



Factors influencing merchandise purchase intention in Vtuber viewers of hololive

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ABSTRACT

Background: Merchandise represents a significant source of revenue in the entertainment industry and has become one of the main income streams for Virtual YouTubers (Vtubers). Unlike traditional entertainers, Vtubers interact directly with their audiences through live streaming, enabling the development of close emotional connections. Despite the rapid growth of Vtuber popularity and their economic potential, academic research examining audience behavior and merchandise purchasing intentions in the Vtuber context remains limited, particularly in Indonesia. **Methods:** This study employed a non-experimental quantitative research design. Data were collected through online self-report questionnaires distributed to 129 Indonesian participants who were viewers of the Hololive Vtuber group. The study examined the influence of parasocial relationships, age, income, relationship length, and duration of live-stream viewing on merchandise purchase intention without any experimental manipulation. **Findings:** The findings reveal that parasocial relationships and relationship length have a significant positive influence on merchandise purchase intention among Hololive Vtuber viewers. Other variables, such as age, income, and duration of watching live streams, did not show a significant effect. These results indicate that emotional bonds and long-term audience engagement play a crucial role in encouraging merchandise purchases. **Conclusion:** The study concludes that stronger parasocial relationships and longer viewer-Vtuber relationships significantly increase merchandise purchase intention. These findings suggest that emotional engagement and sustained interaction are key factors in driving consumer loyalty and merchandise sales. Therefore, Vtubers should focus on building long-term relationships with their audiences to enhance fan loyalty and commercial success. **Novelty/Originality of this article:** This study contributes novel empirical evidence on merchandise purchase intention in the Vtuber context, particularly among Indonesian Hololive viewers. It highlights the central role of parasocial relationships and relationship duration, extending existing literature on digital fandom by demonstrating how emotional attachment and fan loyalty influence consumer behavior in virtual entertainment environments.

KEYWORDS: demographic; live streaming; parasocial relationship; purchase intention; relationship length; virtual youtuber.

1. Introduction

Consumer merchandise purchase intention plays an important role in the entertainment industry (Affuso & Santo, 2018). Purchase intention is defined as a conscious plan made by an individual to purchase a product from a particular brand. Merchandise sales have become one of the main sources of income in the entertainment industry from parties that make films, animated characters, sports teams, and music groups (Akar & Nasir, 2015; Annur, 2023; Alexandrina, 2024). These parties include film/animation studios,

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producers, animated character creators, sports team managers, or music publishers or merchandise manufacturers (Balaji, 2015; Affuso & Santo, 2018; Alexandrina et al., 2024). This merchandise sales phenomenon also occurs in the Vtuber industry. Vtubers or Virtual YouTubers are 2D or 3D animated virtual characters that are brought to life and voiced by an actor behind the scenes or called Nakanohito (Bhat et al., 2021). Based on several studies and reports, Vtubers rely on merchandise sales to their viewers as one of their sources of income (Boonchutima & Surakanon, 2023; Cheng et al., 2014; Deng et al., 2022). The Vtuber group Hololive, for example, noted that 43.7% of its revenue came from merchandise sales such as music albums, dolls, clothing, and others. A reported that out of around 1000 creators at Comic Frontier 17 in Indonesia, 112 of them sold Vtuber-related merchandise. The Comic Frontier 17 event, which is a creative exhibition event that provides a place for creators in Indonesia to express themselves, sells various types of works such as comics, illustrations, novels, music, and various other merchandise (Dibble et al., 2016). Therefore, the intention to buy merchandise is an important component for Vtuber activities and also creators in Indonesia.

As the name suggests, most Vtubers carry out their activities on the Youtube platform. Youtube is one of the social media platforms that is widely used by internet users in Indonesia as a source of information, entertainment, and learning (Dodds et al., 1991). Based on data from Annur (2023), Indonesia currently has 139 million Youtube users and is the fourth country with the most Youtube users in the world. In addition, based on Faul et al. (2009) Indonesia is recorded as having the largest number of Vtubers in the Asian continent, reaching more than a thousand Vtubers and has a number of Vtuber fans reaching 20 million users. Among the thousand Vtubers, the Hololive group is the most popular Vtuber group in Indonesia with their talents such as Kobo Kanaeru from Hololive Indonesia (ID) who had 2.3 million followers or subscribers on Youtube in January 2024 (Gao et al., 2023). The large number of users can be an opportunity to do Vtuber merchandise business in Indonesia. The rapid development of Vtubers has led several companies to establish agencies to accommodate Vtuber talents, one of which is Hololive Production (Gravetter & Wallnau, 2016). Hololive Production was founded by Cover Corporation and has several branches around the world, such as Hololive Japan, Hololive English, Hololive Indonesia, HOLOSTARS, and HOLOSTARS English (Hedlund & Naylor, 2020). Hololive ID is their first international branch, based on an interview with Hollebeek et al. (2023) with the CEO of Cover Corporation, Motoaki Tanigo, Indonesia was chosen for Hololive's expansion because of the popularity of Japanese culture in Indonesia. Based on data released, Hololive has a total of 83 million subscribers on YouTube, which is the sum of the total channels they have and the 82 Vtubers they host. In the data, Hololive noted that on average each Vtuber has an annual income of 304 million Yen or Rp. 32.1 billion and 43.7% of the revenue came from their merchandise. This shows that Hololive brand merchandise is widely purchased by its viewers.

Vtubers are unique compared to other entertainment media where they can interact directly with their audience. This is achieved through live streaming, which is the activity of broadcasting videos in real time via the internet by broadcasters called streamers and is a new media that includes interpersonal interaction and mass media (Hong, 2019; Horton & Wohl, 1956). Hsu & Tsou (2011) introduced this new media as mass personal media which is between mass media and interpersonal media. Live streaming allows a broadcaster or commonly called a streamer to broadcast videos to an audience they do not know like television, but also allows for interpersonal interaction with the audience who type live comments (Huang et al., 2022; Huettermann & Kunkel, 2022; Hwang & Park, 2021; Hwang & Zhang, 2018). Although live streaming allows interpersonal interaction where the streamer can respond to one of the audience's comments, this media is still considered asymmetric where the streamer only knows little information about their audience while the audience has a lot of information about the streamer (Johnson & Woodcock, 2019; Kim et al., 2008). Kim & James (2016) research examines the factors that can influence purchase intentions in viewers of a live stream. Boonchutima & Surakanon (2023) research also

found that credibility is also an important factor in increasing purchase intentions in Vtuber viewers.

Parasocial relationships are defined as the illusion of a social relationship experienced by viewers with the media figures they watch, even though the interaction is only one-way (Horton & Wohl, 1956; McLaughlin & Wohn, 2021). Hwang & Zhang (2018) research found that parasocial relationships can influence consumer purchase intentions. This finding is supported by Ko (2023) who also found that parasocial relationships can affect purchase intentions in live streaming viewers. Gao et al. (2023) also found that parasocial relationships between male streamers and female viewers can increase the purchase intentions of these viewers. Gao's research also shows that the effect of parasocial relationships on purchase intentions is higher in extroverted viewers compared to introverted viewers. According to Tan (2023), Vtubers can fulfill the emotional and social needs of viewers due to limited face-to-face interactions during the COVID-19 pandemic through live streaming. The interaction between Vtubers and viewers can create a strong emotional bond that can then become a parasocial relationship with Vtubers. This live streaming activity has been studied and found to form a parasocial relationship between streamers and viewers like media figures on television (McLaughlin & Wohn, 2021; Deng et al., 2022; Kwon, 2012).

Demographic factors have also been found to influence purchase intentions. Liebers & Schramm (2019) research explains the importance of demographic factors on consumers' online buying intentions. Found that gender, age, education level, and income have a significant influence on the intention to buy merchandise online. Men's buying intentions are higher than women's, younger people have higher online buying intentions than older people, the higher the level of an education, the higher the buying intention, and the higher the income, the higher the intention to buy someone (Lin & Nuangjamnong, 2022). However, other studies have found contradictions in these demographic factors. In terms of age, Liu (2023) found no significant difference between age groups in the intention to purchase sports team merchandise. Whereas research by Liu et al (2016) found that younger people had higher purchase intentions. Research by Bhat et al. (2021) also showed that younger people were found to have higher purchase intentions for online purchases.

The influence of income was also found to have contradictions in previous studies. Research by Liu (2023), Bhat (2021), & Lu (2021) showed that income had no significant relationship with consumer purchase intentions. On the other hand, research by Hedlund & Naylor (2020) showed that income had a significant relationship with the purchase of sports team merchandise. Apart from demographic factors, customer engagement was also found to influence merchandise purchase intentions. Customer engagement is the level of interaction and connection consumers have with a brand or company outside of the purchase transaction (Mamat et al., 2022). Previous studies have shown that customer engagement can positively influence merchandise purchase intentions (Mohammad et al., 2023; Huetterman & Kunkel, 2022; Lin & Nuanjamong, 2022). In the context of live streaming, relationship length, namely the length of time knowing the streamer and the duration of watching live streaming, is a more relevant form of customer engagement to use (McLaughlin & Wohn, 2021; Lin & Nuangjamnong, 2022). Previous studies have also found that purchase intentions can be influenced by relationship length (O'Sullivan & Car, 2018) and viewing duration (Kwon, 2012; So & Kim, 2020; Lin & Nuangjamnong, 2022).

Not much research has been done on Vtubers in general. Research by Lu et al. (2021) is an initial study on Vtubers that has been widely cited by other journals. Lu et al. (2021) research is a qualitative study conducted on Vtuber fans covering fan motivation, fan interactions with Vtubers, including interactions where fans donate superchats as a form of support for their favorite Vtubers. Superchat is a feature on YouTube that allows viewers to donate money to Vtubers (Özer & Argan, 2006). Mohammad et al. (2023) studied Kobo Kanaeru, a Hololive ID Vtuber, and found that the number of Kobo Kanaeru's followers did not significantly affect the number of superchats he received, while other Vtubers from Hololive ID such as Kaela Kovalskia had a higher number of superchats even though they had fewer followers. This suggests the possibility of other variables that make someone buy

merchandise or give superchats to their favorite Vtubers. In addition, there has not been much research conducted on Vtubers, especially in the context of merchandise and there are also contradictions in the findings of previous studies so this study was conducted.

2. Methods

This study is a non-experimental quantitative research type to see the influence of parasocial relationships, age, income, relationship length, and viewing behavior on merchandise purchase intentions of Hololive Vtuber viewers. These variables were obtained through self-report questionnaires filled out by participants online without any manipulation from the researcher. This approach allows for the analysis of relationships between variables in a natural setting, reflecting participants' real experiences and behaviors.

2.1 Parasocial relationship measurement tool

The PSR Scale used to measure parasocial relationships was adapted from Liu's (2023) measuring instrument which has 13 items. Liu (2023) created this PSR Scale by combining several parasocial measuring instruments and then adopting them to measure parasocial relationships in virtual idols. Liu's measuring instrument has 3 aspects (cognition, affection, and behavior) but Liu did not explain the division of aspects and items used. Liu's measuring instrument has sufficient reliability based on the Cronbach alpha test ($\alpha = 0.704, 0.725, \text{ and } 0.771$ for the aspects of cognition, affection, and behavior). Examples of Parasocial Relationship Scale (PRS) measurement items include statements such as "I pay close attention to my idol's behavior," "If my idol feels sad, I also feel sad, and if my idol feels happy, I also feel happy," and "I actively collect information or items related to my idol."

2.2 Purchase intention measurement tool

The measuring instrument for measuring purchase intention was taken from Hwang and Park's (2021) research on K-pop idols because of the similarity of Vtubers to K-pop idols. In addition, this measuring instrument is designed to measure the intention to purchase products related to the idol or idol merchandise. Hwang and Park's (2021) purchase intention measuring instrument has 5 items using a Likert scale of 1 to 5 (1 = strongly disagree, 5 = strongly agree). This measuring instrument has very high internal consistency ($\alpha = 0.932$). The authors adapted this measuring instrument in the same way as the PSR Scale through a readability test and a trial of the measuring instrument. The results of the trial of the measuring instrument showed high internal consistency ($\alpha = 0.878$) based on Cronbach Alpha. Examples of purchase intention measurement items include statements such as "I am willing to buy items related to my idols" and "When I plan to make a purchase, items associated with my idols become my primary consideration."

2.3 Demographic data and customer engagement questionnaire

To measure demographic variables and customer engagement, the researchers developed several questionnaire items based on previous studies (McLaughlin & Wohn, 2021). Age was measured by asking participants to report their age in years. Income was measured using a self-reported question asking participants about their monthly income. Participants selected one response from the following categories: less than IDR 1,000,000; IDR 1,000,000–2,500,000; IDR 2,500,000–5,000,000; IDR 5,000,000–7,500,000; IDR 7,500,000–10,000,000; and more than IDR 10,000,000. Relationship length was measured using the question, "Since when have you followed the Vtuber?" Participants provided a short response indicating the month and year they first began following the Vtuber. Based on these responses, viewers were categorized according to the year in which they first followed the Vtuber. Participants who had followed the Vtuber for less than one year were

excluded from the analysis because they were identified as outliers. Viewing behavior was measured using the question, "How long do you watch the Hololive member per week?" Participants selected one of four response options: less than 2 hours per week; 2–4 hours per week; 4–8 hours per week; and more than 8 hours per week. Following (McLaughlin & Wohn, 2021), viewing duration was calculated on a weekly basis because Vtubers do not livestream every day.

2.4 Preparation stage

This study began by determining the topic and research variables to be studied where the researcher saw an increasing interest in Vtuber in Indonesia. The researcher then searched for literature related to Vtuber and found a trend regarding the parasocial phenomenon among Vtuber fans and a research gap in explaining the behavior of Vtuber fans regarding their merchandise consumption behavior. The researcher also discussed with other Vtuber fans about what psychological things they thought were commonly found in Vtuber fans. The researcher then decided to research the factors that could influence the intention to buy merchandise among Vtuber fans. Vtuber from Hololive was chosen because they are the most popular Vtuber group in Indonesia.

2.5 Research implementation stage

Data collection was conducted online using Google Form as a questionnaire medium. Participants were obtained by distributing the questionnaire link via social media such as WhatsApp, LINE, Discord, and Instagram. The researcher also asked for help from friends, family, and acquaintances who like Vtuber to distribute the questionnaire. The researcher's questionnaire link was included in broadcast messages and posters in which the researcher prepared a reward in the form of E-money for 10 lucky participants. Participant recruitment was conducted from May 1, 2024 to May 28, 2024.

2.6 Data processing stage

After data collection was completed, the researcher checked the invalid participant data. Of the 139 participant data entered, there were 10 data that needed to be eliminated. The data was eliminated because they did not complete the questionnaire or had data that was an outlier. The total final data to be processed was 129 participant data. The data will then be processed through the Statistical Package for Social Science (SPSS) application and the researcher will eliminate the participant data that is an outlier in the data distribution. Data processing is in the form of descriptive analysis, correlation, simple linear regression and multiple linear regression.

3. Result and Discussion

3.1 Definition of merchandise purchase intention

Purchase intention is an important concept in the study of consumer behavior that can be used to predict consumer purchasing behavior. Dodds et al. (1991) defines purchase intention as the possibility that a consumer will purchase a product, with the probability determined by the perceived quality of the product. Papalia & Martorell (2021) define purchase intention as a conscious plan made by an individual to purchase a product from a particular brand. Kim et al. (2008) define purchase intention as the intention to purchase from a particular seller and is used to predict purchasing activity. This definition is in line with Lu et al. (2016), which states that purchase intention is the intention that buyers have to purchase a product from a seller. Hsu & Tsou (2011) added that purchase intention in consumer behavior studies is defined as the consumer's intention to purchase a product in the future. According to Playboard (2024), purchase intention can also be defined as the

consumer's intention to purchase a product after watching a YouTube video where the product is mentioned or reviewed.

Merchandise is a product sold to promote or represent a particular brand, figure, or event (Affuso & Santo, 2018; Alexandrina et al., 2024). Merchandise can be a variety of items such as clothing, toys, accessories, and other collectibles that are often sold in the context of entertainment, sports, and other popular culture (Affuso & Santo, 2018; Putra, 2023). From several definitions, the intention to buy merchandise in this study is defined as the intention or desire of consumers to buy goods that represent a particular brand, figure, or event.

3.2 Factors influencing merchandise purchase intention

Hwang and Park (2021), in their study on K-pop idol celebrities, found that purchase intention for celebrity merchandise is influenced by trust, professionalism, social appeal, and physical attractiveness. These factors contribute to increased desire for imitation and identification with celebrities, which subsequently enhances merchandise purchase intention (Hwang & Park, 2021). Similarly, research on virtual idols shows that purchase intention is shaped by popularity, homogeneity with consumers, relevance, and anthropomorphism, with popularity exerting the strongest influence (Huang et al., 2022). Homogeneity refers to the perceived similarity between consumers and virtual idols, while relevance reflects the alignment between the idol and the promoted product, and anthropomorphism refers to the attribution of human characteristics to virtual idols, including appearance and personality (Huang et al., 2022).

Consumer identification has also been consistently identified as a key determinant of merchandise purchase intention. Prior studies show that identification with events, perceived quality, and collecting attitudes significantly influence purchase intention (Rubin et al., 1985). Likewise, consumer values and identification with a team are important predictors of sports merchandise purchase intention (Schramm & Hartmann, 2008). In media contexts, self-consistency with characters strengthens identification, which in turn increases purchase intention (Sethi, 2016). In addition, past purchasing behavior has been shown to be a strong predictor of future purchase intention (Kim & James, 2016).

In the context of live streaming, purchase intention is further influenced by real-time interactivity between viewers and streamers, shared communication networks (SCN), and parasocial relationships (Ko, 2023). SCN, which encompasses the broader audience within a livestream environment, can enhance trust, social support, and the perceived credibility of the streamer, thereby strengthening purchase intention. Moreover, interactive communication provides viewers with relevant product information, fulfilling informational needs and reinforcing identification with the streamer. This process subsequently increases purchase intention. Additionally, such interactions can foster parasocial relationships, which have been shown to further enhance purchase intention (Stein et al., 2022; Gao et al., 2023; Yuan et al., 2023).

Demographic factors such as age and income have also been shown to influence merchandise purchase intention (Akhter, 2003; Özer & Argan, 2006; Akar & Nasir, 2015). Younger consumers tend to exhibit higher purchase intentions, particularly in online contexts, as evidenced by studies showing that individuals aged 15–25 demonstrate stronger purchase intentions compared to older groups (Akhter, 2003; Sethi, 2016). However, the role of income remains inconclusive. While some studies have found a positive relationship between income and purchase intention, particularly in the context of sports merchandise (Hedlund & Naylor, 2020), others report no significant effect (Özer & Argan, 2006).

Beyond demographic factors, customer engagement has emerged as a critical determinant of purchase intention. Customer engagement refers to customer behaviors directed toward a brand beyond transactional activities (Van Doorn et al., 2010). This concept is multidimensional, encompassing cognitive, emotional, and behavioral components (Viswanathan et al., 2018). In digital contexts, consumer interactions on social media—such as reacting, commenting, and sharing brand-related content—can strengthen

engagement and subsequently increase purchase intention (Hollebeek et al., 2019). In the context of live streaming, customer engagement is often reflected in relationship length and viewing duration, both of which have been shown to significantly influence purchase intention (McLaughlin & Wohn, 2021; Lin & Nuangjamnong, 2022).

3.3 Merchandise purchase intention measurement tool

A purchase intention measurement tool designed to measure consumers' purchase intentions from goods in an advertisement consists of 5 items measured using a semantic differential scale from 1 to 7. This measurement tool has a very high internal consistency with a value of 0.97 as measured using Cronbach's alpha (Spears & Singh, 2004). A purchase intention measurement tool designed to measure the intention to buy sports team merchandise has 2 items that are assessed on a Likert scale from 1 to 7 (Slater et al., 2018). Another measurement tool has an internal consistency of 0.96 as measured by Cronbach's alpha (So & Kim, 2020).

Hwang and Park developed a purchase intention measurement tool designed to measure purchase intentions for products related to idols. This measuring instrument consists of 5 items assessed on a Likert scale of 1 to 5. The instrument has an internal consistency of 0.932 as measured using Cronbach's alpha. The intention to buy merchandise among Vtuber fans is measured using an adaptation of this instrument. This instrument is considered the most relevant for this study and also has a very high level of internal consistency (Hwang & Park, 2021).

3.4 Parasocial relationship

Parasocial relationships were first defined as the illusion of a social relationship experienced by viewers with the media figures or characters they see, even though the interaction is only one-way (Horton & Wohl, 1956; McLaughlin & Wohn, 2021; Tan, 2023). However, the original concept did not distinguish between parasocial interactions and parasocial relationships, leading to the two terms sometimes being used interchangeably and creating ambiguity in their definitions. Parasocial interactions were initially introduced as one-way social interactions between viewers and media figures (Horton & Wohl, 1956). However, as the study of parasocial relationships developed, these two concepts began to be differentiated. Parasocial relationships are understood to develop beyond initial interactions into more enduring connections between viewers and media figures (Liebers & Schramm, 2019). In this perspective, parasocial interactions are limited to moments of interaction, while parasocial relationships can persist beyond a single encounter and evolve into long-term relationships similar to real social relationships (Liebers & Schramm, 2019). This definition is particularly relevant for understanding Vtuber audiences, as viewers not only engage in one-time interactions during livestreams but may also develop sustained, long-term relationships with media figures (Liebers & Schramm, 2019).

3.5 Parasocial relationships in live streaming

Live streaming has similarities and differences with traditional media such as television. Live streaming is similar to regular television broadcasts where media figures broadcast videos to a mass audience, but media figures can interact with the audience (McLaughlin & Wohn, 2021). Interaction with the audience in this livestream is generally carried out by the streamer through live comments where the audience can send short messages which are then read and responded to by the streamer (Johnson & Woodcock, 2019; McLaughlin & Wohn, 2021; Deng et al., 2022). This causes live streaming to not be included in the category of mass communication and also interpersonal communication. Mass communication is communication where communication occurs in one direction through media that is broadcast to a large audience that is not known to the sender, while interpersonal communication is a two-way exchange of messages without media

intermediaries between a small number (usually two) participants who know each other (O'Sullivan & Carr, 2018).

Masspersonal communication or masspersonal media is defined as communication that can be accessed by a large audience while still allowing messages to be directed to the sender or broadcaster (O'Sullivan & Carr, 2018). Although two-way communication can occur between the streamer and the audience, this interaction remains highly asymmetrical because the streamer has limited knowledge about the audience members who send messages (Johnson & Woodcock, 2019; McLaughlin & Wohn, 2021). However, live streaming offers advantages in terms of real-time responsiveness by media figures (Johnson & Woodcock, 2019). In contrast, other forms of masspersonal media, such as Facebook posts, often involve delays before media figures respond to audience messages (O'Sullivan & Carr, 2018). Due to this immediacy and interactivity, livestream viewers tend to experience more effective parasocial interactions compared to other media (McLaughlin & Wohn, 2021). This direct interaction also facilitates the development of parasocial relationships between streamers and viewers, making such relationships easier to form (Tan-intaraarj, 2024).

3.6 Factors influencing parasocial relationships

Parasocial relationships are influenced by two main categories of factors, namely consumer characteristics and media figure influences (Liebers & Schramm, 2019). Parasocial relationships tend to increase with age, which can also be explained by factors such as high television consumption, strong attachment to characters or shows, and reduced social interaction. Adolescents are also found to exhibit high levels of parasocial relationships, possibly due to puberty and identity formation processes. In addition, individuals with lower levels of education and income tend to show more prominent parasocial relationships. Personality traits such as low agreeableness, higher shyness, and higher neuroticism are also associated with stronger parasocial relationships.

Furthermore, low self-esteem has been found to influence parasocial relationships, whereas loneliness does not show a significant effect (Hwang & Zhang, 2018). The characteristics and attributes of media figures also play an important role in shaping the nature and intensity of parasocial relationships (Liebers & Schramm, 2019). This is reflected in the strengthening of parasocial relationships when viewers experience higher levels of sympathy, identification, and perceived similarity with media figures (Hwang & Zhang, 2018; Liebers & Schramm, 2019).

In addition, physical attractiveness, character, and interactivity can also increase parasocial relationships. However, negative factors such as media figure scandals may also strengthen parasocial relationships (Liebers & Schramm, 2019). Research shows that loneliness, length of time knowing the streamer, direct interaction, and interpersonal attraction can predict parasocial relationships in livestream viewers, while gender, age, viewing frequency, viewing time, and physical attractiveness do not have a significant effect (McLaughlin & Wohn, 2021). In this context, interpersonal attraction emerges as the strongest predictor of parasocial relationships, indicating that streamer personality and presentation are key factors in live streaming. This finding is supported by other research showing that interpersonal attraction and loneliness have a positive impact on parasocial relationships (Liu, 2023). Interpersonal attraction itself can take the form of a media figure's humorous, intelligent, and credible personality (Liebers & Schramm, 2019).

3.7 Parasocial relationship measurement tool

The Parasocial Interaction Scale (PSI-Scale) was developed to measure parasocial interactions between viewers and television presenters. The PSI-Scale consists of 20 items on a 5-point Likert scale designed to evaluate viewers' feelings toward media characters as if they had a real social relationship. The scale has high internal consistency, with a Cronbach's alpha of 0.93 (Rubin et al., 1985). It has been widely used in various studies examining both parasocial interactions and parasocial relationships (Liebers & Schramm,

2019). However, research has shown that the PSI-Scale measures parasocial relationships more effectively than parasocial interactions (Dibble et al., 2016).

A parasocial relationship measurement tool was later developed by combining the PSI-P Scale and other related instruments, specifically designed to assess relationships with virtual characters (Schramm & Hartmann, 2008; Slater et al., 2018; Liu, 2023). This instrument integrates the characteristics of virtual idol groups and consists of three aspects—cognition, affection, and behavior—with a total of 13 items measured on a 5-point Likert scale (Tinambunan & Siahaan, 2022; Liu, 2023). The instrument demonstrates acceptable internal consistency, with Cronbach's alpha values of 0.704 for the cognitive aspect, 0.725 for the affective aspect, and 0.771 for the behavioral aspect (Liu, 2023). In this study, the researcher used Liu's measurement instrument because it is specifically designed to assess parasocial relationships with virtual characters, making it highly relevant for Vtubers as virtual streamers. In addition, the instrument shows sufficient reliability to measure the construct of parasocial relationships (Liu, 2023).

3.8 Other factors affecting merchandise purchase intention

3.8.1 Demographic factors

Demographic factors are population characteristics that have been used in various social and marketing studies to understand consumer behavior (Akhter, 2003; Akar & Nasir, 2015). Studies have highlighted the importance of demographic factors in understanding purchase intentions, where factors such as age and income can influence purchase intentions (Akhter, 2003). Age: Previous studies have found that age has an effect on purchase intentions. Younger consumers tend to have higher intentions to buy merchandise online (Akhter, 2003). This is supported by other studies which found that groups of younger individuals have higher purchase intentions compared to older groups (Akar & Nasir, 2015; Sethi & Sethi, 2016; Bhat et al., 2021). However, some studies found no difference in merchandise purchase intentions between younger and older groups (Özer & Argan, 2006).

Income: Income is also an important factor in influencing purchase intention, although findings from various studies are not always consistent. Some studies show that higher income is associated with higher purchase intention (Akhter, 2003; Akar & Nasir, 2015; Hedlund & Naylor, 2020). However, other studies found no significant effect of income on the intention to buy merchandise (Toshiko, 2024; Özer & Argan, 2006; Kwon, 2012; Bhat et al., 2021).

3.8.2 Customer engagement factors

Several previous studies have found that customer engagement can influence purchase intention (Sun et al., 2019; Huetterman & Kunkel, 2022; Lin & Nuanjamong, 2022). Customer engagement is defined as consumer behavior that focuses on a brand or company outside of a purchase transaction (Van Doorn et al., 2010). It is also understood as the level of consumer interaction and connection with a brand or company outside of a purchase transaction (Vivek et al., 2014). This definition is used because it is more relevant in the context of live streaming, where viewer behavior can be seen from their level of interaction and connection with a particular streamer. The more specific forms of customer engagement measured in this study are relationship length and duration of viewing time (Van Doorn et al., 2010).

Relationship length: Relationship length is defined as the duration of time consumers have known a brand or company (Balaji, 2015). In the context of live streaming, it can be defined as the duration of time viewers have known a particular streamer. Previous research has found that relationship length can positively influence consumer purchase intention (Verhoef et al., 2002).

Viewing behavior: Several previous studies have found that viewing behavior influences consumer purchase intentions. This behavior is measured in terms of viewing duration, while viewing frequency has not been found to have a significant effect on purchase intentions (Lin & Nuanjamnong, 2022). The duration of daily TV viewing has also been shown to influence purchase intentions (Kwon, 2012). Similarly, the duration of drama viewing can increase the intention to purchase merchandise among viewers (So & Kim, 2020).

3.9 Young adult hololive Vtuber viewers in Indonesia

According to Erik Erikson's psychosocial theory, the young adult development phase covers the age range of 18 to 40 years (Papalia, 2021). At this stage, individuals are faced with a psychosocial crisis between intimacy and isolation. Erikson argued that successful resolution of this psychosocial crisis puts a person in a good position to face the next crisis. Intimacy is an important quality to achieve, because according to Erikson, if adults are unable to make deep personal commitments to others, they risk becoming too isolated and self-focused. The process of forming intimacy also requires sacrifice and compromise, which helps develop a sense of ethics as a marker of maturity (Viswanathan et al., 2018). Completion of this stage results in the virtue of love, a form of mutual devotion between partners who choose to share their lives. In the modern context, the developmental trajectories of young adults are much more diverse and may develop differently than in previous studies (Widya & Tanto, 2023). Nevertheless, research on the normative stages of human development has continued to impact the field of psychology, drawing attention to the idea that humans continue to change and develop throughout their lives (Yuan et al., 2023). Typical developmental tasks of young adults may include leaving the childhood home for further education, employment, or military service; forming more intimate friendships and romantic relationships; and developing independence and self-reliance (Papalia, 2021).

Studies on parasocial relationships in digital celebrities found that 92.8% of the sample was between the ages of 18–40 (Hwang & Zhang, 2018). Research on parasocial relationships in virtual idol fans also found that all participants were under 40 years old (Liu, 2023). In addition, most participants did not have a romantic partner, with 88.8% of the sample reporting being single (Liu, 2023). This is in accordance with Erikson's approach to the young adult age category. Young adult demographics are heavily involved in parasocial relationships in the digital world such as the internet (Yüksel, 2016). In the context of young adults, individuals may face challenges in forming deep intimate relationships due to busyness or other social barriers (Zhan & Zhang, 2023). Having Vtubers as an alternative can help individuals in the young adult phase to feel socially and emotionally connected (Zhou & Tong, 2022). Vtubers offer interactions that can fill the social and emotional void that may be felt by individuals who have difficulty forming intimate relationships in the real world.

3.10 Dynamics of the relationship between parasocial relationship variables, age, income, relationship length, and watching duration with merchandise purchase intentions of hololive Vtuber viewers in Indonesia

The intention to buy merchandise among Vtuber viewers is an important aspect in understanding the phenomenon of merchandise sales in the Vtuber industry. Merchandise is products sold under the Vtuber brand or identity, such as clothing, accessories, or other merchandise that often have emotional value for viewers. Hololive is the most popular Vtuber group in Indonesia today, so Hololive Vtuber viewers in Indonesia were chosen as the population to be studied. In the context of Vtuber, viewers can fulfill their emotional and social needs through live streaming interactions, which can then create a strong parasocial relationship with Vtuber. Previous studies have shown that parasocial relationships can increase consumer purchase intentions.

Demographic factors are also important factors related to merchandise purchase intentions, but previous studies have found contradictions in these demographic factors. The demographic factors found to have different influences are age and income. Researchers hypothesize that age and income will have a significant influence on purchase intentions. Customer engagement was also found to have a positive influence on merchandise purchase intentions. In this study, customer engagement is seen based on viewer behavior, namely the length of time they have known Vtuber and the duration of watching live streaming per week. The length of time viewers have known Vtuber or relationship length has been found to influence purchase intention. The duration of watching live streaming will be abbreviated to the viewing behavior variable. Viewing behavior in the form of viewing duration has also been found to influence purchase intention.

3.11 Descriptive analysis results

3.11.1 Overview of research participants

The data collection process resulted in a total of 139 participants. After data screening, 10 responses were excluded, resulting in a final sample of 129 participants. All participants were Indonesian Hololive viewers aged between 18 and 34 years ($M = 22.74$, $SD = 3.61$). The demographic distribution of respondents is presented in Table 1. In addition, most participants were viewers of Kobo Kanaeru from Hololive ID (40 participants; 31.0%), followed by Hoshimachi Suisei from Hololive JP (12 participants; 9.3%).

Table 1. Demographic data of participants (N = 129)

Variable	Category	N	Percentage
Age	18–22	67	51.9%
	23–28	50	39.8%
	29–34	12	8.3%
Length of time following Vtuber (years)	1 year	12	9.3%
	2 years	42	32.6%
	3 years	28	21.7%
	4 years	36	27.9%
	5 years	9	6.9%
	6 years	2	1.6%
Time spent watching Vtuber (per week)	< 2 hours	39	30.2%
	2–4 hours	46	35.7%
	4–8 hours	30	23.2%
	> 8 hours	14	10.9%
Purchased merchandise	No	47	36.4%
	Yes	82	63.6%
Income source	Pocket money	63	48.8%
	Salary	64	49.6%
	Others	2	1.6%
Monthly income	< IDR 1,000,000	44	34.1%
	IDR 1,000,000–2,500,000	40	31.0%
	IDR 2,500,000–5,000,000	32	24.8%
	IDR 5,000,000–7,500,000	5	3.9%
	IDR 7,500,000–10,000,000	4	3.1%
	> IDR 10,000,000	4	3.1%

As presented in Table 1, a total of 129 respondents participated in this study. Respondents have followed Vtubers for a period ranging from 1 to 6 years ($M = 2.95$, $SD = 1.18$), with the largest proportion having followed for 2 years (32.6%) and 4 years (27.9%). Regarding weekly viewing time, the majority of participants spend 2–4 hours watching Vtubers (35.7%), followed by less than 2 hours (30.2%) and 4–8 hours (23.2%). In terms of purchasing behavior, 63.6% of participants reported having purchased merchandise, indicating a relatively high level of consumer engagement. Concerning income sources, most

respondents rely on pocket money (48.8%) and salary (49.6%). Furthermore, the majority of participants earn below IDR 5,000,000 per month (89.9%), with the largest proportion falling within the < IDR 1,000,000 (34.1%) and IDR 1,000,000–2,500,000 (31.0%) categories.

3.11.2 Overview of research variables

The following tables show an overview of the variables of this study, namely parasocial relationships and purchase intentions. These descriptive statistics provide a preliminary understanding of the data distribution before further inferential analysis is conducted. Table 2 is a descriptive table that contains the minimum, maximum, average, and standard deviation scores of each variable.

Table 2. Overview of research variables (N = 129)

Variable	Min	Max	Mean	SD
Age	18	34	22.74	3.61
Relationship length (Years)	1	6	2.95	1.18
Parasocial relationship	1.23	5.00	2.93	0.73
Purchase intention	1.00	5.00	3.03	0.90

Based on table 2, 129 participants in this study have an age range of 18 to 34 years, with an average age of 22.74 years (SD = 3.61). The relationship length that viewers have with their favorite Vtubers ranges from 1 to 6 years, with an average of 2.95 years (SD = 1.18). This shows that most participants have known and followed the activities of their favorite Vtubers for quite some time. Participants have a parasocial relationship score range of 1.23 to 5.00 with an average of 2.93 (SD = 0.73). Meanwhile, the intention to buy Vtuber merchandise score ranges from 1.00 to 5.00 with an average of 3.03 (SD = 0.90). The parasocial relationship and intention to buy scores have an average close to the middle of the range so that participants show a neutral or moderate level obtained from the measuring instrument.

3.12 Assumption tests

Prior to conducting the regression analysis, several classical assumption tests were performed to ensure the validity of the model, including tests of normality, multicollinearity, and heteroscedasticity. The normality test indicated that the residuals were normally distributed. The multicollinearity test showed that all predictor variables had tolerance values above 0.10 and Variance Inflation Factor (VIF) values below 10, indicating no multicollinearity issues. Furthermore, the heteroscedasticity test confirmed that the residuals were randomly distributed, suggesting the absence of heteroscedasticity. Therefore, all assumptions required for regression analysis were met.

3.13 Results of simple linear regression analysis

Table 3 shows the results of a simple linear regression analysis of the independent variables on the variable of intention to buy merchandise. The LoS value used for this analysis is $\alpha = 0.05$. The results of the simple regression analysis show that parasocial relationships, income, relationship length, and viewing behavior can significantly affect the intention to buy merchandise with a p value <0.05. Meanwhile, age does not significantly affect the intention to buy merchandise. From these results, all variables except age will be included in the multiple linear regression model.

Table 3. Simple linear regression on merchandise purchase intention

Predictor	B	p-value	Adjusted R ²
Parasocial relationship	0.742	0.001	0.547
Age	0.026	0.773	-0.007
Income	0.226	0.010	0.043
Relationship length	0.182	0.039	0.026
Viewing behavior	0.195	0.027	0.030

Note. B = unstandardized coefficient.

3.14 Multiple linear regression analysis results

Multiple linear regression analysis was conducted to test the research hypothesis, namely to determine what factors can influence and how big the role of these factors is on the intention to buy merchandise in Vtuber viewers. The variables of parasocial relationships, relationship length, income, and viewing behavior were entered as predictor variables, then the intention to buy merchandise as the dependent variable. The order of the predictor variables entered was based on forward selection, namely, parasocial relationships, then relationship length, income and finally viewing behavior. The test results showed that the regression model was significant with a value of $F(4,124) = 42.768$, $p < 0.001$ and could predict the intention to buy merchandise in Vtuber viewers. This regression model can explain 58.0% of the variance in the intention to buy merchandise variable outside of other variables not examined in this study.

Table 4. The results of multiple linear regression analysis on the merchandise purchase intention variable

Predictor	B	SE	Beta (β)	95% C.I. (LL & UL)	P
Constants	-0.030	0.261	-	-0.546 & 0.486	0.909
Parasocial relationship	0.886	0.075	0.717	0.739 & 1.034	0.000
Relationship length	0.094	0.045	0.123	0.005 & 0.182	0.038
Monthly income	0.086	0.045	0.117	-0.002 & 0.175	0.056
Viewing behavior	-0.003	0.057	-0.003	-0.116 & 0.110	0.958

Note. $N = 129$; $F = 42.768$; $R^2 = 0.580$; CI = confidence interval; LL = lower limit; UL = upper limit.

3.15 Discussion

The results of this study indicate that parasocial relationships have the largest B coefficient with a score of $B = 0.886$, making them the strongest factor in predicting merchandise purchase intentions among Hololive Vtuber viewers in Indonesia. This score indicates that every 1 point added to the parasocial relationship score will be followed by an increase in the merchandise purchase intention score of 0.886, indicating that parasocial relationships have a positive effect on merchandise purchase intentions. This finding is consistent with previous studies showing that parasocial relationships with certain media figures can increase merchandise purchase intentions (Hwang & Zhang, 2018; Gao et al., 2023; Yuan et al., 2023). These results also indicate that Vtuber, although a virtual character whose voice is unknown, can influence parasocial relationships and also purchase intentions in viewers. The predictor variable that also has a significant effect on merchandise purchase intentions is relationship length, which is measured by how long the viewer has known the Vtuber. This finding is in line with research (Verhoef et al., 2002). This shows that Vtubers need to pay attention to the loyalty of their viewers so that they can establish long-term relationships with Vtubers.

The viewing behavior variable was also found to have no significant effect on the intention to buy merchandise. Similar to income, viewing behavior can predict merchandise purchase intention when tested using simple linear regression analysis but was found to have no significant effect on the multiple linear regression model. Whereas previous studies found that viewing behavior is measured by viewing duration such as (Kwon, 2012; So & Kim, 2020). This discrepancy can be explained through the results of the multiple linear

regression model where other variables such as parasocial relationships and relationship length have a greater influence than viewing behavior variables on Hololive Vtuber viewers. Regarding the measuring instrument used, the parasocial relationship and purchase intention measuring instrument has high internal consistency or internal reliability. However, the parasocial relationship measuring instrument used (Liu, 2023) explains that the measuring instrument has 3 dimensions, but Liu does not explain which items are included in a particular dimension. Researchers use the measuring instrument as a whole which may cause the explanation of certain aspects of the parasocial relationship variable to be missed. Overall, this study contributes to understanding the factors that influence merchandise purchase intentions in Vtuber viewers, especially in the context of parasocial relationships and the duration of knowing the Vtuber. This study has important implications for marketing strategies in the Vtuber and live streaming industry. Vtubers and their agencies can focus on building and strengthening strong relationships with viewers to increase merchandise sales.

4. Conclusion

Based on the results of this study, there are several main findings related to the factors that influence the intention to buy merchandise among Hololive Vtuber viewers in Indonesia. The variables of a parasocial relationships and relationship length or the length of time knowing the Vtuber are variables that have a significant influence on the intention to buy merchandise. Meanwhile, age, income, and duration of watching live streaming do not have a significant influence on the intention to buy merchandise among Hololive Vtuber viewers in Indonesia.

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