Similarly, FCs (path coefficient of 0.220) play a crucial role, emphasising the importance of supportive resources, such as technical accessibility and user-friendly interfaces, in enhancing adoption. The significant relationship with HBT (path coefficient of 0.660) further implies that consumers who are accustomed to using digital or immersive technologies are more likely to engage with VR.
While PEs, significant with a coefficient of 0.140, underscore that belief in VR's ability to provide an enriching experience influences adoption, PR and SI, though supported, were not statistically significant. This finding indicates that consumers may perceive VR as a premium experience, thereby downplaying cost as a critical factor and valuing personal enjoyment over social endorsement.

7.3 Achievement of Research Questions and Objectives

This section of the research discusses whether or not the investigation was able to address the proposed research questions and achieve the targeted objectives.

7.3.1 Research Question and Objective 1:

The first research question and objective were to establish those factors that influence the adoption of virtual wine tours and virtual wine tastings. This objective was mostly achieved as it established that HM, PR and HB Tall influence the intention to adopt virtual wine tours and virtual wine tastings. The exception was EEs, as it was established that it had no relationship with the intention to adopt virtual wine tours and tastings. A possible reason for the exception could be that virtual wine tours and tastings are perceived as inherently easy to access and use, making EEs irrelevant in influencing a consumer's intention to adopt them.

7.3.2 Research Question and Objective 2:

The second research question and objective were to establish whether or not SI has an impact on the adoption of virtual wine tours and virtual wine tastings. This objective was achieved, however, the impact of SI on the adoption of virtual wine tours and virtual wine tastings was relatively weak. It is likely that the reason for the weak impact of SI could be that the decision to participate in virtual wine tours and tastings is more individualistic and driven by personal preferences, such as enjoyment or curiosity, rather than social pressures or recommendations.

7.3.3 Research Question and Objective 3:

The third research question and objective were to establish which one of these factors (i.e. EE, HM, PR, FCs, and HBT) has the most and least impact on a consumer's intention to adopt virtual wine tasting and tours. It was established that while HBT had the most significant impact, HM had no impact at all. Habit likely had the least significant impact because individuals who are already accustomed to engaging in virtual experiences or similar online activities are more likely to adopt virtual wine tours and tastings. Familiarity and routine reduce barriers to trying new but related activities

7.3.4 Research Questions

What are the factors that influence the adoption of virtual wine tours and virtual wine tastings?

Does SI have an impact on the adoption of virtual wine tours and virtual wine tastings?

Which one these factors (i.e. EE, HM PR, FCs, and HBT) has a more significant impact on the intention to adopt virtual wine tasting and tours?

7.3.5 Research Objectives

To investigate the factors that influence the adoption of virtual wine tours and virtual wine tastings;

To investigate the influence of SI on the adoption of virtual wine tours and virtual wine tastings; and

To investigate which one these factors (i.e. EE, HM, PR, FCs, and HBT) has a more significant impact on the intention to adopt virtual wine tasting and tours?

7.4 Implications

7.4.1 Theoretical Implications

These findings provide theoretical insights into the factors affecting consumers' adoption of VR in experiential tourism, advancing our understanding of the constructs involved in user acceptance of immersive technology. The study extends the UTAUT framework by validating the importance of HM and HBT over EEs and PR in experiential tourism contexts. Traditionally, EEs and PR are critical in adoption studies (Venkatesh et al., 2003), but this study highlights the dominant role of emotional and habitual factors, offering a refined view of UTAUT's applicability in tourism sectors focused on sensory and immersive experiences.

The significant role of FCs and HBT implies that consistent access to VR technologies and prior familiarity with similar digital platforms foster higher adoption rates. These results support the notion that integrating HBT into technology acceptance frameworks in tourism can improve predictive accuracy, as users with established digital routines are more inclined to engage with VR. Additionally, PEs play a supporting role, aligning with the concept that perceived functionality and enrichment are essential in adopting experiential technologies.

Finally, HM emerges as a strong predictor of VR adoption, reinforcing its place as a vital factor in contexts where enjoyment and sensory immersion are valued. This outcome aligns with the

growing body of literature that recognises hedonism as central to understanding technology adoption in experience-driven sectors (Kim et al., 2020). By refining these relationships, the study contributes to a more nuanced theoretical model that incorporates experience-focused motivators, thereby enhancing the UTAUT framework's application in experiential tourism.

7.4.2 Practical Implications

The study's findings suggest several practical applications for VR technology providers, tourism marketers, and wineries seeking to incorporate VR into their services.

First, enhancing user engagement through hedonic features. This is because given the significant impact of HM, VR developers in tourism should prioritise sensory and interactive elements that maximise user enjoyment. Features such as high-definition visuals, interactive wine-tasting simulations, and immersive vineyard tours can enhance the hedonic appeal, encouraging consumer adoption. Marketing efforts should emphasise the enjoyment and uniqueness of VR experiences to align with consumer expectations in experiential tourism.

Second, improving accessibility through FCs. The significant role of FCs indicates that ease of access and technical support are critical for VR adoption. Service providers should ensure that their VR experiences are compatible with various devices, intuitive to navigate, and supported by reliable customer assistance. Collaborating with VR hardware providers or investing in device compatibility could be beneficial in enhancing accessibility, thereby lowering adoption barriers.

Third, building familiarity through incremental VR integration. The importance of HBT in adoption suggests that users who are familiar with VR are more likely to engage. Wineries and tourism providers might consider introducing consumers to VR through smaller, simpler experiences, such as virtual previews of wine-tasting events or short vineyard tours, before transitioning to more complex, fully immersive experiences. This gradual approach can help develop habitual use, thereby encouraging continued engagement with VR over time.

Fourth, targeting experienced users with performance-focused messaging. Although PEs play a supporting role, highlighting VR's ability to enhance wine tourism experiences could appeal to consumers who value the added dimension VR provides. Messaging should emphasise VR's enrichment capabilities, such as bringing remote vineyards closer to consumers or simulating aspects of the tasting process that may be challenging to replicate in person.

Fifth, reconsidering cost as a marketing barrier. Given the minimal influence of PR on VR adoption, pricing strategies might be less critical than previously thought, particularly if VR is

positioned as a premium, value-added experience. Service providers could explore different pricing models, such as subscription packages or bundled experiences, without worrying excessively about PR sensitivity. Instead, focusing on delivering high-quality, memorable experiences might resonate more effectively with target consumers.

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Appendix A: Ethics Clearance Certificate

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Research Office

HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)
R14/49 Bruwer

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER: H23/04/03**
PROJECT TITLE	An investigation into consumers' intention to adopt virtual wine tour and tasting
INVESTIGATOR(S)	Miss L Bruwer
SCHOOL/DEPARTMENT	Wits Business School/
DATE CONSIDERED	21 April 2023
DECISION OF THE COMMITTEE	Approved Risk Level: Minimal
EXPIRY DATE	26 September 2026

DATE 27 September 2023 **CHAIRPERSON** _____
(Professor J Watermeyer)

cc: Supervisor : Dr T Chuchu

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **A SIGNED COPY** returned to the Secretary electronically. Unreported changes to the application may invalidate the clearance given by the HREC (Non-Medical)

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure be contemplated from the research procedure as approved I/we undertake to submit an amendment of the protocol to the Committee. **I/we agree to completion of a regular progress report. For Minimal and Low Risk studies, this is due annually on 31 December. For Medium and High Risk studies, this is due twice annually on 30 June and 31 December.**

_____ _____/_____/_____
Signature **Date**

PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES

Appendix B: Participant Information Sheet

Dear respondent:

This research questionnaire is conducted by a Marketing Master's student for the degree Masters in Communication at the University of Witwatersrand. This questionnaire will obtain data, in order to determine the topic of the study, which reads as follows." ***An investigation into consumer's intention to adopt virtual wine tour and tasting***" The Commerce Faculty in Research Committee has approved this research.

By completing this questionnaire, you as a respondent: give consent to participate in the research study, understand that your participation in this research is voluntary and anonymous, know that you may choose to withdraw from the research at any time without any consequence and that you have the right of access to the researchers, regarding issues of clarity. The information obtained by this survey will be kept confidential and used solely for the purpose of academic research.

You are required to be 18 years and older to participate in this study.

The survey should take you approximately 15-20 minutes to complete. The survey consists of several statements with a 5-point scale ranging from 'strongly disagree' to 'strongly agree' and you are required to select the extent to which you agree or disagree with the statement/question.

Should you have any questions regarding the research, please feel free to contact the following via email:

Researcher: Lee-Andra Bruwer (2631652@students.wits.ac.za)

Supervisor: Dr Tinashe Chuchu (Tinashe.chuchu@wits.ac.za

Appendix C: Consent Form

Consent Form for Completing a Research Questionnaire

I …….. Acknowledge that I understand the research information and the research has been fully explained to me. I understand that the information I supply will be used to provide researchers with information in their study reports. I further acknowledge that the researchers have promised me the following:

- Participation in this research is voluntary.
- Personal information will be kept anonymous throughout the study and dissertation.
- I can decline to answer any questions that make me uncomfortable.

I thus consent to complete the questionnaire provided for the research study: ***An investigation into consumer's intention to adopt virtual wine tour and tasting*.**

☐ I agree with completing the questionnaire (Tick the box if you agree).

Name of participant …… Date ……. Signature ……

Name of the researcher …… Date ……. Signature ……

Appendix D: Research Questionnaire

An investigation into consumer's intention to adopt virtual wine tour and tasting

SECTION A

GENERAL INFORMATION

The section is asking for your background information. Please indicate your answer by crossing (X) on the appropriate box.

A1 Do you consent to participate in this research?

Yes	1
No	2

A2 What is your age?

18-25	1
26-33	2
34-41	3
42-49	4
50-57	5
58-65	6
66 and older	7

A3 Please indicate your gender?

Male	1
Female	2
Other	3
Prefer not to answer	4

A4 Where do you live?

Eastern Cape	1
Free State	2
Gauteng	3
Kwazulu-Natal	4
Limpopo	5
Northern Cape	6
Western Cape	7
Namibia	8
Overseas	9

A5 Have you ever participated in a wine tasting at a wine farm?

Yes	1
No	2

A6 Have you ever participated in a virtual wine tasting or wine tour?

Yes	1
No	2

A7 Are you a loyalty member / wine club member at any wine farm?

Yes	1
No	2

A8 Do you purchase wine regularly if yes, how regularly?

No	1
Yes , daily	2
Weekly	3
Monthly	4

Once every few months	5
Twice a year	6
Once a year	7

A9 Do you consume wine regularly?

No	1
Yes , daily	2
Weekly	3
Monthly	4
Once every few months	5
Twice a year	6
Once a year	7

SECTION B

Below are statements about perceived ideas of the intention to adopt virtual wine tours and tastings. You can indicate the extent to which you agree or disagree with the statement by crossing (X) the corresponding number in the 5-point scale below:

*Please keep in mind when completing the questionnaire, if you have participated in a virtual wine tasting before please base your answers on that experience. If you have not yet participated in one please base your answers on what you would expect from participating in a virtual wine tasting/ tour.

1= Strongly Disagree **2**= Disagree **3**= Neutral **4**= Agree 5= Strongly Agree

1	2	3	4	5

Strongly Disagree	Disagree	Neutral	Agree	Strongly agree

Social Influence

Please cross (X) only one number for each statement

SI1	People who influence my behaviour think I should use virtual reality for wine tours	Strongly Disagree	1	2	3	4	5	Strongly Agree
SI2	People who are important to me think I should use virtual reality for wine tours	Strongly Disagree	1	2	3	4	5	Strongly Agree
SI3	I use virtual reality for wine tours because of the proportion of colleagues who use the system.	Strongly Disagree	1	2	3	4	5	Strongly Agree
SI4	People if my community who use Virtual reality for wine tours have a high profile	Strongly Disagree	1	2	3	4	5	Strongly Agree
SI5	Having access to virtual wine tours is a status symbol in my community	Strongly Disagree	1	2	3	4	5	Strongly Agree

Facilitating Conditions

FC1	I have control over using virtual reality for wine tours	Strongly Disagree	1	2	3	4	5	Strongly Agree
FC2	I have the resources necessary to use virtual reality for wine tours	Strongly Disagree	1	2	3	4	5	Strongly Agree
FC3	I have the knowledge necessary to use virtual reality for wine tours	Strongly Disagree	1	2	3	4	5	Strongly Agree
FC4	Given the resources, opportunities, and knowledge it takes to use the system, it would be easy for me to use virtual reality	Strongly Disagree	1	2	3	4	5	Strongly Agree
FC5	Guidance was available to me in the selection of virtual reality for wine tours	Strongly Disagree	1	2	3	4	5	Strongly Agree

Performance Expectations

PE1	I would find using Virtual reality for wine tours useful	Strongly Disagree	1	2	3	4	5	Strongly Agree
PE2	Using Virtual reality enables me to accomplish the task faster	Strongly Disagree	1	2	3	4	5	Strongly Agree
PE3	Using Virtual reality in wine tours and tastings would increase my Productivity	Strongly Disagree	1	2	3	4	5	Strongly Agree
PE4	If I use virtual reality in wine tours and tastings it would increase the chances of a better wine knowledge	Strongly Disagree	1	2	3	4	5	Strongly Agree

Habit

HBT1	The use of Virtual Reality during wine tours has become a HBTfor me /it can become a habit	Strongly Disagree	1	2	3	4	5	Strongly Agree
HBT2	Using Virtual Reality on my smartphone has become natural to me.	Strongly Disagree	1	2	3	4	5	Strongly Agree

Intention to adopt virtual reality

VR1	I am in favor of using Virtual Reality during wine tours	Strongly Disagree	1	2	3	4	5	Strongly Agree
VR2	I feel the need to use Virtual Reality during wine tours	Strongly Disagree	1	2	3	4	5	Strongly Agree

Hedonic Motivation

HM1	I believe that using Virtual Reality for wine tours is fun/ could be fun	Strongly Disagree	1	2	3	4	5	Strongly Agree
HM2	I believe using Virtual Reality for wine tours is enjoyable/ can be enjoyable	Strongly Disagree	1	2	3	4	5	Strongly Agree
HM3	I believe that using virtual reality for wine tours is very entertaining/ can be very entertaining.	Strongly Disagree	1	2	3	4	5	Strongly Agree

Effort Expectation

EF1	I believe that learning how to use virtual reality is easy for me / will be easy for me	Strongly Disagree	1	2	3	4	5	Strongly Agree
EF2	I believe that my interaction with Virtual Reality for wine tours is clear and understandable/ will be clear and understandable	Strongly Disagree	1	2	3	4	5	Strongly Agree
EF3	I find virtual reality easy to use/ will find it easy to use	Strongly Disagree	1	2	3	4	5	Strongly Agree
EF4	I believe it is easy for me to become skillful at using virtual reality for wine tours	Strongly Disagree	1	2	3	4	5	Strongly Agree

Price

PR1	I can save money when using virtual reality for wine tours	Strongly Disagree	1	2	3	4	5	Strongly Agree
PR2	I like. I would like to search for good deal when using virtual reality for wine tours	Strongly Disagree	1	2	3	4	5	Strongly Agree

PR3	I believe that virtual reality offers better value for my money when using it for wine tours.	Strongly Disagree	1	2	3	4	5	Strongly Agree

The end!

Thank you for your time, have a lovely day!