

THE METAVERSE — WILL CONSUMERS BUY IT?

**A QUANTITATIVE STUDY TO PREDICT CONSUMERS'
INTENTIONS TO USE THE METAVERSE FOR SHOPPING**

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The Metaverse – will consumers buy it? A quantitative study to predict consumers' intentions to use the Metaverse for shopping

Abstract:

The interest in the Metaverse has recently captivated the attention of both individuals and organizations. In its most complete form, the Metaverse is envisioned to become a series of decentralized, interconnected virtual worlds where people can socialize, work, create, play, relax and transact. This thesis focuses on shopping, with the purpose of generating an understanding of what factors influence consumers' intentions to shop in the Metaverse. Hence, the research question for this thesis is: "What behavioral factors influence consumers' intentions to use the Metaverse for shopping?". To collect data, a self-completion questionnaire was distributed using a convenience sample. The results show that perceived usefulness, curiosity and joy significantly influence consumers' intentions to use the Metaverse for shopping.

Keywords:

Metaverse, virtual reality, shopping, commerce, behavioral intentions, Hedonic-Motivation System

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Yours sincerely,
Erik and Oskar

Definitions

Avatar: Refers to a personalized graphical illustration in a three- or two-dimensional form that represents a computer user (Techopedia, 2018).

Behavioral intention to use: “A person’s subjective probability that he will perform some behavior” (Fishbein & Ajzen, 1975).

Control: “The user’s perception of being in charge of the interaction” (Agarwal & Karahanna, 2000).

Crypto: Any form of cryptocurrency, digital or virtual, that uses cryptography to secure transactions (Kaspersky, 2022).

Curiosity: “The extent the experience arouses an individual's sensory and cognitive curiosity” (Agarwal & Karahanna, 2000).

Joy: “The pleasurable aspects of the interaction described as being fun and enjoyable rather than boring” (Agarwal & Karahanna, 2000).

Metaverse: The definition of the Metaverse for our purpose will be a massively scaled and interoperable network of 3D virtual worlds that can be experienced by users with a sense of presence and with continuity of data (Ball, 2021).

Perceived ease of use: “The degree to which a person believes that using a particular system would be free of effort” (Davis et al., 1989).

Perceived usefulness: “The degree to which a person believes that using a particular system would enhance his or her job performance” (Davis et al., 1989).

Virtual Reality: “A computer generated display that allows or compels the user (or users) to have a sense of being present in an environment other than the one they are actually in, and to interact with that environment” (Schroeder, 2008).

Virtual Worlds: “Persistent virtual environments in which people experience others as being there with them - and where they can interact with them” (Schroeder, 2008).

Web 3.0: “The latest Internet technology that leverages machine learning, artificial intelligence and blockchain to achieve real-world human communication” (Bhattacharya, 2021).

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1. Introduction

The interest in the Metaverse has recently captivated the attention of both individuals and organizations. All from executives at the most influential technology companies, to institutional investors and startups are trying to figure out what the Metaverse could eventually become. However, although many view the Metaverse as something new, the term was first introduced by author Neal Stephenson in his 1992 novel “Snow Crash” (Nast, 2017). Fast forward 30 years and people around the world are now starting to imagine the future of how to revolutionize both the digital and the physical world, especially considering the advancements in commercial activity conducted in immersive and virtual environments (Shen et al., 2021).

The general idea behind the Metaverse expands further than just virtual reality. Today, the vision for the Metaverse has expanded into becoming, in its most complete form, a series of decentralized, interconnected virtual worlds with a fully functioning economy where people can do just about anything they can do in the physical world (Ball, 2021). As such, the Metaverse incorporates not only how we might work from home, but also how we might socialize, create, play, relax and transact (JP Morgan, 2022). Therefore, it has become of interest for the authors of this thesis to explore the factors that influence consumers’ willingness to take part in commerce in the Metaverse, and how their behavioral intention toward these potential transactions currently stands. This, in order to gain knowledge about the customer perspective of a potential shift towards the Metaverse as the next platform for shopping.

1.1. Background

1.1.1. Background on the Metaverse

When the term “Metaverse” was first introduced in Neal Stephenson's 1992 science fiction novel ‘Snow Crash’, the Metaverse was described as a three-dimensional space where humans interacted with each other, and with software agents, as programmable avatars (Armstrong, 2021). However, the full version of the Metaverse, and its possibilities, are decades away as extraordinary technological advancements are required (Ball, 2021). When explaining what makes the Metaverse potentially significant to consumers worldwide, it’s best understood as a successor to the internet (ibid.). The Metaverse is not a replacement, but it will instead build upon and transform the capabilities of the internet. In altering the role of computers in our everyday lives, the Metaverse will, from what is currently understood, place everyone within a virtual version of the internet (ibid.). As such, the Metaverse is, by Matthew Ball, co-founder of Ball Metaverse Research Partners, defined as the following:

“A massively scaled and interoperable network of real-time rendered 3D virtual worlds which can be experienced synchronously and persistently by an effectively unlimited number of users with an individual sense of presence, and with continuity of data, such as identity, history, entitlements, objects, communications, and payments.” (Ball, 2021)

Although many might view Metaverse as just virtual reality, the definition above incorporates the complexity and influence the Metaverse could have on commerce, as well as on consumers’ purchasing behaviors. Accordingly, virtual reality is what allows us, as humans, to experience the internet through the Metaverse, similarly as millions of players today enjoy their games online. Therefore, the Metaverse is far more than any purpose-specific video game in current existence; it will rather expand the possibilities of virtual experiences and their importance from how we, for instance, collaborate with our coworkers and spend time with friends and family, to how we design houses and, which will be the focus of this thesis, take part in shopping. This could, in turn, extensively expand participation by individuals across the world.

1.1.2. Background on the Metaverse Framework

With increased participation, the Metaverse becomes more of a network that connects our experiences and their applications with devices, hardware and the digital infrastructure that comes with it. Importantly, this network could be compared with Web 3.0, being the third generation of the internet after Web 1.0 and Web 2.0, in terms of cryptographically connecting data with efficient machine learning algorithms (Mersh & Muirhead, 2021). However, although the Metaverse and Web 3.0 share potential attributes in terms of virtual worlds and a focus on decentralization, the Metaverse is currently distinguished in its potential, massive scale combined with having a fully functioning economy (Armstrong, 2021). Additionally, the technology behind the Metaverse, in terms of framework, could be structured around core elements, or foundations, as described by Matthew Ball (Ball, 2021). A more detailed description of the foundations can be found in Appendix 1.

1.1.3. The Metaverse Framework Summarized

The core foundations described by Ball (2021) are each crucial for the success and development of the Metaverse (see Appendix 1). However, how all of these complex pieces come together is the uncertain, yet society-altering part. Looking back on the history of technology and the internet, it could be estimated that the Metaverse, if implemented successfully, will revolutionize how we socialize, work, transact, play and create. This while introducing a new form of functioning economy with professions and opportunities for individuals and corporations to embrace (Ball, 2021). As such, the value that is potentially created could be immense, thus highlighting the relevance of

gaining knowledge about the customer perspective for corporations planning on introducing their value offerings in the Metaverse for shopping. The illustration below (Figure 1) summarizes the framework of the Metaverse, from the foundations to the technological platform and the potential use cases.

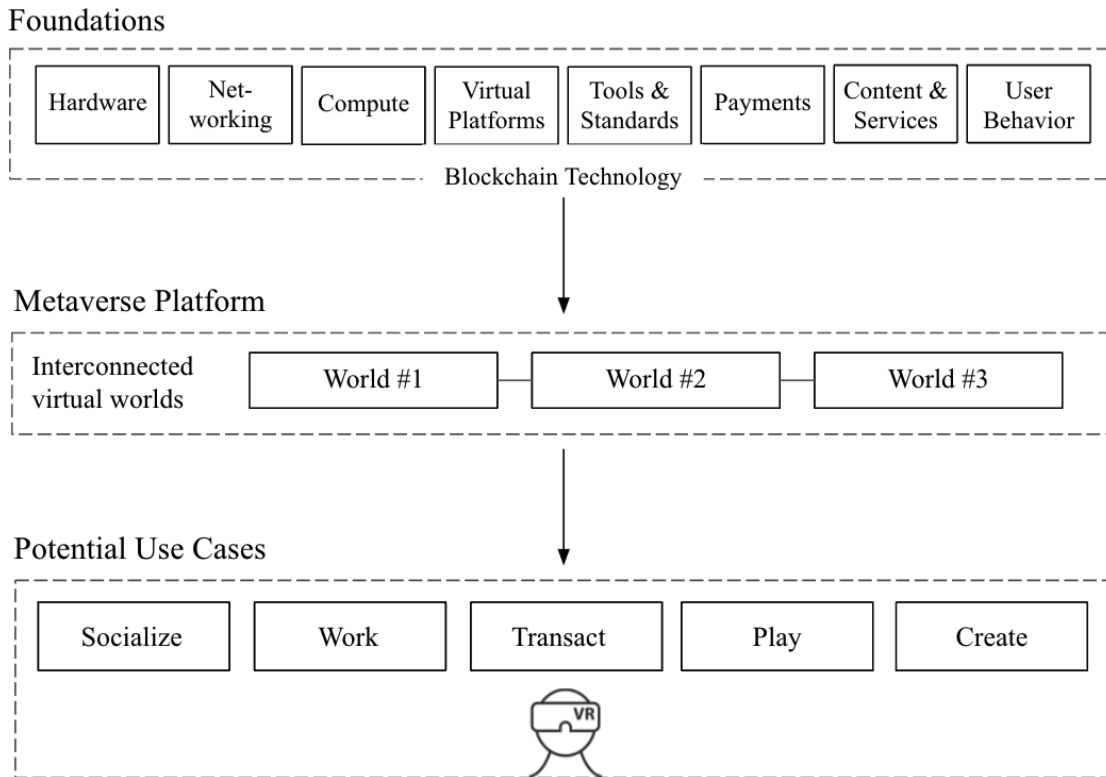


Figure 1. The Metaverse framework illustration, adapted from the published illustration by Coinbase Global, Inc. (Armstrong, 2021)

1.2. Problem Formulation

Staying up-to-date with the latest advancements in technology has proven crucial for companies in pursuit of retaining and attracting consumers (McKinsey & Co, 2020). This has predominantly been the case during the COVID-19 pandemic, where the adaptability to embrace e-commerce has proven crucial in many industries for consumers and corporations alike (World Trade Organization, 2020). Consequently, it has become clear that in order to stay relevant, grow and increase market share through technology and efficient marketing communication, companies must embrace the relentless change characterized by business today (Capron, 2015). As such, this also includes the possibility of the Metaverse becoming the next platform for shopping worldwide. This is further emphasized by Mark Zuckerberg, CEO of Meta Platforms, Inc., formerly known as Facebook, stating:

“We expect to invest many billions of dollars for years to come before the Metaverse reaches scale. Our hope though is that if we all work at it, within the next decade the Metaverse will reach a billion people, host hundreds of billions of dollars in digital commerce and support jobs for millions of creators and developers.” (Zuckerberg, 2021)

Since the Metaverse will build upon and transform the capabilities of the internet, it requires that companies profoundly understand their consumers' intentions. This understanding partly coincides not only with the development of new technology but also with being cognizant of the key behavioral intentions of customers shifting towards the Metaverse as a platform for shopping.

1.3. Research Purpose and Research Question

The primary aim of the thesis is to generate an understanding of the factors shaping shopping intentions among consumers' in what ought to be the next generation of the internet, the Metaverse. As the Metaverse is under construction and yet unexplored, the thesis also has an exploratory purpose. Hence, the thesis will contribute to a greater understanding of the current visions, ideals and possibilities of the Metaverse, as well as what drives shopping intentions in the Metaverse.

The research question that will be addressed is the following:

- *What behavioral factors influence consumers' intentions to use the Metaverse for shopping?*

Answering this question will contribute to understanding how consumers currently perceive how the Metaverse might have implications on their shopping behavior. Consequently, marketers, developers and businesses of all sizes may gain insights regarding their strategy and how to direct their marketing, while minimizing ineffective communication and misdirected marketing efforts.

1.4. Expected Contribution

A fair amount is being communicated by large organizations about their vision for the Metaverse and how it is being built. However, it is an undoubted fact that the Metaverse can never host hundreds of billions of dollars in digital commerce, as Mark Zuckerberg (2021) hopes, if consumers don't accept and use the Metaverse. Hence, in order to predict, and in the long run, increase consumers' use of the Metaverse for shopping, organizations need to understand why people accept or reject it. Although, no studies have been made regarding what factors affect the consumers' intentions to actually use the Metaverse when fully functioning. Hence, the thesis takes the perspective of the consumers and contributes to existing research on behavioral usage intentions, in e.g. gaming, by investigating previous findings in a Metaverse context. As such, the authors

intend to contribute with knowledge not only for researchers, but also for organizations as they build and communicate their vision of the Metaverse. This knowledge will enable marketers and managers to inflect appropriate features of the platform and how it is communicated, in order to implement a thriving Metaverse.

Furthermore, the study contributes with an exploratory approach, i.a. studying whether there are relevant segmentation bases among those who intend to use the Metaverse for shopping. These could be demographical, or related to current social media or gaming usage. This is to the authors' knowledge unresearched, but would be relevant for marketers and selling actors within the Metaverse as they formulate their marketing strategies and perform market segmentations. Altogether, the authors expect to generate early insights into a field that is expected to grow rapidly.

1.5. Delimitations

To balance the ambition and scope of the thesis, several delimitations are made by the authors. First of all, the study is geographically limited to Sweden for convenience reasons. Even though the questionnaire is distributed online, and could hence be reached from a broader geographical scope, the immediate and intended geographical delimitation is Swedish respondents. Furthermore, to keep the questionnaire from becoming too lengthy and complex, the study is delimited to the shopping aspect of the Metaverse, hence excluding other usages of the Metaverse such as work, play and socialization. Shopping is not narrowed down to either physical goods, services or virtual goods, but rather studied as a whole concept. Finally, using the HMSAM as a conceptual framework (see 2.4.) means that other causal variables that could affect the shopping intentions in the Metaverse are not tested in the study.

2. Literature Review and Theoretical Foundation

In this chapter, the literature related to the thesis will be presented. The authors have primarily used the database *SSE library*, using the keywords: Metaverse, Virtual Reality, Virtual Stores, Virtual Goods, Virtual Worlds, Online Shopping, Online Purchase, E-commerce, V-Commerce, Meta-Commerce, TAM and HMSAM. Furthermore, a qualitative review of the leading journals in the field was made. The search generated plenty of results, although none of which targeted consumers' behavioral intentions related to shopping in the Metaverse. The relevant literature will be presented by first addressing virtual commerce, after which the conceptual framework upon which the study is built will be presented.

2.1. Virtual commerce

One of the latest developments of e-commerce is called “Virtual commerce”, and can be defined as the commercial activity conducted in an immersive virtual environment (Shen et al., 2021). Previous research has been made regarding for instance purchase behavior for virtual goods in free-to-play game environments (Hamari, 2015). However, since the Metaverse is more than just gaming or a virtual environment, and rather an integrated network of 3D virtual worlds (Dionisio et al., 2013) there is a lack of research on how to transform virtual commerce into what primarily can be called “meta-commerce” (Shen et al., 2021). The company Meta Platforms Inc. is already in progress, envisioning an environment potentially more powerful than regular 2D networks for things just like commerce (Lee, 2021). Additionally, as the full version of the Metaverse is far from complete, the motives for Metaverse use are still unexplored. More specifically, whether or not shopping could be such a motive is classified as a potential research area in the Journal of Interactive Advertising (Kim, 2021). Hence, what factors influence consumers' intentions to use the Metaverse for shopping is to the author's knowledge yet to be researched.

2.2. Technology Acceptance Litterature

When it comes to explaining whether or not users will accept a new technology that is presented to them, a widely accepted theory is the Technology Acceptance Model (TAM) (Venkatesh, 2000). More specifically, TAM was originally introduced to explain computer usage behavior in the late 1980s (Davis et al., 1989). By deriving from an earlier framework, the Theory of Reasoned Action, TAM specifies the causal linkages between perceived usefulness and perceived ease of use, and users' attitudes, intentions and actual computer adoption behavior. The findings of Davis et al. (1989) imply that perceived usefulness strongly influenced peoples' intentions, hence predicting computer

usage. Consequently, TAM is a relevant model when examining the commercial driving forces from the selling actor, and a helpful tool for predicting behavioral intentions among consumers being presented with new technology. However, the authors found TAM to have limitations as the factors focus on the user's reduction of effort and increased job performance (Davis et al., 1989), and fail to take into account aspects related to joy and intrinsic motivation, expected to be present in a Metaverse context. Accordingly, adoptions and extensions of TAM were reviewed.

Several proposed extensions of TAM have been made, one of which is referred to as TAM2 (Venkatesh & Davis, 2000). With this extension, the researchers explain perceived usefulness and usage intentions in terms of social influence, such as subjective norms, and cognitive instrumental processes, such as job relevance (ibid.). Furthermore, Venkatesh et al. (2003) formulated the unified theory of acceptance and use of technology (UTAUT), establishing four key constructs: performance expectancy, effort expectancy, social influence and facilitating conditions.

Finally, one extension of TAM has been made that is highly suitable for explaining the adoption of, inter alia, virtual worlds (Lowry et al., 2013). This alternative model called the hedonic-motivation system adoption model (HMSAM) is after careful consideration by the authors considered to be the most relevant in regards to the aim of the thesis (see 2.3.), whereby the literature review was narrowed down to this specific model.

2.3. Hedonic-Motivation System Adoption Model

HMSAM was originally built and tested to explain intentions to use Hedonic-Motivations Systems, systems used primarily to fulfill users' intrinsic motivations (Lowry et al., 2013). This model has been used to examine the factors affecting consumers' mobile shopping (Ertz et al., 2021) as well as games with virtual reality technology (Sampoerna et al., 2021). Based on the findings related to commerce in the Metaverse, the authors find the HMSAM suitable for examining what factors influence consumers' shopping intentions in the Metaverse.

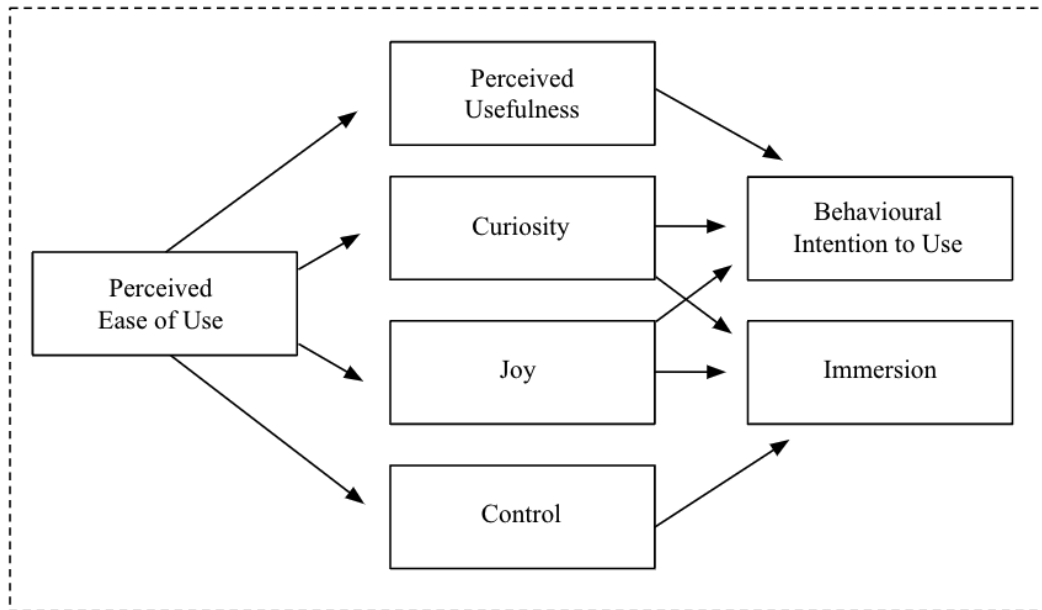


Figure 2. Lowry et al.'s final proposed Hedonic-Motivation System Adoption Model

The variables in Figure 2 are defined as follows. Perceived ease of use is defined as “the degree to which a person believes that using a particular system would be free of effort” (Davis et al., 1989). Perceived usefulness is defined as “the degree to which a person believes that using a particular system would enhance his or her job performance” (ibid.). Furthermore, curiosity is defined as “the extent the experience arouses an individual's sensory and cognitive curiosity” and joy is defined as “the pleasurable aspects of the interaction described as being fun and enjoyable rather than boring” (Agarwal & Karahanna, 2000). Control is “the user’s perception of being in charge of the interaction” and immersion is “the experience of total engagement where other attentional demands are, in essence, ignored” (ibid.). Lastly, behavioral intention refers to “a person’s subjective probability that he will perform some behavior” (Fishbein & Ajzen, 1975).

As illustrated in Figure 2, the HMSAM model suggests that perceived ease of use has a direct influence on perceived usefulness, curiosity, joy and control. Perceived usefulness, curiosity and joy are suggested to directly influence behavioral intention to use, while curiosity, joy and control directly influence immersion (Lowry et al., 2013). In their study, Lowry et al. (2013) conclude that perceived ease of use is mediated by joy, perceived usefulness and curiosity to predict behavioral intention to use.

2.4. Conceptual Model

The HMSAM model is used as a framework for this study, although with a few modifications. The variable immersion is not to be studied, as it refers to the actual use of the system, which extends beyond the boundaries of this thesis. The model used in this study rather draws a link between control and behavioral intentions to use. This is suggested to hold in a mobile shopping context (Ertz et al., 2021), hence assumed by the authors to hold in a Metaverse context. In addition, as immersion is found to have no significant impact on behavioral intention to use (Lowry et al., 2013), the authors find it redundant considering the research question. Furthermore, the authors modify the original HMSAM model by drawing a direct line from perceived ease of use to behavioral intention to use, as justified in 2.5.1 The authors' adapted version of the Hedonic-Motivation System Adoption Model can be seen in Figure 3. For convenience reasons, the dependent variable will several times be referred to as “behavioral intention to use” in the study, although it will always concern the more lengthy formulation “behavioral intention to use the Metaverse for shopping”, which is in line with the research question and aim of the study.

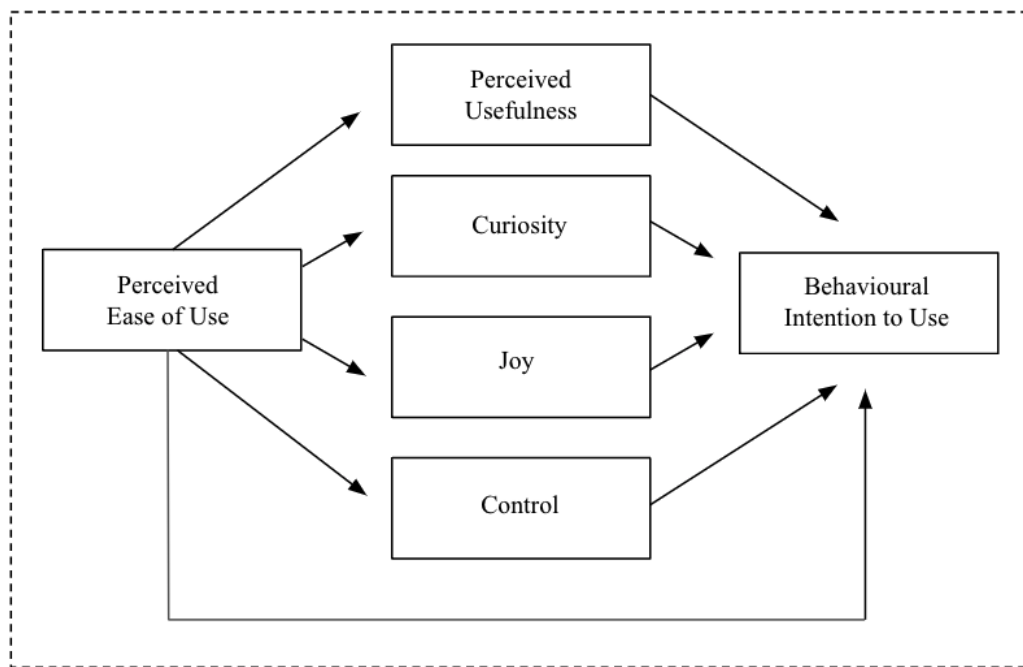


Figure 3. Overview of the authors' adapted version of the Hedonic-Motivation System Adoption Model

2.5. Hypotheses Development

2.5.1. Relationship Between Perceived Ease of Use and Behavioral Intention to Use

Since Lowry et al. (2012) found significant paths between perceived ease of use and perceived usefulness, curiosity, joy and control, we do not explicitly replicate hypotheses for these. In a mobile shopping context, support has been found in a US dataset for the hypothesis that perceived ease of use positively relates to behavioral intentions (Ertz et al., 2021). Also, studies show that consumers are more likely to accept a system they perceive as easier to learn and use (Pikkarainen et al., 2004). Hence, we posit the following hypothesis:

H1: Perceived ease of use relates positively to the behavioral intention to use the Metaverse for shopping.

2.5.2. Relationship Between Perceived Usefulness and Behavioral Intention to Use

When it comes to perceived usefulness, HMSAM posits a positive relationship with behavioral intentions in a gaming context (Lowry et al., 2012). Support for this relationship has also been found in a mobile shopping context (Ertz et al., 2021). Furthermore, research shows that utility, a concept related to perceived usefulness, positively correlates with user intentions (Watson et al., 2013). Since the Metaverse share many elements of both gaming and mobile shopping, we thus hypothesize:

H2: Perceived usefulness relates positively to the behavioral intention to use the Metaverse for shopping.

2.5.3. Relationship Between Curiosity and Behavioral Intention to Use

Curiosity is found to be a state that leads to additional engagement (Kashdan et al., 2004). Also, as curiosity about a system increases, the behavioral intention to use it likely increases as well (Qin et al., 2009). Overall, curiosity is found to be directly associated with greater use intentions in many various contexts, for example when it comes to the intentions to use e-cigarettes (Jongenelis et al., 2019) and when studying purchase intentions in a social media context (Shin & Lee, 2021). Thus, we hypothesize:

H3: Curiosity relates positively to the behavioral intention to use the Metaverse for shopping.

2.5.4. Relationship Between Joy and Behavioral Intention to Use

Building upon the previous arguments, we argue that perceived joy plays a significant role in the behavioral intention to use as it is an intrinsic motivation of interaction, similar to gaming and customizing an avatar (Birk et al., 2016). If the consumer perceives the usage of the Metaverse for performing the task of shopping, and thus customizing their avatar, as enjoyable, an increase in the behavioral intention of use would be a logical causal outcome. Consequently, if consumers believe that they will not enjoy the Metaverse, it would reasonably affect their intention for virtual shopping negatively. Thus, we hypothesize:

H4: Joy relates positively to the behavioral intention to use the Metaverse for shopping.

2.5.5. Relationship Between Control and Behavioral Intention to Use

Individuals, regardless of their age and previous experience with new technology, have a desire for control (Reiss, 2014). Consequently, we argue that an increase of consumers' control in their Metaverse experience will increase the behavioral intention to use the Metaverse for shopping. Accordingly, this also implies that if control would not be achieved, it would negatively affect the behavioral intention (Walter & Lopez, 2008) of using the Metaverse. Thus, we hypothesize:

H5: Control relates positively to the behavioral intention to use the Metaverse for shopping.

2.6. Overview of Hypothesis

The illustration below includes the authors' adapted version of the Hedonic-Motivation System Adoption Model for this thesis, along with an overview of the hypotheses.

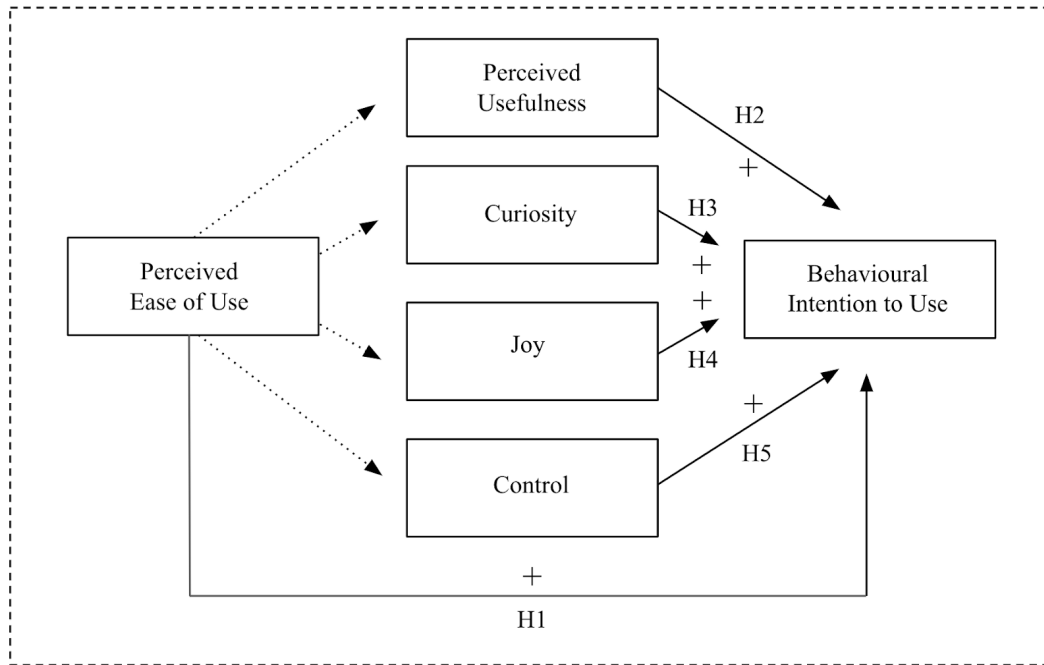


Figure 4. Adapted version of the Hedonic-Motivation System Adoption Model

Note: The dependent variable always refers to shopping intentions in the Metaverse.

3. Method

In this section, the choice of scientific approach will be explained and motivated, after which the authors will present previous work and the insights generated from a preparatory study. Additionally, the study design will be described thoroughly, and the distribution method of the questionnaire and a discussion about the quality of the generated data will be presented. Finally, this section contains a discussion about research reliability and validity, along with the respondents' survey judgment.

3.1. Scientific Research Approach

With this thesis, the authors aim to establish quantitative relationships between the independent factors perceived ease of use, perceived usefulness, curiosity, joy and control, with the behavioral intention to use the Metaverse for shopping. Hence, a paradigm of objective ontology and epistemological positivism is adopted to find the correlations between these variables (Bell et al., 2019). Accordingly, the authors take a deductive approach, as this is more relevant than induction or abduction to answer the research question and build hypotheses.

Following this, the quantitative research strategy is adopted by conducting an online questionnaire that is completed by the respondents in the absence of the authors. This method is very common in quantitative studies, despite the fact that the honesty of the respondents can not be fully guaranteed (Bell et al., 2019). Furthermore, an exploratory approach is integrated into the survey by demographic questions, as well as questions regarding e.g. the usage of social media, gaming platforms and previous knowledge of the Metaverse as a concept.

3.2. Previous Work

This study is inspired by a Canadian study focusing on the specific context of mobile shopping, examining the factors affecting consumers' mobile shopping intentions in China and the United States (Ertz et al., 2021). Although Ertz et al. use a modified version of HMSAM in their study, their construction of questions and measures, as well as the usage of a Likert-type scale, served as valuable inspiration for this thesis. Just as Ertz et al. applied HMSAM, initially developed to explain gaming, to the specific context of predicting mobile shopping adoption, we aim to contribute to research by applying HMSAM to another specific, and more uncharted context, namely the Metaverse.

3.3. Pre-studies and Insights From Pilot-Testing

Before administering a self-completion questionnaire it is always desirable, if possible, to conduct a pilot study (Bell et al., 2019). Hence, to ensure that the main study was of high quality, the online questionnaire was pilot-tested using a convenience sample of 7 respondents. These respondents were asked to look out for any flaws or ambiguity, as well as think out loud about their experience of completing the survey. This pilot testing gave the authors valuable insights into usability, tendencies of lost interest and the flow of the questions. Some of the feedback received concerned the similarity between questions having a demotivational effect. However, the authors decided to keep these questions for reliability reasons. Also, there were concerns that the explanation of the term “Metaverse” in the questionnaire was rather brief, whereby this section was improved and elaborated.

Finally, the authors were suggested to shorten a few questions regarding the usage of social media and the respondents’ gaming habits. This, in order to make the survey less time consuming, and hence decrease the likelihood of respondents dropping out halfway through. As these questions belonged to the explorative part of the study, the authors found it reasonable to follow this suggestion. The final version of the questionnaire was then constructed by incorporating the feedback received from the pilot testing.

3.4. Main Study

3.4.1. Questionnaire

The conducted study was in the form of a self-completion questionnaire distributed online (see Appendix 2). The survey was designed with the priority of providing a fluid and respondent-friendly experience. This by keeping the fonts, colours and overall layout simplistic and minimal. Furthermore, by attempting to avoid distractions from the design of the survey, the intention was to increase the number of completed surveys and allow the respondents to allocate their focus toward the questions within the survey.

The respondents were first welcomed and given the information that each completed survey would be matched with a 3 SEK donation to UNHCR. This, in light of the Russian invasion of Ukraine taking place in parallel to the release of the survey. The donation was made jointly by the authors of the thesis on March 30th, 2022. In addition, due to GDPR, the respondents were informed that all of their responses and data would be handled anonymously. Thereafter, the respondents were presented with the first part of the survey (Part 1A). This part had the objective of gathering information about the demographic variables, such as the respondents’ age, gender, employment status and nationality. Questions about their usage of social media, online shopping behavior,

gaming habits, perceived knowledge of the Metaverse and their ability to adapt to new technology were also added. In total, Part 1A consisted of 18 questions.

Part 1B of the questionnaire was tailored toward gathering further information regarding the respondent's gaming habits. If the respondent previously answered that they “Never” play video games, this part would automatically be detracted from the survey. This part gathered information about the gaming genres played, and the frequency of in-game purchases made by the respondents. In total, Part 1B consisted of two questions.

After completing the first part of the survey, respondents were directed to the second part (Part 2). In this part, respondents were first introduced to a short description of the Metaverse. Afterwards, respondents were instructed to watch a 36-second long video (see Appendix 3). Given the challenges of illustrating the phenomenon of experiencing the Metaverse as it is yet not fully developed, the authors viewed the addition of a video as a reasonable solution. The presented video was therefore carefully selected with the objective of providing the best-illustrated scenario published by a relevant technology company, being Meta Platforms, Inc. To further clarify the scenario, a text was later presented describing the content of the video shown. Subsequently, respondents were introduced to three matrix questions with six to seven questions each, all of which consisted of balanced Likert scales with 7-points for each variable measured. Included at the end was a control question to determine if the respondent paid attention to the survey. In total, Part 2 consisted of 19 questions.

Lastly, respondents were introduced to the third and final part of the survey (Part 3). This part allowed the respondent to share their thoughts regarding the clarity of the questions and the answer options presented in the survey. Respondents also had the opportunity to share if they felt pressured by the survey to answer in a specific way and, if needed, write their final comments. In total, Part 3 consisted of three questions. The entirety of the survey consisted of 40 to 42 questions depending on the individual respondent.

3.4.2. Survey Flow

The illustration below includes the number of respondents that completed each part of the survey. The “End of the survey” (i.e. $n = 200$) only included the number of respondents that successfully completed the survey and that was over the age of 18, while also answering the control question correctly.

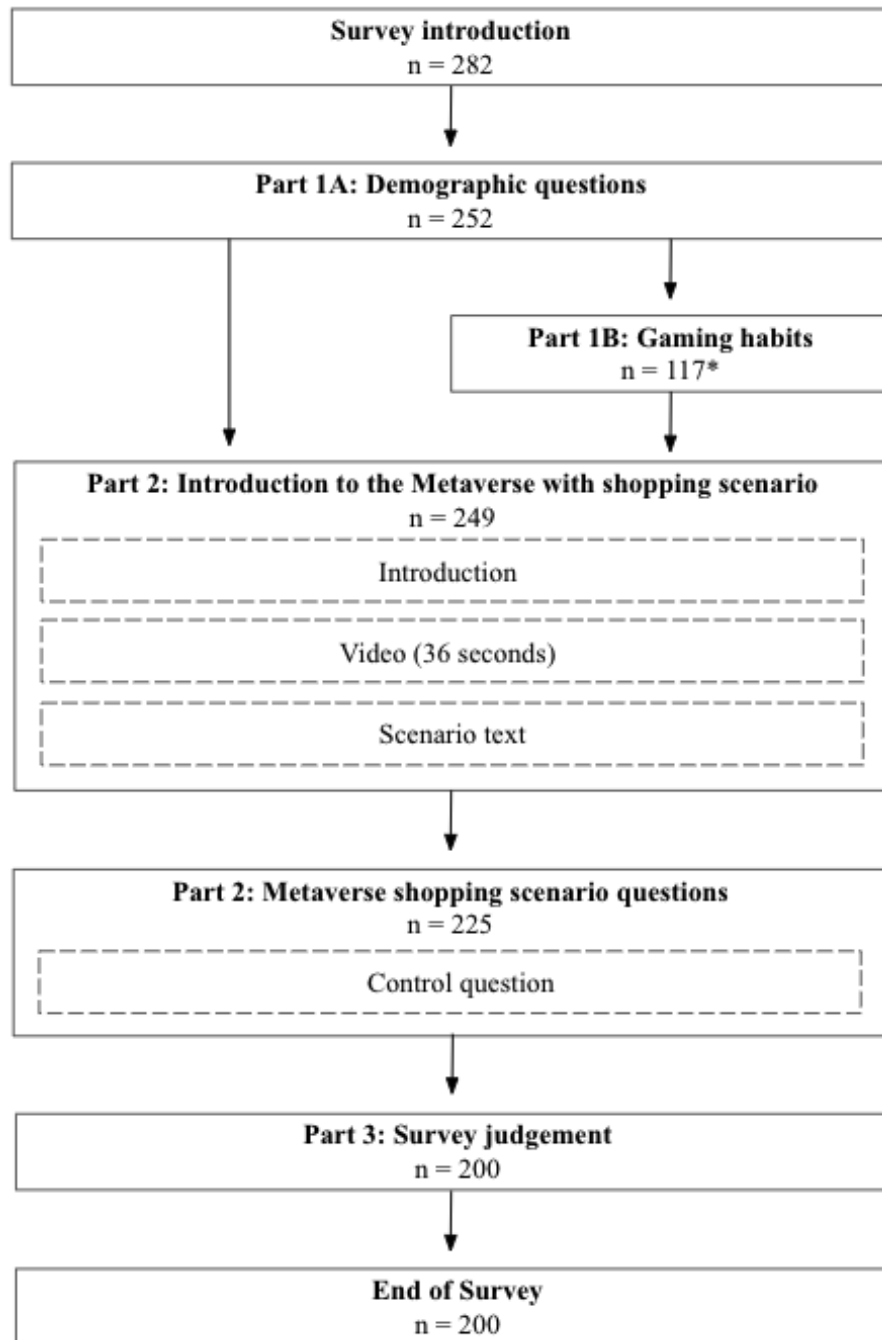


Figure 5. Visualization of the survey flow and number of respondents per part

*Out of the 117 respondents, a total of 98 valid responses were gathered in Part 1B.

3.4.3. Dependent Variable

This thesis has the objective of exploring the dependent variable ‘behavioral intention to use’, defined as “a person’s subjective probability that he will perform some behavior”

(Fishbein & Ajzen, 1975). Throughout this thesis, “use” refers to using the Metaverse as a platform for shopping. This dependent variable will thus explore whether the Metaverse has a wider system use for transactions by individual consumers. As described in the literature review and theoretical framework, the origins behind the dependent variable stem from the authors’ adapted version of the Hedonic-Motivation System Adoption Model, which in turn will serve as the basis for the analysis within this thesis. The variable in question is studied by using three statements related to Metaverse usage, one of which is “When possible, I plan on using the Metaverse for shopping”. The respondent is asked to tick their answer on a scale from “1. Strongly disagree” to “7. Strongly agree”. The full questionnaire, as well as the questions related to each variable, can be found in Appendix 2 and 4 respectively.

3.4.4. Independent Variables

When measuring the independent variables, the scales used in the thesis are crafted to be of the same nature. The scales used when gathering the data are balanced Likert scales with 7-points. Below are the definitions of the variables studied, as well as examples of questions used to collect data from the respondents. Again, a full summary of the questions can be found in Appendix 4.

Perceived ease of use

Perceived ease of use is defined as “the degree to which a person believes that using a particular system would be free of effort” (Davis et al., 1989). Hence, one of the statements to which the respondent can choose between alternatives on a scale ranging from “1. Strongly disagree” to “7. Strongly agree” is “Shopping in the Metaverse does not seem to require a lot of my mental effort”.

Perceived usefulness

Perceived usefulness is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis et al., 1989). One of the statements related to this variable is thus, “Shopping in the Metaverse could increase my productivity”.

Curiosity

Curiosity is defined as “the extent the experience arouses an individual's sensory and cognitive curiosity” (Agarwal & Karahanna, 2000). Hence, one of the statements presented to the respondent is “I find the idea of shopping virtually in the Metaverse interesting”.

Joy

Joy is defined as “the pleasurable aspects of the interaction described as being fun and enjoyable rather than boring” (Agarwal & Karahanna, 2000). This variable is studied by i.a. asking the respondent to state to which degree they agree with the statement “Shopping in the Metaverse seems fun”.

Control

Control is “the user’s perception of being in charge of the interaction” (Agarwal & Karahanna, 2000). As with the other variables, the respondent is asked three statements to which they can choose between alternatives on a scale ranging from “1. Strongly disagree” to “7. Strongly agree”. One of these statements is “I seem to be able to decide for myself what to buy in the Metaverse”.

Additional variables

As an explorative part of the study, demographic variables such as gender, age and occupation are studied, as well as social media use and gaming habits. The inspiration behind the chosen additional variables stems mainly from the study by Ertz et al. (2021). Furthermore, the authors find it reasonable to assume that e.g. gaming habits could have an influence on shopping intentions in the Metaverse, as a respondent who is familiar with the virtual worlds in games could possibly come to accept the Metaverse more easily, as it is envisioned to consist of a network of virtual worlds. Apart from exploring and analyzing these variables’ potential effects, they are also included in order to study the composition of the sample.

3.5. Data Collection, Quality of Data and Analysis

3.5.1. Data Collection and Sample

The final version of the questionnaire was distributed using convenience sampling on Facebook, LinkedIn, Instagram and via email. Although probability sampling is generally preferred as it enables making generalizations (Bell et al., 2019), a convenience sample was regarded as more appropriate when considering cost-efficiency and the scope of the thesis. To increase the response rate, the survey was introduced through a short text bringing attention to the fact that each valid response would result in a donation to the UN Refugee Agency (UNHCR). Furthermore, a snapshot from the video integrated within the questionnaire was attached to draw attention to the post. The authors also aimed to obtain snowball sampling by asking other users to share the questionnaire, although with moderate success. The survey was distributed between the 2nd of March and the 23rd of March, 2022. In total, 200 valid responses were collected.

3.5.2. Quality of Data

In total, 282 participants took part in the study. Included were all participants who entered and started the online self-completion questionnaire. In preparation for the analysis of the gathered data, respondents that had not progressed 100% of the study were excluded, alongside those that were under the age of 18. Moreover, participants who did not successfully answer the control question at the end of the second part of the survey (Part 2) were also excluded. The control question had the objective of excluding participants that did not pay attention to the questions asked and/or the given multiple-choice alternatives.

Additionally, a qualitative analysis between the included and excluded groups was performed by the authors. The results indicate that the excluded group of participants did not answer similarly to the included group of participants, hence validating the decision to exclude these respondents from further analysis.¹ Notably, the authors discovered that the actual views of the YouTube video integrated into the questionnaire did not correspond to the number of respondents completing the questionnaire, implying that some of the respondents did not watch the video. However, as the scenario was presented both through video and text, the authors find it reasonable to assume that the respondents who skipped the video, gained enough understanding of the scenario to answer the questionnaire well and truly. Additionally, the authors are not fully knowledgeable of the accuracy of the reported views on YouTube, hence validating the decision to disregard this inconsistency.

3.5.3. Data Analysis

The software used in executing the questionnaire was the online tool Qualtrics, provided by Stockholm School of Economics. Subsequently, the collected data was imported to IBM SPSS Statistics 28 where the authors conducted all statistical analyses. Initially, the descriptive data regarding the participant's socio-demographic aspects were summarized. Descriptive data regarding, for instance, the respondent's ability to adapt to new technology, their perception of the Metaverse, and gaming habits were also summarized. In preparation for the analysis, the questions were coded in a range of either 1 to 5, or 1 to 7 depending on the number of multiple-choice alternatives per respective question. A variable was computed by dividing the respondents' age into six different categories as shown in Table 2. Additionally, the variable "Social media usage frequency" was computed by summarizing the value (1-7) from each platform, dividing the sum by seven, and then dividing the respondents into 7 different categories.

¹ In qualitatively analyzing the respondents that incorrectly answered the control questions, the authors noticed multiple patterns. These patterns included respondents creating intentional zigzag patterns in the matrix questions, while other respondents used only one answer alternative, for instance "Strongly disagree" or "Disagree", thus creating an intentional straight line across all of the matrix questions.

Additionally, an evaluation of the reliability was done for all indexed variables using Cronbach's alpha. Also, Pearson's correlation test was done for these variables to find significant relationships between the independent variables and the dependent variable (Table 7). Finally, multiple linear regression analyses were conducted in six steps (see Appendix 5) as shown in Tables 8-9. To start off, the effects on the dependent variable were measured using only control variables. In the second to the sixth step, each of the five independent variables were subsequently included in the analysis. As such, the last model includes all of the independent variables.

3.6. Research Reliability and Validity

3.6.1. Reliability

One of the most prominent criteria for evaluating the quality of business research is reliability, a measurement concerned with the repeatability of the results of a study. To test internal reliability, Cronbach's alpha is commonly used. A computed Cronbach's alpha varies between 0 and 1, where 1 denotes perfect internal reliability and 0 denotes a complete lack of internal reliability. What denotes an acceptable level of the measure varies between researchers, although above 0.7 is typically considered to be efficient. (Bell et al., 2019)

Consequently, Cronbach's alpha was calculated to test the reliability of the measures. The results of the tests are shown in Table 1. As all of the measurements generated a Cronbach's alpha of > 0.7 , the authors argue that the variables can be seen as reliable according to the academic norms.

Table 1. Overview of Cronbach's Alpha

Variable	N	Cronbach's Alpha	N of Items
	200		
Perceived ease of use		.799	3
Perceived usefulness		.841	3
Curiosity		.916	3
Joy		.909	3
Control		.852	3
Behavioral intention to use		.937	3

3.6.2. Validity and Survey Judgment

Validity refers to whether an indicator that is devised to gauge a concept actually measures that concept or not (Bell et al., 2019). Several measures were taken by the authors in order to ensure the validity of the study and to gain knowledge of how the respondents perceived the online survey. These include using well-established measuring scales, pilot testing, a control question, a survey judgment, and giving the respondents a chance to leave a comment. As the definitions of the variables, as well as the questions related to the variables, have a strong theoretical connection, the authors argue that the construct and content validity is sufficient. However, a convenience sample was used, whereby the possibility to make generalizations from the results can be questioned.

To gain insight into how respondents perceived the questionnaire, while securing validity, the survey contained an evaluation at the end based on a 7-point Likert scale. In the evaluation, 85.5% of respondents answered “Agree” or “Strongly agree” to the statement that the questions were clearly formulated. Meanwhile, 89.0% of respondents answered “Agree” or “Strongly agree” to the statement that the answer options were clearly formulated. Moreover, 83.0% of respondents answered “Strongly disagree” or “Disagree” to the statement that they felt pressured by the survey to answer in a specific way. Observe that no respondent answered “2. Disagree” in Figure 6.

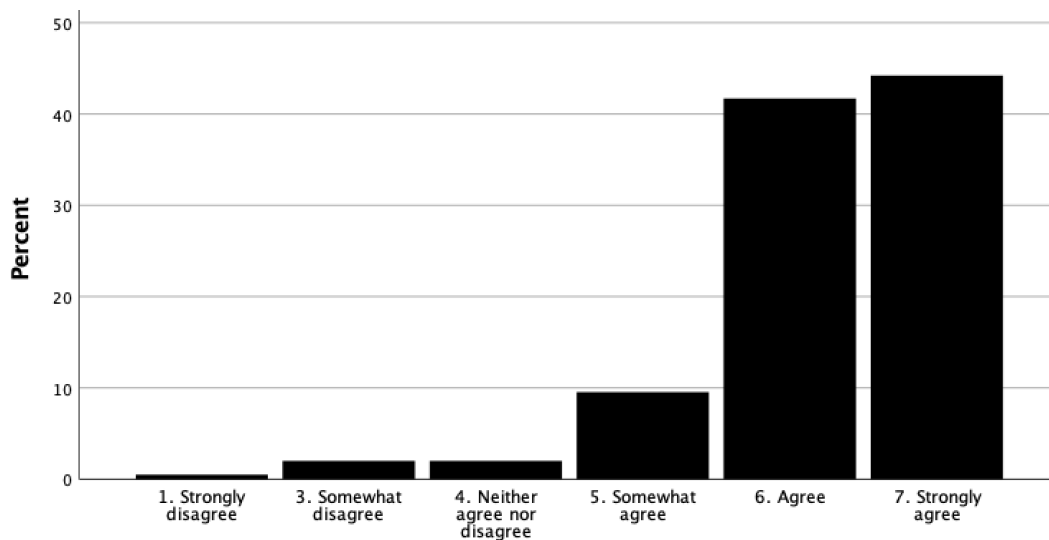


Figure 6. Survey judgment for respondents regarding the statement “The questions in this survey were clearly formulated”

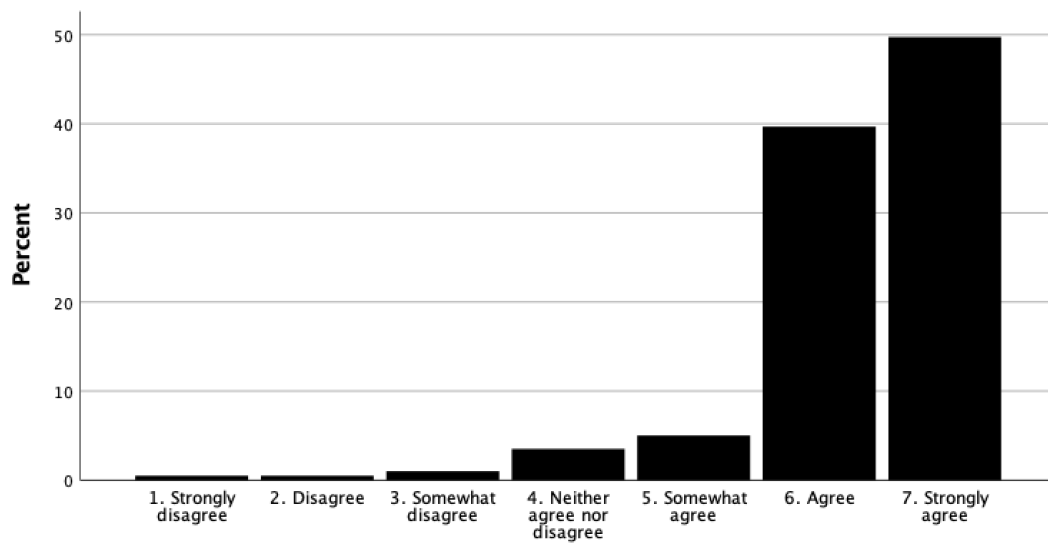


Figure 7. Survey judgment for respondents regarding the statement “The answer options in this survey were clearly formulated”

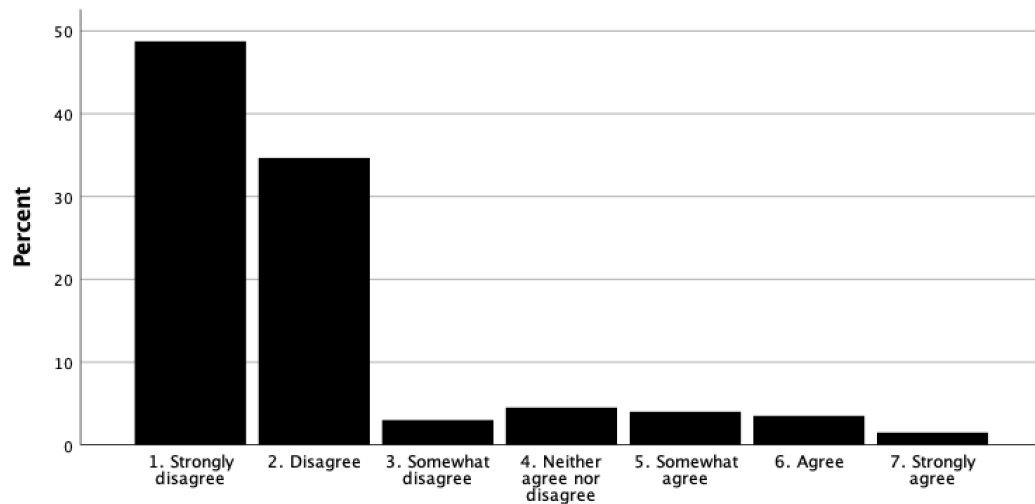


Figure 8. Survey judgment for respondents regarding the statement “I felt pressured by the survey to answer in a specific way”

4. Results

4.1. Descriptive Statistics

The majority of the 200 valid respondents from the survey were female. Additionally, 47.0% of the respondents were full-time employed, while 75.5% of respondents had only a Swedish nationality. A total of 57.5% of respondents were 18-35 years old.

Table 2. Overview of socio-demographic variables

Variable	N	n	% of total sample
	200		
Gender			
Male		73	36.5
Female		124	62.0
Non-binary / third gender		1	0.5
Prefer not to say		2	1.0
Nationality*			
Swedish		151	75.5
Swedish and other		22	11.0
Other		27	13.5
Age (years)*			
18-25		53	26.5
26-35		62	31.0
36-45		25	12.5
46-55		23	11.5
56-65		20	10.0
> 65		17	8.5
Occupation			
Student (incl. those also employed)		73	36.5
Unemployed		5	2.5
Part-time employed		11	5.5
Full-time employed		94	47.0
Retired		19	9.5

Note: The percentages may not equal 100% due to rounding errors.

* Respondents could freely enter their nationality and age in the questionnaire. For presentation and analysis purposes, the respondents' answers have been divided into groups.

4.1.1. Social Media Usage Statistics

Table 3 indicates that the most frequently used social media platforms among respondents were Facebook, Messenger and Instagram with 66.0%, 63.5% and 63.5% respectively of respondents using them every day. In contrast, the least frequently used social media platforms among respondents were WeChat, TikTok, Snapchat and Twitter with 91.5%, 67.0%, 57.0% and 55.0% respectively of respondents never using them.

Table 3. Overview of respondents' usage of social media apps/platforms in %

Variable*	Never	A few times a year	A few times a month	A few times a week	Every day
Facebook	2.0	3.0	5.0	20.5	66.0
Messenger	2.0	3.0	6.0	21.0	63.5
WhatsApp	23.5	14.0	11.5	18.5	29.0
YouTube	2.5	7.0	23.5	31.0	32.0
Instagram	9.0	5.0	5.5	12.5	63.5
TikTok	67.0	0.5	6.5	7.5	14.5
Twitter	55.0	12.0	10.5	8.0	10.0
Snapchat	57.0	4.5	6.5	8.5	19.5
WeChat	91.5	1.0	2.0	0.5	0.5
LinkedIn	26.5	13.0	14.0	27.0	15.5

Note: The percentages may not equal 100% due to rounding errors, and due to some respondents not ticking an alternative for all apps/platforms.

* The apps/platforms have been selected as they, to the authors, represent a variety of social media apps/platforms currently being used in Sweden and globally.

4.1.2. Additional Descriptive Statistics

A majority of respondents that shop online do so with a frequency of a few times a month. In addition, 68.5% of respondents either “Agree” or “Strongly agree” to finding it easy to use and learn new technology. In contrast, only 2.5% of respondents view their perceived knowledge and understanding of the Metaverse as “Very Strong”, while 23.5% of respondents view it as “Very poor”.

Table 4. Overview of additional descriptive variables

Variable	N	n	% of total sample
	200		
Frequency of online shopping			
Never		4	2.0
A few times a year		65	32.5
A few times a month		111	55.5
A few times a week		19	9.5
A few times a day		1	0.5
“I find it easy to use and learn new technology”			
Strongly agree		68	34.0
Agree		69	34.5
Somewhat agree		37	18.5
Neither agree or disagree		8	4.0
Somewhat disagree		9	4.5
Disagree		7	3.5
Strongly disagree		2	1.0
Perceived knowledge and understanding of the “Metaverse”			
Very strong		5	2.5
Strong		14	7.0
Somewhat strong		40	20.0
Neither poor or strong		44	22.0
Somewhat poor		22	11.0
Poor		28	14.0
Very poor		47	23.5

Note: The percentages may not equal 100% due to rounding errors.

4.1.3. Gaming Statistics

Table 5 indicates that 51.0% of respondents never play video games. Among the respondents that do play video games, the three most popular genres were strategy, open world and action with 27.0%, 23.5% and 23.0% respectively of respondents playing. Moreover, 30.0% of respondents never make any in-game purchases, while 15.0% do make in-game purchases with a frequency of at least once a year.

Table 5. Overview of gaming variables

Variable	N	n	% of total sample
	200		
Frequency of playing video games			
Never		102	51.0
A few times a year		42	21.0
A few times a month		22	11.0
A few times a week		23	11.5
A few times a day		11	5.5
	98		
Frequency of video game genres*			
Simulation		35	17.5
Open world		47	23.5
Strategy		54	27.0
Action		46	23.0
Role-playing		25	12.5
Sports		35	17.5
Other		23	11.5
Frequency of in-game purchases			
Never		60	30.0
A few times a year		30	15.0
A few times a month		7	3.5
A few times a week		1	0.5
A few times a day		0	0

Note: The percentages may not equal 100% due to rounding errors.

* Respondents were able to tick multiple video game genres in the survey. As such, the total number of responses for the frequency of video game genres question is greater than N = 98. These genres, to the authors, represent a variety of the most played in Sweden and globally.

4.1.4. Computed Variables

Table 6 presents the means and standard deviations for the variables computed by transforming the results from the questions to the variables to which they relate. Scores for the variables could range from “1. Strongly disagree” to “7. Strongly agree”. All questions, as well as their respective means and standard deviations, can be found in Appendix 4.

Table 6. Overview of the means and standard deviations of the indexed variables

Variables	Mean	SD
Perceived ease of use	5.00	1.29
Perceived usefulness	3.47	1.47
Curiosity	3.97	1.80
Joy	3.91	1.73
Control	4.38	1.47
Behavioral intention to use	3.36	1.74

4.1.5. Pearson Correlation Matrix

In order to conduct a statistical test for the significant relationships between the indexed variables, Bivariate Pearson correlations was used. From the results in Table 7, the variables joy and curiosity indicated a correlation of 0.878. These variables could be argued as to some respondents being perceived as similar, thus measuring similar behavioral intentions. However, given the results from the survey judgment (see Figures 6-8), the authors find it reasonable to assume that respondents recognized the intended distinctions between the variables, as defined in 3.4.4..

Table 7. Pearson correlation matrix for the indexed variables

Variable	N = 200	1	2	3	4	5	6
1. Perceived ease of use	Pearson's r Sig.	1					
2. Perceived usefulness	Pearson's r Sig.	.312** <.001	1				
3. Curiosity	Pearson's r Sig.	.194** .005	.797** <.001	1			
4. Joy	Pearson's r Sig.	.252** <.001	.767** <.001	.878** <.001	1		
5. Control	Pearson's r Sig.	.509** <.001	.490** <.001	.404** <.001	.446** <.001	1	
6. Behavioral intention to use	Pearson's r Sig.	.244** <.001	.821** <.001	.867** <.001	.842** <.001	.461** <.001	1

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

4.2. Multiple Linear Regression

To predict the behavioral intentions to use the Metaverse for shopping, several multiple regressions were performed. A total of six models were performed, adding additional independent variables in each model analyzed (see Appendix 5). In order to facilitate the multiple regression analysis, gender was coded into either female or male. This resulted in the exclusion of 3 respondents.² Social media usage frequency was coded as an average of each respondent's usage of included apps/platforms in the survey, as described in 3.5.3.. As the objective was to incorporate the respondents' average usage of social media, and not the specific usage per app/platform included in the survey, the authors reasoned this would be a suitable method. Some of the questions in the questionnaire were not computed into variables in the regression analysis, such as what genre of games the respondent played, occupation and nationality. The reason for this was that the questions were considered by the authors not to be of importance in regard to the scope of the research question. Also, the authors did not find it reasonable to code the responses into valid and reliable scales that would be of interest in the analysis.

4.2.1. Multiple Linear Regression Model 1

The results for Model 1 show an adjusted R^2 of 0.050. No significant predictors of behavioral intentions to use the Metaverse for shopping were identified at $p < 0.05$.

² A total of three respondents identified themselves as “Non-binary / third gender” or “Prefer not to say”, representing 1.5% of the total sample. These respondents were subsequently excluded in order to enable the multiple regression analysis. The authors reasoned that this would not affect the result as only a small proportion of the total sample was excluded.

Table 8. Linear regression model 1 for behavioral intention to use

Unstandardized coefficients	
Variables	Model 1
	<i>B</i>
Age	-0.01 (.16)
Dummy gender (male)	.60 (.42)
Online shopping Frequency	.26 (.33)
Perceived ease of use of new technology	.11 (.20)
Perceived knowledge of the Metaverse	.06 (.14)
Gaming frequency	.12 (.21)
In-game purchase frequency	.32 (.37)
Social media usage frequency	.24 (.20)
Key Statistics	
N	197
Adjusted R^2	0.050

Note: Dependent variable behavioral intention to use * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Standard errors are indicated in parentheses.

4.2.3. Multiple Linear Regression Models 2-6

The results for model 6 show an adjusted R^2 of 0.823. Perceived usefulness, curiosity, joy and age were identified as significant predictors of behavioral intentions at $p < 0.05$ and at $p < 0.001$ when all of the independent variables were included. As such, the data indicates that a high degree of perceived usefulness, curiosity, joy, and a higher age, indicates a higher behavioral intention to use the Metaverse as a platform for shopping.

Table 9. Multiple linear regression models 2-6 for behavioral intention to use

Variables	Unstandardized coefficients				
	Model 2	Model 3	Model 4	Model 5	Model 6
	<i>B</i>	<i>B</i>	<i>B</i>	<i>B</i>	<i>B</i>
Age	.02 (.16)	.13 (.09)	.18* (.08)	.17* (.07)	.17* (.07)
Dummy gender (male)	.57 (.41)	.03 (.24)	.06 (.19)	.09 (.19)	.11 (.18)
Online shopping frequency	.27 (.32)	.19 (.18)	.15 (.15)	.27 (.15)	.27 (.15)
Perceived ease of use of new technology	.01 (.21)	-.03 (.12)	.09 (.10)	.10 (.09)	.10 (.09)
Perceived knowledge of the Metaverse	.10 (.14)	.08 (.08)	-.01 (.06)	-.01 (.06)	-.01 (.06)
Gaming frequency	.14 (.21)	-.02 (.12)	.02 (.10)	.05 (.09)	.04 (.09)
In-game purchase Frequency	.32 (.37)	.14 (.21)	.09 (.17)	-.00 (.17)	.00 (.16)
Social media usage Frequency	.28 (.20)	.10 (.11)	.09 (.09)	.08 (.09)	.07 (.09)
H1: Perceived ease of use	.35 (.23)	-.04 (.13)	.08 (.11)	.07 (.11)	.00 (.11)
H2: Perceived usefulness		.99*** (.08)	.45*** (.10)	.41*** (.10)	.37*** (.01)
H3: Curiosity			.56*** (.08)	.40*** (.10)	.42*** (.10)
H4: Joy				.26* (.11)	.25* (.11)
H5: Control					.13 (.07)
Key Statistics					
N	197	197	197	197	197
Adjusted R^2	0.066	0.700	0.807	0.819	0.823

Note: Dependent variable behavioral intention to use * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Standard errors are indicated in parentheses.

4.3. Hypotheses Testing

Table 10 summarizes hypotheses H1 to H5 and whether they are empirically supported or not. The hypotheses that are empirically supported showed significant p-values in the performed multiple regression model 6, with all of the independent variables included.

Table 10. Summary of hypotheses

H1	Perceived ease of use relates positively to the behavioral intention to use the Metaverse for shopping.	Not empirically supported
H2	Perceived usefulness relates positively to the behavioral intention to use the Metaverse for shopping.	Empirically supported ***
H3	Curiosity relates positively to the behavioral intention to use the Metaverse for shopping.	Empirically supported ***
H4	Joy relates positively to the behavioral intention to use the Metaverse for shopping.	Empirically supported *
H5	Control relates positively to the behavioral intention to use the Metaverse for shopping.	Not empirically supported

Note: Dependent variable behavioral intention to use * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

5. Discussion

The primary aim of the thesis is to generate an understanding of the factors influencing the shopping intentions among consumers in what ought to be the next generation of the internet, the Metaverse, with the following research question:

- *What behavioral factors influence consumers' intentions to use the Metaverse for shopping?*

5.1. Conclusions and Implications

5.1.1. Descriptive

The majority of the respondents were female between the age of 18 and 35. From the analyzed descriptive variables, the respondents' gender had no significant effect on the behavioral intentions to use the Metaverse for shopping. This indicates that limited focus should be allocated to communication targeted toward consumers with a certain gender as it evidently has no significant effect. Furthermore, the respondents' age had a significant positive effect on the behavioral intention to use the Metaverse as a platform for shopping, suggesting that a higher age increases the shopping intention in the Metaverse. However, the results vary between the different regression models and show a rather small effect. The authors hence argue that this effect is likely to be random, possibly due to outliers or a non-normal distribution. As the age variable is a control variable, and not part of the main study, the authors find it reasonable not to analyze this further, but rather to disregard the results. However, the authors find the results interesting and argue that they could be worth investigating further.

5.1.2. Perceived Ease of Use

Despite the findings by Ertz et al. (2021) and Pikkarainen et al. (2004) referred to in 2.5.1., perceived ease of use was not found to significantly correlate positively with the consumers' behavioral intention to use the Metaverse for shopping. However, with a mean of 5.00 on a scale from 1 to 7, it can be concluded that on average respondents "Somewhat agree" that how to shop in the Metaverse seems e.g. clear, understandable and easy. The relationship between perceived ease of use and the other independent variables was not tested further, although the literature makes these positive relationships clear. It is, therefore, reasonable to assume that there might still be an indirect effect of perceived ease of use on behavioral intention to use the Metaverse for shopping.

5.1.2. Perceived Usefulness

The authors found empirical support that perceived usefulness had a significant and positive relationship to the behavioral intention to use the Metaverse for shopping. However, the descriptive analysis showed that the variable perceived usefulness had a rather low mean of 3.47 with a standard deviation of 1.47, suggesting that respondents were not convinced of the usefulness of the Metaverse as a shopping platform. These results imply that companies aiming to take part in commerce in the Metaverse should focus on communicating how the platform could be useful for the consumer, and how it can improve their effectiveness and productivity, in order to boost their shopping intentions.

5.1.3. Curiosity

In line with the studied literature, the authors found curiosity to significantly and positively correlate with behavioral intentions to use. With a mean of 3.97 and a standard deviation of 1.80, it is however clear that there are opportunities for improvement regarding this variable. Consequently, efforts have to be made to increase the consumers' curiosity regarding shopping in the Metaverse, in order to increase the likelihood of usage intentions.

5.1.4. Joy

Joy was hypothesized to play a significant role in the behavioral intention to use. The results indicate that joy indeed has a positive effect on behavioral intention to use the Metaverse for shopping, although on a significance level of $p < 0.05$. This might have practical relevance for the developers of the Metaverse, as the decision making among consumers in the Metaverse is implied to include less rational elements, and rather more pleasurable aspects of interaction described as being fun and enjoyable rather than boring (Agarwal & Karahanna, 2000).

5.1.5. Control

Divergent from the findings of Ertz et al. (2021), the authors could not find empirical support for control relating positively and significantly to behavioral intention to use. One possible explanation for this can be that the presentation of the scenario through text and video did not sufficiently give the respondents an accurate possibility to evaluate the level of control included in an imagined shopping scenario. Although, the findings are in line with the original HMSAM model by Lowry et al. (2013), where no direct relationship is found between control and behavioral intention to use, but rather between control and immersion. As this study does not include the variable of

immersion, the possible effect that control has on consumers' immersion in a Metaverse context remains uncharted. However, as the HMSAM model is suitable for explaining the adoption of virtual worlds (Lowry et al., 2013), another explanation for the results regarding the variable control can be that the Metaverse bears more resemblance with the virtual worlds studied by Lowry et al. (2013) than the mobile shopping context studied by Ertz et al. (2021).

5.1.6. Additional Variables

Additionally, it can be concluded that neither gaming habits, online shopping frequency, and the ease of learning new technology, nor the frequency of social media use, seem to significantly affect the shopping intentions in the Metaverse. Rather, the six steps taken when performing the multiple linear regressions indicate that these variables have a very low explanatory value. This indicates that the success of the Metaverse will come down to how developers manage to build the Metaverse and its shopping features, rather than what previous knowledge and background of the potential users have. This further implies that if the developers manage to evoke e.g. joy and curiosity, it will be an attractive platform for shopping not only for the very heavy social media users or gamers but rather for a much wider audience.

5.2. Key Findings and Summary of Implications

The key findings of this study can be summarized as follows:

The consumers' current intentions to use the Metaverse for shopping when possible entails room for improvement. The factors that are shown to significantly and positively influence the usage intentions are perceived usefulness, curiosity and joy. Hence, developers and marketers are suggested to focus on these factors when developing the platform and communicating their visions of the Metaverse. This, in order to minimize misdirected marketing efforts and boost shopping intentions among consumers.

To summarize, this study contributes to researchers and organizations by pinpointing the factors influencing consumers' intentions to use the Metaverse for shopping. These insights can support the decisions being made when building features of the Metaverse and when communicating the current visions, in order to boost the usage intentions and create a thriving Metaverse. Furthermore, the findings from the exploratory part of the study speak for the fact that marketers today should put limited focus on market segmentation. Rather, the marketing efforts should be directed toward communicating the usefulness of the platform to a broad target group and evoking feelings such as curiosity and joy.

However, there are several limitations to this study that should be taken into consideration when analyzing the key findings, as discussed in 5.3.. Also, although this study generates early insights regarding the Metaverse and consumers' shopping intentions, this field is expected to grow rapidly, whereby further research is encouraged. The final section of this thesis will address these two matters.

5.3. Limitations

The authors have limited this thesis to study the Metaverse in accordance with the present view of the Metaverse's functionality as a platform for shopping. Therefore, no distinction has been made between products that are either digital or physical. Due to the non-existent guidelines regarding how physical versus digital products will be purchased, the authors viewed it as prudent to not accentuate any distinction between these products within the thesis and the online self-completion questionnaire.

The authors presented to the respondents of the survey a potential shopping scenario in the Metaverse in the form of a short video (see Appendix 3) and text (see Appendix 2). The purpose was to showcase a scenario of how the Metaverse, with avatars, might look when first launched for the average consumer using a virtual headset. This leads to the authors observing further limitations, as the virtual worlds within the Metaverse will depend on the developer (Dionisio et al., 2013). As such, differences in terms of design, usability and more will, most likely, depend on the virtual world in question despite the interchangeability across platforms (ibid.). Additionally, the survey was limited in its ability to reflect the immersion of the Metaverse. The presented video was therefore carefully selected with the objective of providing the best-illustrated scenario published by a relevant technology company, being Meta Platforms, Inc.. As other technology companies such as Microsoft, Amazon, Apple and Alphabet (Google) have yet to publish a video of a probable shopping scenario in the Metaverse, the selected video was, according to the authors, best suited for the purpose of the survey. Therefore, despite these limitations, the method used was deemed appropriate given the scope and limited resources of the thesis.

Furthermore, the authors discovered that the actual views of the YouTube video integrated into the questionnaire did not correspond to the number of respondents completing the questionnaire, implying that some of the respondents did not watch the video. In order to mitigate this anticipated limitation, the authors included the text describing the presented Metaverse shopping scenarios in the survey. Therefore, as discussed in 3.5.2., the authors find it reasonable to assume that the respondents who skipped the video gained enough understanding of the scenario to answer the questionnaire well and truly.

Lastly, the authors gathered the analyzed data as a convenience sample, as discussed in 3.5.1.. This, as the survey was predominantly distributed towards the private social networks of the authors, given the cost-efficiency and the scope of the thesis. Therefore, the respondents' variety of nationality, age, occupation and socio-economic background, further limits this thesis.

5.4. Mitigation of Limitations and Future Research

The authors have identified opportunities to mitigate the limitations discussed in 5.3.. With increased resources, respondents could be invited to explore multiple shopping scenarios in the Metaverse through a consumer developed head-set device, and thus incorporate the factor of immersion into the results and analysis. These virtual shopping scenarios would have to be created for the potential study in question. Additionally, gathering data from respondents with a higher degree of variety in nationality, age, occupation and socio-economic background could also further strengthen the results given the intended global reach of the Metaverse as a platform for shopping. As the results regarding the age variable in particular were neglected in this study, the authors find this variable to be specifically interesting to study to a greater extent.

Furthermore, the authors also encourage all studies that continue to expand the understanding and explore the behavioral intentions to use the Metaverse as a platform for shopping, and that also focus on points of view that incorporate the company perspective. These studies could examine similar or other key variables in measuring behavioral intentions — valuable also in comparing results. Consequently, such studies could create further insights into a more nuanced perspective towards the Metaverse as a platform for shopping. The authors would also find it interesting to study the launch of the Metaverse as a shopping platform to compare whether intentions align with the analyzed behaviors of consumers. Moreover, as consumers might purchase a variety of products in the Metaverse, studies that specialize in either virtual or physical products separately, or purely on services, would also be of interest.

In closing, although it's not certain if or when the Metaverse will exist, there are undoubtedly many interesting aspects to learn about it. Our hope, as authors of this thesis, is that this study, along with future research, will further guide consumers, corporations and regulators to build a Metaverse that benefits society at large. However, only with time, technological advancements and great marketing efforts, will we know if consumers will buy it.

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7. Appendices

7.1. Appendix 1: The Metaverse Foundations

Table 11. Summary of the foundations behind the Metaverse (Ball, 2021).

Foundation	Summary
<i>Hardware</i>	Support from hardware devices will be required for the Metaverse. These devices include hardware for private consumers such as virtual reality headsets, and enterprise hardware for the creation of virtual worlds.
<i>Networking</i>	High bandwidth connections and decentralized data will support the Metaverse network. This, in combination with providers that manage the last-mile data for consumers and enterprises using the Metaverse.
<i>Compute</i>	Supply of computer power in order to support all technical functions of the Metaverse will be necessary, especially considering the necessity of immersing users through life-like graphics.
<i>Virtual Platforms</i>	Creation and development of virtual and immersive worlds will be crucial for the success of the Metaverse. These worlds will serve as platforms for users to be part of a wide range of experiences.
<i>Tools and Standards</i>	Tools, protocols, formats, services, and engines that serve as standards for computer systems to exchange and make use of information, will enable to create, operate and improve the Metaverse.
<i>Payments</i>	Support of digital payments will serve as the foundation for transactions. These will need to include currency exchange between traditional and cryptocurrencies as part of a functioning economy.
<i>Content and Services</i>	Creation of content for users will be essential in gaining adoption for the Metaverse. Additionally, the storage, re-sale and management of these digital assets will be utilized by businesses within the Metaverse.
<i>User Behavior</i>	Changes in consumer and business behaviors in terms of underlying trends and spending, attention, decision-making and investment, are to be needed for the Metaverse to gain wide commercial adoption.

Note: Excluded from most of these categories is blockchain technology as it serves a core role of decentralization within each of the foundations.

7.2. Appendix 2: Questionnaire

Thesis Survey 2022

Start of Block: Survey Introduction

Hello there!

Welcome to this survey from Stockholm School of Economics, created for educational purposes as a part of a Bachelor's thesis. The survey is expected to take no more than 5 minutes to complete. We appreciate you taking the time to participate. Thank you!

NOTE: For every completed response, we will donate 3 SEK to the UN Refugee Agency (UNHCR). Throughout the month of March, the Akelius Foundation will double this amount.

Keep in mind that all answers will be anonymous.

Please press the arrow to start the survey:

End of Block: Introduction

Start of Block: Part 1A

Q2 What is your age? (Please answer by writing a number, e.g. "25")

Q3 What is your gender?

☐ Male (1)

☐ Female (2)

☐ Non-binary / third gender (3)

☐ Prefer not to say (4)

Q13 What is your nationality? (Please write e.g. "Swedish". If more than one, please write e.g. "Swedish, Japanese")

Q4 What is your current employment status?

☐ Student (1)

☐ Unemployed (2)

☐ Part-time employed (3)

☐ Full-time employed (4)

☐ Retired (5)

Q5 Please tick how frequently you use the following apps/platforms

	Never (1)	A few times a year (2)	A few times a month (3)	A few times a week (6)	Every day (7)
Facebook (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Messenger (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
WhatsApp (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
YouTube (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Instagram (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
TikTok (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Twitter (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Snapchat (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
WeChat (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
LinkedIn (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q7 How frequently do you shop online? (Such as clothes, books, food, etc.)

- ☐ Never (1)
- ☐ A few times a year (2)
- ☐ A few times a month (3)
- ☐ A few times a week (4)
- ☐ A few times a day (5)

Q8 Please state how you regard the following statement:

"I find it easy to learn and use new technology"

	1. Strongly disagree (1)	2. Disagree (2)	3. Somewha t disagree (3)	4. Neither agree nor disagree (4)	5. Somewha t agree (5)	6. Agree (6)	7. Strongly agree (7)
(1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q15 What is your perceived knowledge and understanding of the "Metaverse"?

	1. Very poor (1)	2. Poor (2)	3. Somewhat poor (3)	4. Neither poor or strong (4)	5. Somewhat strong (5)	6. Strong (6)	7. Very strong (7)
(1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q9 How frequently do you play video games?

- ☐ Never (1)
- ☐ A few times a year (2)
- ☐ A few times a month (3)
- ☐ A few times a week (4)
- ☐ Every day (5)

End of Block: Part 1A

Start of Block: Part 1B (Gaming)

Display This Question: If How frequently do you play video games = "Never"

Q11 Which of the following genres do you like to play? Please choose all options that apply

☐ Simulation (1)

☐ Open World (2)

☐ Strategy (3)

☐ Action (4)

☐ Role-playing (5)

☐ Sports (6)

☐ Other (7)

Display This Question: If How frequently do you play video games = "Never"

Q12 How often do you make in-game purchases?

☐ Never (1)

☐ A few times a year (2)

☐ A few times a month (3)

☐ A few times a week (4)

☐ Every day (5)

End of Block: Part 1B (Gaming)

Start of Block: Part 2

Q16 In this section, you will get a short introduction of the Metaverse.

You will then be presented a scenario through a short video and text, after which you will be asked to answer a few questions.

Page Break

Q17 A short description of the term "Metaverse":

The Metaverse is the term for a universe of virtual worlds, where people can socialize, work, transact, play and create. It is still under construction, but is predicted by many to be the next generation of the internet.

You will be able to experience the Metaverse as an avatar, a virtual version of yourself, through a headset or a pair of glasses. In the Metaverse, you can shop for virtual goods, such as clothes for your avatar or a piece of virtual land.

You can also shop physical goods that can be delivered home to you, much like today's e-commerce.

Page Break

Q18

You will now be shown a 36s long video. Imagine yourself in the scenario shown. When you have watched the full video, please click the arrow to continue.

Please watch carefully:



Source: Meta Platforms. YouTube. "The Metaverse and How We'll Build It Together -- Connect 2021". Sourced Feb 2022.

Page Break

Q19 Imagine the following scenario, similar to the one you have just watched:

You are in the Metaverse and have just attended a virtual concert with your favorite artist/band. After the concert, you decide to go to a virtual afterparty with some friends. At the party, you are given the option to buy merch virtually from the concert.

As in the video, you can scroll through and try the merch and see what you like the best. Your friends, who are also at the party, will be able to see the new merch after your purchase.

In the Metaverse, you can decide for yourself if you only want to buy virtual merch for your avatar, or order the physical merch to be delivered home to you as well.

Page Break

Q20 Please rate how you feel about the following statements: Part 1/3

	1. Strongly disagree (1)	2. Disagree (2)	3. Somewhat disagree (3)	4. Neither agree nor disagree (4)	5. Somewhat agree (5)	6. Agree (6)	7. Strongly agree (7)
How to shop in the Metaverse seems clear and understandable (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shopping in the Metaverse could increase my productivity (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find the idea of shopping virtually in the Metaverse interesting (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shopping in the Metaverse seems enjoyable (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I seem to be able to decide for myself what	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

to buy in the Metaverse (5)							
When possible, I would intend to use the Metaverse for shopping (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break

Q21 Please rate how you feel about the following statements: Part 2/3

	1. Strongly disagree (1)	2. Disagree (2)	3. Somewhat disagree (3)	4. Neither agree nor disagree (4)	5. Somewhat agree (5)	6. Agree (6)	7. Strongly agree (7)
Shopping in the Metaverse does not seem to require a lot of my mental effort (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using the Metaverse to shop could enhance my effectiveness in purchases (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would like to learn more about the possibilities of shopping in the Metaverse (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shopping in the Metaverse seems fun (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It seems like I could choose freely what to buy in the	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Metaverse (5) When possible, I plan on using the Metaverse for shopping (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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Page Break

Q22 Please rate how you feel about the following statements: Part 3/3

	1. Strongly disagree (1)	2. Disagree (2)	3. Somewhat disagree (3)	4. Neither agree nor disagree (4)	5. Somewhat agree (5)	6. Agree (6)	7. Strongly agree (7)
Learning how to shop in the Metaverse seems easy (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shopping in the Metaverse could be useful in my daily life (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'm intrigued by how the Metaverse could change my shopping experience (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shopping in the Metaverse would likely make me more satisfied than regular online shopping (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that I would have a lot of control when shopping in the Metaverse (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect to use the Metaverse for shopping	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

in the future (6) It's important that you pay attention to this survey. Please tick "7. Strongly agree" (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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End of Block: Part 2

Start of Block: Part 3

Q23 Finally, please give us your thoughts on this survey.

	1. Strongly disagree (1)	2. Disagree (2)	3. Somewha t disagree (3)	4. Neither agree nor disagree (4)	5. Somewha t agree (5)	6. Agree (6)	7. Strongly agree (7)
The questions in this survey were clearly formulated (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The answer options in this survey were clearly formulated (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt pressured by the survey to answer in a specific way (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q23 If you have any final comments, please write them below. Otherwise, just press the arrow to complete the survey.

Q25 Thank you for your participation! We will donate 3 kr to UNHCR as a thank you for your time and effort.

End of Block: Part 3

End of Survey

Note: The design and layout is not identical to the distributed survey. The numbers in parentheses after each answer option were not included in the distributed survey.

7.3. Appendix 3: Survey Video

The authors used a 36-second long video in the survey with the objective of illustrating a possible shopping scenario in the Metaverse. The respondents could choose to skip the video and/or read the text version of the shopping scenario in the survey.

Please use the following link to access the video: <https://youtu.be/aSrq9s7FihQ>



The video is an excerpt from the original video:

The metaverse and how we'll build it together -- connect 2021. Zuckerberg, M. (2021, Okt 28,). Meta. Retrieved from

<https://www.youtube.com/watch?v=Uvufun6xer8&t=2212s>

7.4. Appendix 4: Variables Means and Standard Deviations

Table 12. Overview of the means and standard deviations of the indexed variables and their corresponding survey questions to respondents

Constructs and items	Mean	SD
<i>Perceived ease of use</i>	5.00	1.29
How to shop in the Metaverse seems clear and understandable	5.10	1.54
Shopping in the Metaverse does not seem to require a lot of my mental effort	4.72	1.54
Learning how to shop in the Metaverse seems easy	5.18	1.49
<i>Perceived usefulness</i>	3.47	1.47
Shopping in the Metaverse could increase my productivity	3.26	1.64
Using the Metaverse to shop could enhance my effectiveness in purchases	3.64	1.67
Shopping in the Metaverse could be useful in my daily life	3.51	1.75
<i>Curiosity</i>	3.97	1.80
I find the idea of shopping virtually in the Metaverse interesting	3.98	1.89
I would like to learn more about the possibilities of shopping in the Metaverse	4.01	1.98
I'm intrigued by how the Metaverse could change my shopping experience	3.93	1.98
<i>Joy</i>	3.90	1.73
Shopping in the Metaverse seems enjoyable	4.05	1.83
Shopping in the Metaverse seems fun	4.22	1.92
Shopping in the Metaverse would likely make me more satisfied than regular online shopping	3.47	1.88
<i>Control</i>	4.38	1.47
I seem to be able to decide for myself what to	4.79	1.68

buy in the Metaverse		
It seems like I could choose freely what to buy in the Metaverse	4.46	1.74
I believe that I would have a lot of control when shopping in the Metaverse	3.90	1.59
<i>Behavioral intentions to use</i>	3.36	1.74
When possible, I would intend to use the Metaverse for shopping	3.41	1.83
When possible, I plan on using the Metaverse for shopping	3.20	1.86
I expect to use the Metaverse for shopping in the future	3.46	1.85

7.5. Appendix 5: Multiple Linear Regression Models

Model 1: Behavioral intention to use the Metaverse for shopping_i = $\beta_0 + \beta_1 \text{Age} + \beta_2 \text{Gender} + \beta_3 \text{Online shopping frequency} + \beta_4 \text{Perceived ease of use of new technology} + \beta_5 \text{Perceived knowledge and understanding of the Metaverse} + \beta_6 \text{Gaming frequency} + \beta_7 \text{In-game purchase frequency} + \beta_8 \text{Social media usage frequency} + e_i$

Model 2: Behavioral intention to use the Metaverse for shopping_i = $\beta_0 + \beta_1 \text{Age} + \beta_2 \text{Gender} + \beta_3 \text{Online shopping frequency} + \beta_4 \text{Perceived ease of use of new technology} + \beta_5 \text{Perceived knowledge and understanding of the Metaverse} + \beta_6 \text{Gaming frequency} + \beta_7 \text{In-game purchase frequency} + \beta_8 \text{Social media usage frequency} + \beta_9 \text{Perceived ease of use} + e_i$

Model 3: Behavioral intention to use the Metaverse for shopping_i = $\beta_0 + \beta_1 \text{Age} + \beta_2 \text{Gender} + \beta_3 \text{Online shopping frequency} + \beta_4 \text{Perceived ease of use of new technology} + \beta_5 \text{Perceived knowledge and understanding of the Metaverse} + \beta_6 \text{Gaming frequency} + \beta_7 \text{In-game purchase frequency} + \beta_8 \text{Social media usage frequency} + \beta_9 \text{Perceived ease of use} + \beta_{10} \text{Perceived usefulness} + e_i$

Model 4: Behavioral intention to use the Metaverse for shopping_i = $\beta_0 + \beta_1 \text{Age} + \beta_2 \text{Gender} + \beta_3 \text{Online shopping frequency} + \beta_4 \text{Perceived ease of use of new technology} + \beta_5 \text{Perceived knowledge and understanding of the Metaverse} + \beta_6$

Gaming frequency + β_7 In-game purchase frequency + β_8 Social media usage frequency + β_9 Perceived ease of use + β_{10} Perceived usefulness + β_{11} Curiosity + e_i

Model 5: *Behavioral intention to use the Metaverse for shopping_i = β_0 + β_1 Age + β_2 Gender + β_3 Online shopping frequency + β_4 Perceived ease of use of new technology + β_5 Perceived knowledge and understanding of the Metaverse + β_6 Gaming frequency + β_7 In-game purchase frequency + β_8 Social media usage frequency + β_9 Perceived ease of use + β_{10} Perceived usefulness + β_{11} Curiosity + β_{12} Joy + e_i*

Model 6: *Behavioral intention to use the Metaverse for shopping_i = β_0 + β_1 Age + β_2 Gender + β_3 Online shopping frequency + β_4 Perceived ease of use of new technology + β_5 Perceived knowledge and understanding of the Metaverse + β_6 Gaming frequency + β_7 In-game purchase frequency + β_8 Social media usage frequency + β_9 Perceived ease of use + β_{10} Perceived usefulness + β_{11} Curiosity + β_{12} Joy + β_{13} Control + e_i*