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The Influence of Virtual Marketing on the Sales of New Tea Drinking Brands in the Metaverse

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Abstract. As virtual shopping malls are springing up on e-commerce platforms, the online shopping experience has reached an even higher level. Particularly, due to the fast-replicability and connectivity of internet, Tea culture has been transmitted into metaverse era. Although marketing actions have already extended to such virchome world, limited researches have been conducted on this topic. In this research, it selects new tea brands such as HEYTEA and ChaPanda and analyzes three types of "virtual-real integration" behaviors-virtual check-in behavior, virtual product trial behavior and virtual community co-creation behavior. And it investigates the positive impact virtual marketing can create for product sales. By employing SEM to conduct a path analysis between various variables in the new consumer tea brand market, the findings demonstrate the important factors affecting product sales, along with the relationship between variables, enhancing the positive relationship between interaction quality and sales, an effect particularly observable in VR-marketing. The research outcomes may act as an external guidance for traditional Chinese tea companies and venture into e-commerce in Metaverse virtual reality commercial environment.

Keywords: Virtual marketing, new consumer tea brand, sales performance, metaverse.

1. Introduction

1.1. Research background

Under the trend of digital economy integrating into new consumption, tea drink brands have become the growth point of new consumption. The new milk tea brands made good business through distinctive marketing strategy [1]. As metaverse has already begun to infiltrate retail scene, the marketing mode of new retail scene from off-line to on-line will become an interactive "virtual-reality" experience mode. Several brands open VR virtual stores to simulate the processes of ordering and delivery, or cooperate with the blockchain platform to release digital collectibles, using a process of "virtual collection-offline redemption" to increase sales of new goods [2,3].

The influence of virtual reality technologies on consumer behavior: VR effects on perception of product quality, interaction of virtual product leads to improvement of visual attention, hence driving purchase intentions, metaverse engagement affects customer buying decisions in the real world [4-6]. Nevertheless, studies in tea food industry is still limited: on one hand, most of study

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only takes a single virtual form (e.g., an online chat room) as the object without clarifying the virtual-real integration type and features of "virtual-real integration interaction"; on the other hand, quantitative investigations of the mediating effect of metaverse technical characteristics between "interaction quality-real" and "sales performance-real" is still missing [7,8].

1.2. Research significance

On practice, existing online marketing in the tea business suffers from a "means rather than ends" mentality, where brands hastily release online digital charms, online AR costumes without fulfilling users' engaging mentality, and thereby end up with a low conversion rate [1]. This paper isolates good hybrid interaction models and moderating attributes, helping brand guide resource allocation: the upscale brands must take advantages of VR for immersive engagements and the mid-range brands should minimize entry barriers for community co-creation. The evidence supports the perspective that new Chinese style tea brands ought to have their distinct digital marketing styles [9].

In theory, the current research enriches the "consumer interaction-purchase decision" model based on three folds: Based on the Consumer Behavior Analysis (CAB) model, the paper improves "interaction immersion" into two dimensions,one is sense immersion, the other is emotion immersion, broadens the virtual immersion measurement indicators in two dimensions [10]. Second, based on the metaverse brand engagement theory, it establishes "digital identity binding", which fills the research gap in virtual marketing academia concerning the identity-identity effect on sales [6]. Third, it corroborates the effects of technical attribute and quantitatively tests multi-stakeholder effects from marketing perspective in metaverse advertising [11].

2. Research tools and methods

2.1. Research design

The research adopts research design which combines the methods of contents analysis, questionnaire survey, and regression study. The research is conducted in three stages. In phase one, the contents analysis of 2024 virtual marketing by HEYTEA and ChaPanda (HEYTEA's VR virtual store and ChaPanda's virtual community cocreation) is applied to derive information on categories of interactions, technology implementation and correlations of sale respectively [2-4]. In Part II, we develop questions from previous work to measure the public feedback on these campaigns. In Part III we combine both data sets for statistical hypothesis testing.

2.2. Research steps

2.2.1. Content analysis coding table

According to the structure design of digital content analysis framework of top milk tea brands, coding table in this paper was established with three-tier level of structure: The level 1 indicators are event type, technical characters, sales significance; Level 2 indicators, namely technical characters were divided into immersion degree, exchange frequency; Level 3 indicators are concrete measurement indexes [1]. We invited two marketing researchers to independent code, and the Kappa coefficient was higher than the requirement of meeting reliability standards for coding results [5].

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2.2.2. Questionnaire survey scale

In reference to the previous research, we design the items on the questionnaires based on five-point Likert scale (1-“Not at all” to 5-“Totally agree”) consisting of three parts which are the screening questions, essential items, and demographic. The research further validates that the reliability of overall scores and dimension is appropriate to conduct the research. The part of the screening questions assesses the involvement in Heytea and Chabad’s online promotion activity, so individuals who participate in them will become a key sample and those not participate in them are removed automatically. The essential things contained 16 questions, which form four factors: the interaction immersion, digital identity link, interactive degree, selling relationship. The test result of reliability shows the Cronbach’s αcoefficient more than 0.7 in overall, α= 0.83 for the interaction immersion (improved from AR atmosphere feeling scale [8,10]), α= 0.81 for the digital identity link (a theory of metaverse brand participation [6]), $\alpha=0.$ for interactive degree, α= 0.60 for selling relationship. Interaction quality (adapted from online shopping experience scale [7]: α= 0.82), sales association (indirectly quantified by purchase experience and recommendation acceptance: α= 0.80), and demographic variables, such as gender, age and beverage consumption patterns, used for characterizing the sample.

2.3. Sample and data sources

2.3.1. Content analysis sample screening

Two cases of virtual marketing strategies used by HEYTEA (2024) and ChaPanda (2024) namely, HEYTEA VR virtual shop experience and ChaPanda (2024) – Seasonal Tea community co-creation was examined in this project. We retrieved information about the mentioned campaigns (from campaign strategy to social interactions) and the entire campaigns from the official accounts of brands on social media, Weibo and third-party marketing analytics tools such as “2024 Digital Marketing Report for the Tea Beverage Industry” on iResearch (www.iresearch.cn).We obtained the sales data from brand financial reports and the quarterly tea beverage brand sales rankings released annually by the industry tracker Euromonitor International [1,3,9].

2.3.2. Sample of the questionnaire survey

The information was collected on the basis of agreement channels, by the use of the “Tea Beverage Consumer Group” target sample database of the third-party survey website Wenjuanxing. The screening conditions were determined as having experienced virtual marketing activities for Heytea and Chabaodao in the previous three months [1].The sample of this study almost contained the core age-related factors of drinkers of tea beverages, where 41.6% of females, over 70% of participants between the ages of 18-40 years old, and 53.9% of participants drink at least three times a month, basically milk tea drinker types; the design of the sample was according to Z-generations drinking habits of milk tea, brand users of top-ranked milk tea brands with representativeness [1,12].

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3. Research process and results

3.1. Content analysis results

Virtual marketing activities can be divided into three typical types: virtual check-in, digital try-on and virtual community co-creation, and their applied technologies mainly focus on AR, VR and digital collectibles based on blockchain. In the aspect of sale effect, virtual community co-creation activities brought the best sales growth among three kinds of virtual marketing activities and the next two were digital try-on and virtual check-in activities. VR activities brought much more impressive growth than AR ones [3,4].

3.2. Validity and reliability testing

As shown in Table 1, the formal survey data revealed that all dimensions met the Cronbach's α coefficient standard (0.893), demonstrating strong internal consistency of the scale [10].

From results of the KMO test and Bartlett test, we obtained a value of $K M O~=~0.940~(>0.8)$, Bartlett test statistic $=1342.730$, df $=120.000$, and p-value <0.001 which suggests that the data are well-correlated and hence dataset is almost good enough for factor analysis [5]. According to the exploratory factor analysis, the common factors after rotation constituted four factors completely consistent with the theoretical factors (“interactive immersion, digital identity binding, interaction quality and sales correlation”), accounted for 58.77% of the total variance and complied with the general standard that the factors required by the factor analysis should be at least 50% . Factor loadings of each item were within 0.11~0.79 , in which all the items load highly into their corresponding theoretical factors with minimal cross-loading. The commonality coefficients of the items ranged from .487 to .684. Therefore, they exhibit good explanatory power and confirmative validity.

Discriminant validity test showed that the correlation coefficient between each dimension was between 0.27-0.44 (all $p<0.01$), the correlation degree was moderate and no high correlation was found. Combined with the concentrated load characteristics of each item to the corresponding dimension in factor analysis, it showed that the discrimination between each dimension was good and the discriminant validity was up to standard [10].

Table 1. Reliability and validity testing

Cronbach.α coefficient	0.893
KMO	0.940
Bart's spherical value	1342.730
df	120.000

3.3. Relevance analysis

As can be seen from Table 2, the mean value of each dimension is located at a point of 3.63 - 3.76 within Likert 5-point scale, “moderate agree” range, while its standard deviation is clustered to 1.09 - 1.16 range, showing that the dispersion degree of samples’ percept about variables is rather moderate, and the data distribution is relatively stable.

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Table 2. Correlation analysis of core variables

Dimension	average value	standard deviation	Interactive Immersion	Digital identity binding level	Interaction quality	Sales linkage
Interactive Immersion	3.63	1.12	1			
Digital identity binding level	3.72	1.22	0.34**	1		
Interaction quality	3.76	1.16	0.44**	0.38**	1	
Sales linkage	3.71	1.09	0.30**	0.28**	0.27**	1

*p<0.05 **p<0.01

The data correlation analysis indicated the statistically significant correlations of all the variables ($p<0.01$) under 0.01 level with the values from a low correlation ($r<0.5$) to moderate level correlation and with no danger of severe multicollinearity. Under the virtual-real fusion interaction dimension, the moderate correlation of interaction immersion with digital identity binding ($r=0.34$) and the strong correlation with interaction quality ($r=0.44$). Analogous to the digital identity binding, moderately significant positive correlation was found between virtual-real fusion interaction and interaction quality ($r=0.38$). The three dimensions of virtual-real fusion interaction were all significantly and positively correlated with the low-level variables of sales performance at statistically significant level. The correlation coefficients were .30 for interaction immersion, .28 and .27 for digital identity binding and interaction quality respectively.

The findings demonstrate that in virtual marketing for milk tea brands, interactive immersion, digital identity binding, and interaction quality not only exhibit significant correlations among themselves, but also show positive associations with sales performance [6,8].

3.4. Regression analysis and testing of moderating effects

The hierarchical regression model was constructed with "sales correlation" as the dependent variable and "interactive immersion", "digital identity binding", "interactive quality" and "monthly purchase frequency" as the independent variables. The sample size was 234. The results of model fitting and variable effects were as follows:

Table 3. Results of hierarchical regression analysis

Project	coefficient of regression	t value	P value	VIF
Sales linkage	1.49	4.07	0.000**	-
Interactive Immersion	0.22	3.35	0.001**	1.20
Digital identity binding level	0.15	2.56	0.011*	1.23
Interaction quality	0.16	2.46	0.014*	1.22
Average monthly frequency of tea drink purchases	0.08	1.35	0.179	1.01
sample capacity	234			
R^2	0.177			
adjust R^2	0.162			
F	F(4,229)=12.302,p=0.000			

*p<0.05 **p<0.01

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3.4.1. Model fitting and main effect of independent variable

The fitting results of the regression model showed that the coefficient of determination R2=0.177 and the adjusted R2=0.162, which indicated that the model could explain 16.2% of the variation of the sales volume.

As shown in Table 3, the effect tests of each variable on sales volume reveal:

Interactive immersion regression coefficient is 0.22(t=3.35, p=0.001**) with a VIF is 1.20, which has a high positive significant correlation with sales at α=0.01, and no multicolinearity concern. Digital identity binding regression coefficient is 0.15(t=2.56, p=0.011**) with a VIF is 1.23, which has a high positive significant correlation with sales at α=0.05. The interactive quality regression coefficient is 0.16(t=2.46, p=0.014**) with a VIF is 1. Additionally, it turned out to be positive and statistically significant at 0.05 level. The coefficient of tea purchase monthly average was 0.08(t=1.35,p=0.179), not significant, and did not affect the correlation of sales significantly.

3.4.2. Testing for the mediating effect

The mediation effect of 'interaction quality' was validated by combining model results with Bootstrap testing (with 5000 bootstrap samples and 95% confidence interval).

Post-hoc analyses, with monthly average number of tea beverage purchases controlled for, revealed that both interactive immersion and binding of digital identities influenced interaction quality significantly, positive (interactive immersion → interaction quality: β=0.24, t=3.68, p<0.001**; digital identity binding → interaction quality: β=0.18, t=2.87, p=0.004**). Once interaction quality entered the model, the regression coefficients of interactional immersion and digital identity linking on sales correlation (0.22 and 0.15) decreased compared to their effects directly, and the bootstrap tests suggested that the confidence intervals for interaction quality's indirect effects were [0.028,0.115] (interactional immersion → interaction quality → sales correlation) and [0.021,0.068] (interactional linking → interactional quality → sales correlation).Moreover, all except zero: 098] (digital identity binding → interaction quality → sales correlation), indicating that interaction quality partially mediate the interactive immersion - digital identity binding – sales correlation relationship [10].

3.4.3. Testing for the moderating effect

Based on the model above, in this research we used the interaction term of 'interactiveimmersion×interactionquality'and'digitalidentitybindingdegree×interactionquality'(post centralized processing) to test the effect of moderators. Add these interaction terms raised the adjusted R^2 to 0.213 (ΔR^2=0.051, F=14.125, p=0.000), indicating it presented a significant improvement in explanatory capacity. Interaction effects indicated that the regression coefficients of 'interactive immersion×interaction quality' and 'digital identity binding degree×interaction quality' were 0.19(t=3.02,p=0.003**) and 0.17(t=2.81,p=0.005**) respectively, which are both significantly positive. Simplified slope analysis found that in the high level of interactive immersion group (M+1SD) , the role of interaction quality on sales correlation (slope=0.38, t=4.75, p<0.01) is both the most positive, indicating that interactive immersion enhances the improvement in sales effectiveness through better interaction quality.001) was stronger than in low-immersion group (slope=0.14, t=1.98, p=0.049). Likewise, in high-digital identity binding degree group (M+1SD), the effect of interaction quality (slope=0.35, t=4.32, p<0.001) was stronger than in the lowbinding degree group (slope=0.15, t=2.07, p=0.040). This shows that interactive immersion and digital

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identity binding degree show positive moderation effect in channel “interaction quality → sales correlation” [8].

In conclusion, the interactive immersion, the digital identity binding degree and the interactive quality all have a significant positive impact on the sales correlation, the interactive quality plays a partial intermediary role, and the interactive immersion and the digital identity binding degree can further amplify the interactive quality to promote the sales correlation.

3.5. Brand comparison analysis

The virtual marketing activities of HEYTEA focus more on the highimmersion (VR and blockchain are the most popular), and the significantly larger engagement indicator and digital identity bonding than ChaPanda, which means the sales increase is also greatly [2,3]. Compared, ChaPanda focuses on more light-weight AR activities and community co-creation.Although the single-sale rate increase of the two events is relatively small, the low number of users opening an event leads to large increase rates after events and supports the approach that new Chinese style drinks should adopt customised virtual marketing techniques for their positioning [9].

4. Discussion

4.1. Interpretation of core results

First, the value of virtual-real integration interaction varies depending on its form. For example, virtual community co-creation has the greatest effect on sales because it strengthens users' sense of brand identity and belonging through their involvement in product development and marketing creativity, which is consistent with the meta-world advertising principle of giving priority to user co-creation [11]. AR's logic of lowering decision-making costs through immersive environments is consistent with digital trials that use AR technology to enable "virtual tasting," which lowers consumers' perceived risk of new products [8]. Virtual check-ins are a fundamental strategy for brand exposure, but they are less effective because of the shallowness of the interaction [7].

Second, interactive immersion works on a different governance mechanism: the greater immersion for increased sensory stimulation motivates user’s dwell time and reinforces positive brand impression – this result echoes the effect of VR boosting perceived products quality [4]. Even, intense immersion enhances psychological investment, which is able to translate the interactive process into purchase [10].

Third, the metaverse brand engagement mechanism that reinforces AR purchase intent is validated by stable brand-related virtual identities, which improve user identity recognition and promote active brand information sharing and repeat purchases [6]. Additionally, personalized digital identity design can improve user stickiness [13].

4.2. Practical implications

For various tea brands, they should devise specific virtual marketing strategies based on its positioning. For the premium brands, they could afford to use VR and blockchain to achieve users’ immersion under its position of co-created virtual communities, and for the mid-range brands, they could afford AR digital trial/check-in to reach a cost-performance trade-off [9]. Enriched experience —deliver virtual life simulations of the process to prepare tea, as well as the realistic mall environment to enhance the real scene experience, and use storytelling contents such as “virtual tea ceremony experiences” to enhance a strong emotional link [3,4]. At the same time, enhance digital

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identity system and produce virtual identity to offer brand consistent characters with different layers of member value (e.g., high-level members are entitled to receive large-scale offline coupons) to enhance users' stickiness [6].

4.3. Limitations of the study

Limits: 1) our sample contains only HEYTEA and ChaPanda, which neglects the brands from low-tier markets; 2) we do not control for exogenous influencing of sales such as marketing promotions and seasonal bias [1]; 3) the metrics for the immersive experience and digital identity bondage can be improved.

5. Conclusion

This study systematically explores the influence mechanism of virtual-real integration interaction on sale of tea beverage brand under metaverse background by adopting mixed-method research. The study results indicate: Sales of tea brand will be significantly enhanced by three types of virtual-real integration interaction, i.e., virtual check-in, digit trial and virtual community co-creation with the latter has the most effective promotion effect. Moreover, virtual-real integration to the sales performance partially mediated by interactivity quality. Mediation of interactivity quality is the technical foundation of metaverse technology-supported virtual marketing. Second, the positive impact of interaction quality on selling is also dramatically enhanced by both the interaction immersion and the digital identity binding; this moderating effect appears more prominent in the activities with the high interaction immersion virtual reality technology. Third, with respect to the underlying quality of activities, the degree of success varies for different tea brands in virtual marketing. In addition, although midrange brands such as ChaPanda performed well in lightweight interactions, high-end brands such as HEYTEA are adept at technologydriven deep interactions. On this basis, the research ends with the conclusion that the "technological features → interaction level→ sales" transmission chain of the metaverse can assist the development of tea drink brands. With proper integration of branding positioning and product technology and leveraging interaction immersion and social identity bond, brands are able to flexibly design VR/AR brand positioning strategy.

For its related fields, this research has high reference. It explains the "mediation-regulation" dual mechanism of virtual-real integrating interaction affecting sales and is the pioneering work of academic research on new tea drink consumption brand, which provides a new theoretical perspective and methodological guidance for exploring the impact of virtual marketing on consumption, finally filling the empirical research blank of metaverse technology application to tea drink marketing. It offers clear advice for tea drink brand to design effective virtual marketing plans by characterizing which interaction types, technology categories and brand standing can be matched.

Future Research: There are two directions for researchers to make the model better and the results more general. To make the future research model more scientific and enhance the generalizability of the results, expand the samples and the type of models from now on by adding outside factors and multi-brands, multi-regions and non-green tea beverage brands. Second, to explore the application value of AI virtual idols in virtual-real integration from the perspective of AI technology trends and refine individual technology marketing effectiveness differences of AR, VR, digital twins technology and to point out the main empowerment points. Third, enhance research procedures and perspectives by using long term tracing to explore the long-term influence mechanisms of virtual-real integration to sales and by evaluating user immersion experiences through neuroscience

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methods to optimize the research accuracy. Fourth, focus on group difference analysis through incorporating consumer attributes (such as age and consumption style) to explore the group differential virtual marketing response, providing specific evidence for advanced marketing practices.

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