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A QUANTITATIVE ANALYSIS OF VTUBER MASCOT DEBUTS: EFFECTS ON COMPANY REVENUE AND BRAND INTEREST

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This study investigated the impact of VTuber mascot debuts on company revenue and brand interest. Utilizing a quantitative approach, the research examined quarterly revenue data from nine VTubers from seven companies and Google Trends search volume data from 21 VTubers from 15 companies for periods before and after VTuber mascot debuts. Paired t-tests were conducted to determine statistically significant changes. Results indicated no significant impact on company revenue ($t(8) = 0.465$, $p = 0.654$) or brand interest ($t(18) = -0.982$, $p = 0.341$) within the analysed timeframes. These findings suggest that, based on the examined data, the debut of a VTuber mascot did not lead to immediate, measurable changes in revenue or brand interest. Further research with larger sample sizes and extended timeframes is recommended to explore potential long-term effects and qualitative aspects of audience engagement.

Keywords: VTuber, virtual youtuber, media technologies, digital avatars, digital marketing.

Introduction

The digital age has brought about a dramatic shift in marketing strategies, and one of the most prominent phenomena is that of virtual YouTubers (VTubers). VTubers are virtual 2D or 3D animated avatars used mainly in streaming and video making; instead of showing their face, streamers will use avatars that follow their motion, speech and other creative outlets. These virtual characters, often embodying highly conceptualized mascots, have transcended traditional influencer marketing, creating a unique space where technology, entertainment, and consumer engagement meet. Ferreira et al. (2022) argue that the VTuber phenomenon has experienced significant growth, particularly since the COVID-19 pandemic, driven by the expansion of culture in various spheres and globalization. This growth has established VTubers as a relevant part of digital media, with a notable economic impact fuelled by audience engagement and creating a rapidly expanding, technology-intensive digital cultural market.

The development of a VTuber mascot is a strategic decision on the part of businesses to leverage the effective synergy of virtual presence and individual personality to build consumer loyalty and enhance financial returns. This research paper makes an in-depth examination of the effect that the advent of VTuber mascots has on business revenue and brand engagement, investigating the complex dynamics in this emerging sector. The virtual nature of VTubers provides a unique type of parasocial interaction in which the viewers experience a sense of proximity and one-to-one interaction, as argued by Zhou (2020). Some companies have already debuted their brand VTuber mascots to facilitate user engagement and revenue increase. From this research, it is hoped that an explanation for how the intentional use of VTuber mascots, which can form significant affective bonds, equates to measurable business achievements. By synthesizing existing literature in the areas of influencer marketing, audience psychology, and digital consumer behaviour, and by making a quantitative research on brand interest and revenue of the companies that had implemented the technology this research presents a sophisticated understanding of the effectiveness of VTuber mascots as an effective means of enhancing brand visibility and driving revenue.

Literature Review

The basis for VTuber mascots' impact on company revenues and brand popularity is in the established foundations of influencer marketing and audience engagement, but with a special virtual twist. Research has consistently shown that parasocial relationships with virtual celebrities affect consumers' attitudes towards brands substantially. Su et al. (2022) found a positive relationship between the emotional connection and trust built up between YouTubers and viewers and brand ratings, thus validating the findings of Lee and Watkins (2016) regarding the influence of YouTubers on consumer attitudes toward luxury brands. However, Su et al. (2022) also highlighted an important difference: viewers' loyalty to YouTubers does not always translate into an increase in purchase intentions. This indicates a combination of effects, both regarding the nature of the content, whether there are explicit product endorsements or not, and the individual viewing habits of consumers. This result adds further weight to the argument for a more nuanced understanding of the underlying dynamics of VTuber communities themselves, which may have bespoke behavioural traits compared with conventional YouTube viewers. The virtuality of VTubers adds a special dimension to this engagement in that the experience of personalized engagement and co-creation, as hypothesized by Zhou (2020), becomes more profound. The absence of a "self in reality" enables the viewers to project their fantasies and dreams onto the virtual avatar, projecting a sense of closeness and intimacy. This individualization is often achieved by the consumption of commodities and related services, powering the dynamics of digital capitalism by creating consumer-driven self-identities.

Credibility and trust are most important in predicting buying intentions in the case of VTubers. Boonchutima and Surakanon (2023) showed how trustworthiness is an important aspect, especially for non-Otaku respondents, who may depend more on perceived credibility because they have less prior experience with the influencer. Otaku meaning a big fan of Japanese media including anime, manga, gaming, etc, it is expected for non-Otaku respondents, who have no prior deep experience with Japanese media to have concerns. On the other hand, Otaku respondents, being more knowledgeable about VTuber culture, put more emphasis on expertise in developing their purchase intentions. This points to the relevance of content applicability and alignment with audience expectations, indicating that VTubers need to present a balanced knowledge about their specific niche to successfully impact purchase decisions. The emotional connection that VTubers share with their audience, while strong, does not necessarily result in purchase intentions, as Corrêa et al. (2020) has shown. This study identified that while affection towards YouTubers is present, it only contributes to usage intentions in the presence of a strong feeling of connection, affection, and trust. Furthermore, audiences may be resistant to overt promotional attempts, preferring authentic interactions that align with their affective bond with the VTuber. This is in line with Liu's (2023) study, which illustrated that the appetite for continued viewing has a considerable influence on purchase intentions and the likelihood of sharing content, making it imperative to create engaging content that facilitates a positive feedback cycle. The strategic advantages of using VTubers in marketing campaigns are manifold. Hsu and Hung (2024) pointed out VTubers' capacity to tap into existing audiences, match brand values, and produce genuine content to connect with their viewers. The argument, hence, is upfront for non-VTuber agency companies to invest in creating and launching branded business mascot VTubers to promote their products and services.

However, the VTuber industry is not without challenges. Fazora et al. (2024) highlighted the importance of reputation management and transparency, citing the Nijisanji EN controversy as a cautionary tale of how internal conflicts can have a significant impact on an organization's reputation and stakeholder relations. This highlights the importance of firms maintaining ethical business practices and having proper communications in place when utilizing VTuber mascots. In addition, Shen (2023) analysed the objectification and commodification of VTubers in the context of China, under the impact of capitalism, communication technology, and prevailing presuppositions of femininity. While VTubers facilitate economic empowerment and entertainment, they also stir up ethical questions regarding the exploitation of female identities in the digital era. The situation refers to the appeal of a critical examination of power dynamics and the social implications within the application of VTuber mascots.

Overall, the literature reveals an intertwined and complex interaction of influences on how VTuber mascots affect company top line and brand engagement.

The virtuality of VTubers allows for novel audience interaction and generates intense emotional bonds; however, the conversion of such bonds into concrete business results depends on meticulous care for aspects such as trust, credibility, moral aspects, and audience-particular tastes. This study will investigate these dynamics in greater depth, offering empirical findings and observations regarding the strategic utilization of VTuber mascots in companies across many industries.

Methodology

This study employed a quantitative approach to investigate the impact of VTuber mascot debuts on company revenue and brand interest. The research was conducted in two phases, each addressing a distinct aspect of the research question.

Hypotheses

Based on the existing literature and the research questions, the following hypotheses were formulated:

- **H1:** The debut of a VTuber mascot will result in a statistically significant increase in company revenue.
- **H2:** The debut of a VTuber mascot will result in a statistically significant increase in brand interest, as measured by Google Trends search volume.

Phase 1: Revenue Analysis

In the first phase, the study examined the effect of VTuber mascot debuts on company revenue. A sample of nine VTuber mascots from seven companies with publicly accessible quarterly revenue data was selected (Table 1). For each company, revenue data was collected for four quarters preceding the VTuber mascot's debut and four quarters following the debut. This pre- and post-debut data allowed for a direct comparison of revenue changes attributable to the VTuber's introduction. A paired t-test was performed to determine if there was a statistically significant difference in revenue between the pre- and post-debut periods. This statistical method was selected to account for the paired nature of the data, as each company served as its own control.

Phase 2: Brand Interest Analysis

The second phase of the study focused on assessing the impact of VTuber mascot debuts on brand interest. Google Trends data was utilized as a proxy for brand interest, capturing the relative search volume for each company's brand name. A sample of 21 VTuber mascots from 15 companies was selected for this analysis (Table 1). Google Trends data was collected for a 30-day period preceding the VTuber mascot's debut and a 30-day period following the debut. This timeframe was chosen to provide a focused analysis of immediate changes in brand interest. A paired t-test was conducted to determine if there was a statistically significant difference in Google Trends search volume between the pre- and post-debut periods. Like the revenue analysis, the paired t-test was chosen to account for the paired nature of the data, ensuring a robust comparison of brand interest changes.

Table 1: VTuber Mascots and Companies

Company Name	VTuber Mascot	Industry	Revenue Analysis	Trends Analysis
airasia	Aozora Kurumi	Airlines		Yes
airasia	Airi Gwynevere	Airlines		Yes
airasia	Mikazuki Mai	Airlines		Yes
Crunchyroll	Crunchyroll-Hime	Streaming Entertainment		Yes
Hitachi	Shirokaden Hakushaku	Conglomerate	Yes	Yes
HyperX	Himura Kuraudo	Computer Peripherals		Yes
Kellogg's	Tony the Tiger	Food Processing		Yes
Loop	Hinata Hino	Energy		Yes
Loop	Mahiru Shirayume	Energy		Yes
miHoYo	Mi Youji	Video Games		Yes
miHoYo	Lumi N0va	Video Games		Yes
MSI	Mei Mihoshi	Computer Hardware	Yes	Yes
Netflix	Kurono N-ko Mei	Streaming Entertainment	Yes	Yes
Omega Strikers	Sonii	Video Games		Yes
Opera GX	GX Aura	Software		Yes
Rohto Pharmaceutical	Nebasei Cocoro	Pharmaceutical	Yes	
Sanrio	Natsume Renge	Entertainment	Yes	Yes
SEGA	Tails	Video Games	Yes	Yes
SEGA	PoPona	Video Games	Yes	Yes
SEGA	Usaki Rin	Video Games	Yes	Yes
SNK Corporation	Asamiya Athena	Video Games		Yes
Suntory	Suntory Nomu	Beverage	Yes	Yes

Statistical Analysis

All statistical analyses were performed using Python with SciPy. The paired t-tests were conducted to determine the statistical significance of the differences in revenue and Google Trends data between the pre- and post-debut periods. The significance level was set at $\alpha = 0.05$.

Results and Discussion

The results of the paired t-tests for both revenue analysis and brand interest analysis are summarized in Table 2.

Phase 1: Revenue Analysis

The paired t-test conducted on the quarterly revenue data of the nine VTubers from seven companies revealed no statistically significant difference in revenue between the four quarters preceding the VTuber mascot's debut and the four quarters following the debut. Since the p-value (0.654) was greater than the significance level of 0.05, the null hypothesis, which states that there is no difference in revenue, could not be rejected. This indicates that, based on the available data, the debut of a VTuber mascot did not result in a statistically significant change in company revenue.

Phase 2: Brand Interest Analysis

Similarly, the paired t-test conducted on the Google Trends data of the 21 VTubers from 15 companies revealed no statistically significant difference in brand interest between the 30-day period preceding the VTuber mascot's debut and the 30-day period following the debut. The p-value (0.341) exceeded the significance threshold of 0.05, meaning that the null hypothesis, which states that there is no difference in brand interest, could not be rejected. This suggests that, within the 30-day timeframe analysed, the debut of a VTuber mascot did not result in a statistically significant change in brand interest as measured by Google Trends search volume.

Table 2: Paired T-Test Results for Revenue and Brand Interest

Analysis Type	Sample Size	T-Statistic	P-Value	Conclusion
Revenue Analysis (Quarterly revenue, pre- and post-debut)	9 VTubers from 7 companies	0.4648	0.6544	No significant difference in revenue ($p > 0.05$)
Brand Interest Analysis (Google Trends, 30 days before vs. after debut)	21 VTubers from 15 companies	-0.9819	0.3408	No significant difference in brand interest ($p > 0.05$)

The results of this study indicate that, based on the analysed data, the debut of VTuber mascots did not yield statistically significant changes in company revenue or brand interest within the specified timeframes. While the research did not find a statistically significant impact, it is important to note that the sample sizes for both phases were relatively small, and the timeframes analysed may not have captured longer-term effects. Future research with larger sample sizes and extended timeframes could provide more comprehensive insights into the long-term impact of VTuber mascot debuts on company performance. Another limitation of this study

arises from the observation that several companies implemented multiple VTuber mascot debuts within a compressed timeframe. This occurrence may have led to an interaction effect, wherein the combined impact of these launches influenced the measured variables, potentially altering the study's findings. Additionally, qualitative research could explore the nuances of audience engagement and brand perception associated with VTuber mascots, providing a deeper understanding of the underlying dynamics.

Conclusions

This study aimed to quantitatively assess the impact of VTuber mascot debuts on company revenue and brand interest, analysing data from a selection of companies across various industries. Through paired t-tests, we examined quarterly revenue changes and Google Trends search volume fluctuations in the periods immediately surrounding VTuber mascot debuts. The results, however, did not reveal statistically significant changes in either company revenue or brand interest within the analysed timeframes.

These findings suggest that, based on the data and methodologies employed, the introduction of VTuber mascots did not produce immediate, measurable effects on the financial performance or online search presence of the companies studied. This outcome underscores the complexity of integrating virtual influencers into marketing strategies and highlights the potential for a delayed or nuanced impact that may not be captured by short-term quantitative analysis.

Furthermore, the study acknowledges limitations, including the relatively small sample sizes and the potential influence of concurrent VTuber debuts by some companies. These factors may have obscured subtle or long-term effects. Future research should consider expanding the sample size, extending the analysis timeframe, and employing qualitative methods to explore the nuanced aspects of audience engagement and brand perception associated with VTuber mascots.

In conclusion, while this study did not find immediate quantitative evidence of VTuber mascot impact on revenue and brand interest, it provides a foundation for further exploration into this emerging field. Understanding the long-term effects and qualitative dimensions of VTuber marketing strategies is crucial for businesses aiming to effectively leverage virtual influencers in the evolving digital landscape.

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КОЛИЧЕСТВЕННЫЙ АНАЛИЗ ДЕБЮТОВ VTUBER-МАСКОТОВ: ВЛИЯНИЕ НА ДОХОДЫ КОМПАНИЙ И ИНТЕРЕС К БРЕНДУ

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В данном исследовании рассматривалось влияние дебюта маскотов VTuber на доходы компаний и интерес к бренду. С использованием количественного подхода были проанализированы данные о квартальных доходах девяти VTuber из семи компаний, а также данные о поисковых запросах в Google Trends для 21 VTuber из 15 компаний за периоды до и после дебюта маскотов. Были проведены парные t-тесты для определения статистически значимых изменений. Результаты показали отсутствие значимого влияния на доходы компаний ($t(8) = 0.465$, $p = 0.654$) и интерес к бренду ($t(18) = -0.982$, $p = 0.341$) в пределах анализируемых временных рамок. Эти данные свидетельствуют о том, что, согласно изученной информации, дебют маскота VTuber не привел к немедленным, измеримым изменениям в доходах или интересе к бренду. Рекомендуется проведение дальнейших исследований с более крупными выборками и на более длительных временных отрезках для изучения возможных долгосрочных эффектов и качественных аспектов вовлеченности аудитории.

Ключевые слова: VTuber, виртуальный ютубер, медиатехнологии, цифровые аватары, цифровой маркетинг.

VTUBER-МАСКОТТАРЫНЫҢ ДЕБЮТТАРЫНЫҢ САНДЫҚ ТАЛДАУЫ: КОМПАНИЯ КІРІСІ МЕН БРЕНДКЕ ҚЫЗЫҒУШЫЛЫҚҚА ӘСЕРІ

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Бұл зерттеуде VTuber маскоттарының дебюттары компаниялардың кірісіне және брендке деген қызығушылыққа әсері қарастырылды. Сандық әдіс қолданылып, жеті компанияға тиесілі тоғыз VTuber-дің тоқсандық кіріс деректері және 15 компаниядан 21 VTuber бойынша Google Trends жүйесіндегі іздеу көлемі талданды. Маскот дебютына дейінгі және кейінгі кезеңдер салыстырылып, статистикалық мәнді өзгерістерді анықтау үшін жұптық t -тесттер жүргізілді. Нәтижелер компания кірісіне ($t(8) = 0.465$, $p = 0.654$) немесе брендке қызығушылыққа ($t(18) = -0.982$, $p = 0.341$) елеулі әсер болмағанын көрсетті. Бұл деректер VTuber маскотының дебюты бірден байқалатын, өлшенетін өзгерістерге әкелмегенін көрсетеді. Аудиторияның қатысуының сапалық аспектілерін және ұзақ мерзімді әсерлерін зерттеу үшін кеңірек іріктемелер мен ұзағырақ уақыт аралықтарын қамтитын қосымша зерттеулер жүргізу ұсынылады.

Кілт сөздер: VTuber, виртуалды ютубер, медиатехнологиялар, цифрлық аватарлар, цифрлық маркетинг.