

THE STRUCTURAL EQUATION MODEL OF THE VARIABLES PARA-SOCIAL AND PRODUCT FIT INFLUENCING ATTITUDE AND PURCHASE INTENTION OF GAME CONSUMERS WHO FOLLOW THE LIVE STREAMS OF GAMING STREAMERS

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ABSTRACT

This study investigates the influence of para-social behavior and product fit on consumers' attitudes and purchase intentions toward gaming products, aiming to develop a structural equation model aligned with empirical data. Leveraging Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM), the research utilized a sample of 400 participants, comprised of gaming product consumers and followers of streamers in Thailand. Results demonstrated that the developed model exhibited a perfect fit with empirical data.

CFA results confirmed that all observed variables met the factor loading thresholds, eliminating the need to exclude any variables. Construct reliability (CR) and Average Variance Extracted (AVE) values exceeded the accepted thresholds for all latent variables, and discriminant validity was verified by demonstrating that the square root of the AVE for each latent variable surpassed its correlation with other latent variables. Path analysis revealed significant positive influences of para-social behavior and product fit on consumers' attitudes and purchase intentions. Para-social behavior affected purchase intentions both directly and indirectly through attitudes, which were identified as a key mediating factor. Additionally, product fit exhibited a direct and substantial impact on attitudes and purchase intentions, underscoring its role in consumer decision-making.

The research highlights the strategic importance of fostering relationships between streamers and their audiences while ensuring that gaming products align with consumer preferences. These findings provide valuable insights for the gaming industry, offering practical recommendations for utilizing online platforms and live streaming to strengthen consumer engagement and enhance purchase behaviors. The study successfully developed a structural equation model that elucidates the factors influencing consumer attitudes and purchase intentions, contributing to a deeper understanding of consumer behavior in the gaming industry and serving as a framework for effective marketing and business strategies. The results reinforce the significance of para-social dynamics and product alignment in shaping consumer behavior in a rapidly evolving digital landscape.

Keywords: Streamers, Video Game, Para-social, Attitude, Product Fit, Video Game Products

INTRODUCTION

The gaming industry in Southeast Asia is regarded as the fastest-growing in the world, driven by remarkable growth in mobile gaming. The mobile gaming sector has seen a revenue increase of over 45.3%, which significantly surpasses the global average of 14.6%. While the growth of PC gaming may be somewhat slower than mobile gaming, both platforms exhibit notable upward trends in player engagement and market expansion. This data highlights the region's robust and dynamic gaming landscape, as shown in Table 1.

Table 1

Platform	Domestic		Export		Total		
	2556	2557	2556	2557	2556	2557	% change
PC							
PC-Online	4,715.6	5,166.7	651.9	565.3	5,367.5	5,732.0	6.8%
PC-Offline	270.9	168.9	6.4	11.2	277.3	180.2	(35.0%)
Mobile							
IOS	221.5	671.7	177.3	245.8	398.8	917.6	130.1%
Android	245.7	540.1	165.7	222.8	410.8	762.9	85.7%
Windows	0.5	0.7	0.8	0.8	1.2	1.5	25.0%
อื่น ๆ	11.0	15.4	0.0	0.0	11.0	15.4	40.0%
Arcade	328.3	210.9	0.4	0.0	328.7	210.9	(35.0%)
Console/Handheld	7.7	0.1	28.0	14.2	35.7	14.3	(59.9%)
Total	5,801.2	6,774.5	1,030.5	1,060.1	6,831.0	7,834.6	14.7%

The video game industry in Thailand has shown remarkable growth in recent years. This is evident from data highlighting the increasing number of viewers and followers engaging with gaming content on platforms such as YouTube (data accessed on December 2, 2022). Furthermore, consumer spending on gaming products reached an impressive 17.2 billion baht in 2021 (Statista, 2021; data retrieved online on December 2, 2022). According to AIS E-sports, a subsidiary of Advanced Info Service Public Company Limited, the value of Thailand's gaming market was projected to grow to 27 billion baht in 2020, reflecting a 15.8% increase compared to 2019.

In Thailand, the gaming market share is distributed across different platforms as follows: 71% of gamers play on mobile devices such as smartphones or tablets, 22% on computers (PC), and 7% on gaming consoles. Alongside the rapid expansion of the gaming industry, there has been a significant rise in the number of viewers watching online game streams hosted by Thai streamers. Interest in video game-related content, including general gaming topics and esports competitions, has gained substantial traction among both players and viewers.

Data from well-known Thai streamers who create content focused on gaming competitions or video game play on popular platforms like YouTube can be summarized and organized in Table 2 for clearer presentation and analysis.

Table 2

Name Channel	Subscribers	Channel
Zbing z.	13.3 million	youtube.com/zbing z
HEARTROCKER	6.96 million	youtube.com/HEARTROCKER
Skizztv	5.57 million	youtube.com/SkizzTV

The data in the table clearly demonstrates a significant interest in watching renowned streamers play video games. This interest is reflected not only in the high viewership figures but also in the active exchange of ideas, analysis, and mutual expressions between viewers and streamers during live broadcasts. Such interactions take place in real-time through discussion boards and often extend beyond the streaming sessions, fostering continued engagement.

According to revenue data disclosed by companies managing the earnings of professional streamers on social media platforms, streamers with tens of thousands of concurrent viewers during live gaming streams typically earn between \$60,000 and \$70,000 per hour. In Thailand, the earnings for streamers with a large audience range from approximately 30,000 to 50,000 baht per hour. This represents a notably high income for streamers with a significant following (Online Performers Group, as referenced in Bangkokbiznews.com, retrieved on December 2, 2023).

The connection between well-known figures, such as actors, singers, or political leaders, and their audience or media consumers is often characterized as unidirectional. In such relationships, influential individuals in mass media usually lack personal knowledge of or formal interaction with their audience. These interactions commonly take place through platforms like television, radio, or social media. This form of engagement is known as a "para-social relationship," as it reflects a one-sided dynamic where the audience connects with public figures who are unable to reciprocate direct interaction (Dibble & Hartman, 2015; et al., 2021). It is crucial to study and develop a model to understand the varying levels of para-social relationships and their influence on viewers' attitudes and purchasing intentions regarding gaming products promoted by streamers. This research includes a comprehensive literature review aimed at creating a strategic model that serves as a framework for future studies or as a guideline for businesses involved in gaming product transactions. The objective is to strengthen business confidence in effectively adapting to the inevitable rise of gaming culture through online channels. (Aw & Chuah, 2021; Kaewkhuntee, 2023; Hanief et al., 2019; Kim & Chang, 2022; Ko, 2023; Su et al., 2021; Yuan et al., 2021)

Observations across various online social media platforms that host live streaming by gaming streamers reveal a common practice of financial transactions, often referred to as "donations." In addition, there is a growing trend of streamers selling virtual goods or products to their fans, allowing audiences to purchase items while enjoying gaming content on platforms such as YouTube, Twitch, Facebook, and others (Johnson, M. R. & Woodcock, J., 2019). This phenomenon aligns with the concept of para-social behavior, similar to the marketing strategies used in contexts involving celebrities, singers, or public figures (Farivar et al., 2021). A substantial body of literature has explored the relationship between para-social variables and their influence on consumer attitudes and purchase intentions in marketing contexts (Long et al., 2024; Chang & Kim, 2022; Zhang et al., 2021). Beyond the para-social behavior of followers engaging with streamers' live streaming, the categorization of video game products itself also plays a significant role in influencing consumer purchasing decisions (Park and Lin, 2020; Folkvord et al., 2020; Lu & Chen, 2021; Belanche et al., 2021). Moreover, attitudes also influence purchase intention (Kerdpitak et al., 2024). Extensive literature has discussed the relationship between the alignment of products with consumer preferences and its impact on purchase decisions. Based on these insights, the researchers have formulated five research hypotheses as follows:

H1: Para-social behavior has a direct positive influence on consumers' attitudes toward video game products.

H2: Para-social behavior has a direct positive influence on consumers' purchase intentions for video game products.

H3: Product fit has a direct positive influence on consumers' attitudes toward video game products.

H4: Product fit has a direct positive influence on consumers' purchase intentions for video game products.

H5: Consumers' attitudes toward video game products have a direct positive influence on their purchase intentions for those products.

Based on these hypotheses, the researcher can develop the following conceptual framework for the study.

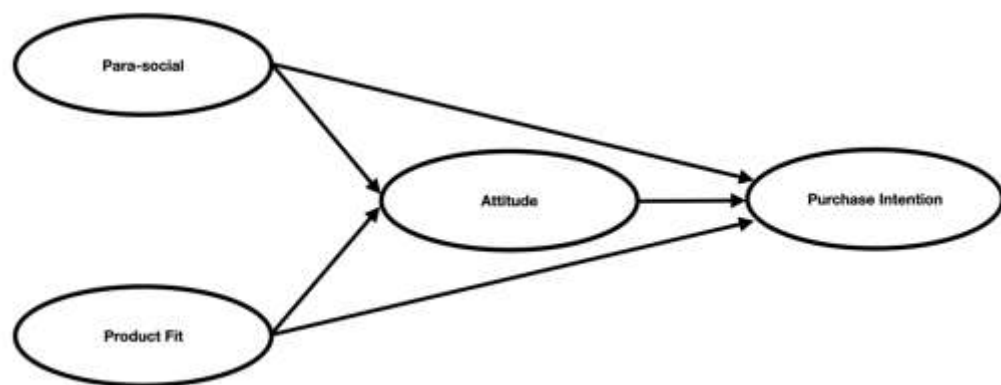


Figure 1: The Research Framework

In the context of live streaming gaming content by streamers, one critical element is the various gaming products used as tools for entertainment alongside the streamers themselves. However, a negative cultural tendency has emerged, where viewers often focus solely on watching streamers play games without actively participating in purchasing or supporting the products associated with the games being streamed (Yudha, A., 2023). Given the issues and phenomenon described, the researcher is interested in studying a structural equation model that examines the influence of the variables *Para-social* and *Product Fit* on consumers' attitudes and purchase intentions toward video games. This study is based on the identified issues, conceptual framework, and hypotheses derived from the literature review presented above.

OBJECTIVE

(1) To examine the influence of the variables *Para-social* and *Product Fit* on consumers' attitudes toward video game products and their purchase intentions for video game products.

(2) To develop a structural equation model of the factors influencing consumers' attitudes and purchase intentions toward video game products within the context of *Para-social* behavior and *Product Fit*.

METHODOLOGY

The population in this research consists of consumers of gaming products who engage in following streamers' streaming activities and are also players or users of video game products. The researcher employed a multi-stage sampling method from the population of Thailand to ensure representation from all regions. The data collection instrument used was a questionnaire, with data gathered from 400 participants. This sample size aligns with the recommendations of Hair et al. (2011) regarding the determination of sample size for structural equation modeling (SEM). This study adopts a quantitative research approach, collecting data from both secondary sources, such as literature, theories, and related studies, and primary sources using questionnaires. Statistical software for social science research was utilized for data analysis. Descriptive statistics were employed to summarize the data, while inferential statistics, such as confirmatory factor analysis (CFA) for variables within the conceptual framework, and path analysis were applied to test hypotheses and explain the direct and indirect effects of variables. The data collection tool, the questionnaire, was developed by the researcher based on a review of related literature. Its reliability was assessed through content validity and internal consistency using Cronbach's alpha. The results indicated that the Cronbach's alpha coefficients for all latent variables exceeded 0.70, suggesting that the questionnaire developed by the researcher demonstrated sufficient reliability for statistical analysis. After data collection, the data were analyzed following the process of developing a structural equation model (SEM).

RESULTS

The testing of the measurement model through Confirmatory Factor Analysis (CFA) was conducted to examine the validity and reliability of the scale. The results of the CFA revealed that the researcher analyzed the relationships between variables, which indicated that in each component, certain observed variables did not have factor loadings below the threshold. Therefore, it was unnecessary to consider removing any observed variables from the components. When assessing the model's goodness-of-fit with empirical data, it was found that the goodness-of-fit indices yielded the following values: $\chi^2 = 123.987$, $df = 48$, $p\text{-value} = 0.000$, $\chi^2 / df = 2.583$, $GFI = 0.949$, $NFI = 0.949$, $IFI = 0.968$, $TLI = 0.955$, $CFI = 0.968$, $RMSEA = 0.063$. This can be interpreted as the model achieving a perfect fit with the empirical data, meeting all the standard criteria established by Hair et al. (2010), as shown in Figure 2. (PS = Para-social, PF = Product Fit, AT = Attitude towards Game Product, PI = Purchase Intention)

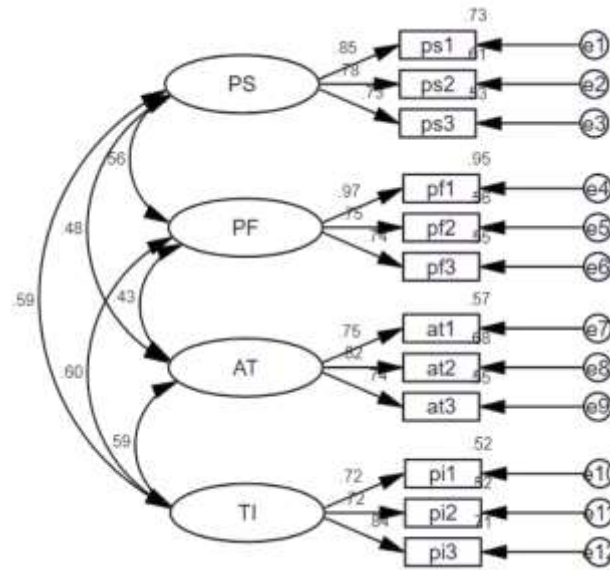


Figure 2: CFA Measurement Model

The researcher tested the validity and reliability of the revised measurement model by removing observed variables with factor loadings below the threshold. Techniques were employed to examine structural reliability, convergent validity, discriminant validity, and the model's goodness-of-fit with empirical data, referencing the literature by Fornell and Larcker (1981). The measurement model included 12 observed variables, which are presented in Table 1.

Table 1 Results of structural reliability testing, composite reliability coefficients, and the average variance extracted (AVE).

Laten Variable	Observed Variable	Construct Reliability	AVE
PS	3	0.831	0.621
PF	3	0.864	0.684
AT	3	0.814	0.594
PI	3	0.805	0.581

It was observed that the construct reliability (CR) coefficients for all variables exceeded 0.60, indicating that each latent variable sufficiently explains the set of observed variables as defined by the measurement model developed by the researcher (Diamantopoulos and Siguaw, 2000:90-91; Saarani and Shahadan, 2012). The researcher assessed convergent validity using the analysis of the Average Variance Extracted (AVE). The table shows that the AVE values for all latent variables were above 0.50, which meets the threshold and demonstrates adequate precision in measuring the variables (Fornell and Larcker, 1981).

The discriminant validity was evaluated following the criteria set by Fornell and Larcker (1981). It was found that the square root of the AVE for each latent variable was greater than the pairwise correlation coefficients of that latent variable with any other latent variable in the model. This confirms sufficient discriminant validity (Hair et al., 2014). The lowest square root of the AVE among the variables was 0.762, which indicates a high level of discriminant validity.

The results of the analysis to assess the consistency of the structural equation model developed by the researcher, based on the stated hypotheses, examined whether the model aligned with empirical data using statistical software. From the consideration of goodness-of-fit indices, it was found that the hypothesized model achieved a perfect fit with the empirical data. This indicated that the researcher did not need to eliminate any observed variables or modify the model by correlating the error terms of observed variables based on the values of Modification Indices (MI). The characteristics of the model are illustrated in Figure 3. The evaluation of the Goodness of Fit Indices provided the following values: $\chi^2 = 123.987$, $df = 48$, $p\text{-value} = 0.000$, $\chi^2 / df = 2.583$, $GFI = 0.949$, $NFI = 0.949$, $IFI = 0.968$, $TLI = 0.955$, $CFI = 0.968$ and $RMSEA = 0.063$.

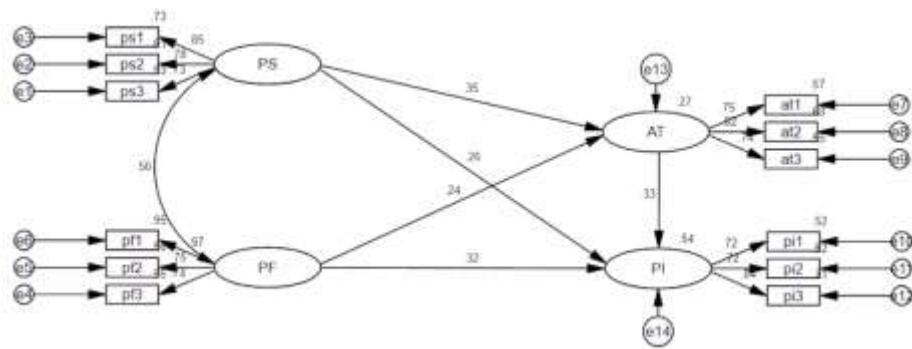


Figure 2: CFA Structural Model

The results of the hypothesis testing revealed that all research hypotheses were accepted at a statistical significance level of 0.001. The analysis examined the influence weights of all factors by assessing the direct effects, indirect effects, and total effects. The results of the analysis are presented in Table 2.

Table 2 The path analysis of the influence relationships between variables in the structural equation model.

Dependent Variable	R ²	Effect	Independent Variable		
			PS	PF	AT
AT	0.27	Direct	0.347	0.241	-
		Indirect	-	-	-
		Total	0.347	0.241	-
PI	0.54	Direct	0.256	0.316	0.334
		Indirect	0.116	0.080	-

Total	0.372	0.397	0.334
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$\chi^2 = 123.987$, $df = 48$, $p\text{-value} = 0.000$, $\chi^2/df = 2.583$, $GFI = 0.949$, $NFI = 0.949$, $IFI = 0.968$, $TLI = 0.955$, $CFI = 0.968$, $RMSEA = 0.063$

CONCLUSION

This research focuses on analyzing the role of para-social behavior and product fit on consumers' attitudes and purchase intentions toward gaming products. It aims to develop a structural equation model that aligns with empirical data and utilizes analytical techniques such as CFA (Confirmatory Factor Analysis) and SEM (Structural Equation Modeling), following the conceptual framework and hypotheses defined. The study involved a sample of 400 participants, consisting of gaming product consumers who follow streamers in Thailand. The structural equation model developed was tested and demonstrated a perfect fit with empirical data. The results of the CFA analysis indicated that all observed variables had factor loadings above the threshold, making it unnecessary to remove any variables. Furthermore, the construct reliability and average variance extracted of all latent variables exceeded the required thresholds. Discriminant validity was also confirmed to be sufficient, as the square root of the average variance extracted was higher than the correlation coefficients between pairs of other latent variables in the model. The path analysis revealed that para-social behavior and product fit positively influenced consumers' attitudes and purchase intentions. Para-social behavior had both direct and indirect effects on purchase intentions through attitudes, which played a critical role in enhancing consumers' purchase intentions. Additionally, product fit was found to have a significant impact on both attitudes and purchase intentions, with a high total effect value. This study is significant for the gaming industry and marketers, as it provides in-depth insights into developing marketing strategies that focus on fostering relationships between streamers and their audience, as well as designing products that align with consumer needs. The research also offers practical recommendations for business applications, emphasizing the use of online platforms and live streaming to build deeper connections with consumers and promote product purchases by enhancing attitudes and appropriate behaviors. In conclusion, this study successfully developed a structural equation model that effectively explains the factors influencing consumers' attitudes and purchase intentions. The model not only contributes to a deeper understanding of consumer behavior in the gaming industry but also serves as a framework for developing effective business strategies in the future.

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