

Research on post-epidemic brand co-branding based on big data -- take Zhouheiyia store as an example

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Abstract. 2020 is bound to be a difficult year. The rapid spread of COVID-19 has had a huge impact on public life, public health and even the entire industry. But at the same time, online services are also on the rise. As the most active marketing method in the Internet era, brand co-branding still played a role during the epidemic. At present, China has achieved phased victory in the epidemic prevention campaign, and we have also ushered in the post-epidemic era of small-scale outbreaks. Many brands in the post-epidemic era, as the main victims of the epidemic, are also constantly exploring new ways of brand co-branding. In this case, in order to find a new method for the brand co-branding of Zhouheiyadian in Wuhan in the new era, the author will analyze the factors that affect the development of the regional brand co-branding of Zhouheiyadian in the form of big data and questionnaires: first, analyze the factors, classifications and policies that affect the regional brand from the four aspects of packaging, brand, marketing and service, and put forward suggestions; Secondly, it analyzes the factors that affect regional brands, and puts forward suggestions from three aspects: convenience of purchase, reputation and selectivity; The third is to analyze the factors affecting regional brands from three aspects of purchase price, brand and publicity mode, and put forward suggestions to find brand co-branding forms suitable for the post-epidemic era.

1. Introduction

Joint regional brands include regional brands and joint brands. Literally, regional brands refer to regional characteristics that can be expressed by brands in a certain region. Co-branding refers to the co-branding of most people or groups. In commodity cooperation, the joint regional brand refers to the products with brand image in different regions or jointly designed by both parties, and then jointly released and sold in the name of both parties. This cooperation focuses on innovation of new brands or promotion of enterprise routines of both sides, and profits from it while maintaining the original product characteristics of both brands. Nowadays, the Internet is full of various kinds of data, but the utilization rate of data is low, and the data is complex, resulting in low value density of many data. Therefore, this paper links big data with questionnaires to use and filter data more efficiently and quickly to obtain valuable information big data ^[1]. Compared with traditional information dissemination and advertising, regional brand construction in the era of big data will provide better ideas and suggestions for brands and enterprises.

2. Opportunities and challenges of Wuhan brand in the post-epidemic era

Professor Wang Zhuli explained the "post epidemic era". The so-called "post epidemic era" is not what we think. After a period of time, the epidemic will disappear completely and everything will return to the previous state, but the epidemic may break out in a small scale and scope. This state will not disappear in a short time. This situation will have an impact on all aspects. In this case, online marketing still dominates. With the advent of the post-epidemic era, changes in society, market and consumer psychology also require Wuhan brand co-branding to make changes that are suitable for this era.

2.1.A: Offline stores are impacted, and brand competition is more intense

Under the background of the epidemic, all walks of life have been impacted, and offline brands such as shopping malls have suffered huge losses. Due to the measures of home isolation, the epidemic has been effectively restricted, but many brands cannot promote their own products. For example, catering businesses have also dropped from more than 12 million in 2019 to more than 8 million, almost halving. In addition to the impact on the catering industry, offline industries such as retail and

entertainment also have similar problems. In the post-epidemic era, with the gradual recovery of the economy and market, many head brands will be fully prepared in advance, seize opportunities, expand market share, and the competition between brands will be more intense. Wuhan local brands have been the most affected by the epidemic. Many stores have closed directly, and chain brands can only survive through cracks. The epidemic is a double-edged sword. Wuhan has received the greatest help from the state and enterprises while suffering the greatest impact. The report on the development of snack industry under the background of consumption upgrading issued by the Ministry of Commerce shows that under the influence of the epidemic, the consumption environment, ability, content and mode are all upgrading, and enterprises must develop with high quality. In the early days, Zhouhei Duck Shop had identified the characteristics of ' high quality ' and ' high experience ', and brand co-branding became an urgent way for brand development under the epidemic. [3].

2.2.B. After the epidemic, Wuhan's popularity has recovered and the potential market is huge

There is no doubt that the epidemic has had a major impact on Wuhan 's life, but it has also made many people see the tenacity of Wuhan, a heroic city. During the outbreak of the epidemic, various social software broadcasted high-frequency information on the current epidemic situation. The audience gained attention from the epidemic report and deepened the image of Wuhan city. At the same time, the 918 million users of the short video platform have enabled the rapid spread of Wuhan stories, which has greatly helped the spread of Wuhan 's city image.[4] During the anti-epidemic period, the spread of the ' anti-epidemic hero story ' has formed a comprehensive understanding of Wuhan 's spirit, culture and urban level. The rapid dissemination of information and the continuous expansion of popularity have brought great market opportunities for Wuhan local brands. At the same time, the state has increased its support for Wuhan, and economic construction and infrastructure construction have brought rare help to the damaged Wuhan.[5] So is Wuhan brand.

2.3s.C. Change of people's concept in the post-epidemic era

In the case of COVID-19, the rapid changes in the environment have changed the psychological needs of consumers. The outbreak of COVID-19 makes its own brand products need to give consumers more trust, health, and focus on consumers' emotional needs. Comfort consumers has become an important breakthrough of the brand [6]. At the same time, after the epidemic, people's social responsibility, announcement ethics and public trust for the brand side became the main way to display the brand value.

3.Overview of the development of Zhou Heiya brand

Chow Hei Duck is a food enterprise located in Wuhan, committed to providing consumers with high-quality taste. Over the years, it has developed into a duck neck, covering "duck collarbone, duck paw, duck tongue" and other varieties. "Eat Chow Hei Duck without taste" is the brand concept of Chow Hei Duck. To become a young, dynamic and cultural brand is the original intention of Zhouheiya.. Since the establishment of the brand for more than 20 years, Zhouheiya has been expanding continuously, with 1288 self-operated stores covering 90 cities in 17 provinces and municipalities. It covers 22 major domestic e-commerce platforms online. In order to cater to the changes in the living habits of the main consumer groups, Zhou Heiya's products provide take-out services in 90 cities. In the wave of joint marketing, Zhouheiya also quickly seized the opportunity to try to co-name with many enterprises. We signed a joint development agreement with Leshi KFC Kwai Magnetic Inman and others, and achieved good results. According to the big data of Baidu Index in Table 1 and Table 2, the sales of Zhouhei Duck Store is the highest in Hubei and the highest in Wuhan. This not only shows that Chow Hei Duck Restaurant was founded in Wuhan, but also began to develop in Wuhan. Under the impact of the epidemic, it is also the first to develop through innovative use of brand names in the post-epidemic era.

Figure 1. Baidu Index is the top ten provinces with the highest sales of black duck stores next week.

1	Hubei
2	Hunan
3	Henan
4	Sichuan
5	Chongqing
6	Guangxi
7	Zhejiang
8	Yunnan
9	Jiangxi
10	Jiangsu

Figure 2. Baidu Index's top ten cities with the highest sales of black duck stores next week

1	Wuhan
2	Changsha
3	Chengdu
4	Beijing
5	Chongqing
6	Zhengzhou
7	Hangzhou
8	Nanchang
9	Nanjing
10	Qingdao

4.Analysis of the influencing factors and results of the joint thinking of Zhouheiya stores in the post-epidemic era based on big data

In the normal situation of the post-epidemic era, online marketing has become the mainstream. As a common way of co-branding, it has also changed with the trend of the times. Here, we will analyze the brand co-branding case of Wuhan's local brand Zhouheiya in the post-epidemic era

by combining big data and questionnaire survey, and explore a new method of Wuhan brand co-branding suitable for the post-epidemic era. Experimental data research and factor analysis on the impact of packaging, category and policy on the brand co-brand of Zhouhei Duck Store under big data.

Under the background of the post-epidemic era, online marketing has gradually become the mainstream. As a common marketing method, co-branding has also changed with the trend of the times. This paper will analyze the brand co-branding strategy of Wuhan's local brand Zhouheiya in the post-epidemic era by combining big data and questionnaire survey, and explore new co-branding methods suitable for Wuhan brands in the post-epidemic era. Experimental data research and factor analysis on the impact of category, taste and packaging on the brand alliance and brand of Zhouhei Duck under the background of big data.

4.1.A. Experimental data research and factor analysis on the impact of purchase type, packaging and taste on the brand co-brand of Zhouhei Duck Store under big data

This paper uses a combination of questionnaire and big data to explore many useful information, such as data mining and questionnaire star search. These data will be analyzed by SPSS to obtain more accurate results. This chapter focuses on three different age groups: 10-16 years old, 18-25 years old and 30-40 years old. Explore the factors that affect the joint brand of store brands from three aspects of packaging, category and taste, and put forward adaptive suggestions for the brand.

Figure 3. Multiple comparative analysis of the packaging, category and taste of the co-brands of the Black Duck store brand next week

Dependent variable	Mean	F	P
packing	372.080	120.887	0.000
category	268.320	56.399	0.000
taste	356.227	165.388	0.000

Figure 4. Multi-comparison analysis of the packaging, category and taste of the co-brands of the Black Duck Store next week

Dependent variable	I	J	P
packing	10-16 years old	18-25 years old	0.000
	18-25 years old	30-40 years old	0.000
	30-40 years old	30-40 years old	0.000
category	10-16 years old	18-25 years old	0.312
	10-16 years old	30-40 years old	0.000
	18-25 years old	30-40 years old	0.000
taste	10-16 years old	18-25 years old	0.000

	10-16 years old	30-40 years old	0.000
	18-25 years old	30-40 years old	0.000

*The significance level of the average difference is 0.05.

It can be seen from the data in Table 4 that there are significant differences in packaging, category and taste (P<0.01). Now, the brand co-branding of Zhouheiya Store should pay attention to the differences in three aspects in order to obtain a good consumption effect. From the data in Table 4, it can be seen that in terms of packaging, there are significant differences between the packaging of 10-16 years old, 18-25 years old and 30-40 years old (P<0.05). In terms of packaging design, targeted design should be carried out for each age stage. For category comparison between 10-16 years old and 30-40 years old, the significance of multiple comparison between 10-16 years old and 30-40 years old is different (P<0.05), but there is no difference between 10-16 years old and 18-25 years old (P<1.05). In category design, enterprises should pay attention to the design of 10-16 years old and 18-25 years old. In terms of taste, there were significant differences between 10-16 years old, 18-25 years old and 30-40 years old (P<0.05).

4.2.B. Experimental data research and factor analysis on the impact of purchasing convenience, reputation and selectivity on the brand co-branding of Zhouhei Duck Store under big data

The experiment also adopts the method of combining big data with questionnaire survey. Many useful information can be searched through data mining and questionnaire star search. These data will be analyzed through SPSS to obtain the most accurate data as possible. The subjects in this study were divided into three groups, ranging in age from 10 to 40. Explore the factors that affect the joint brand of the store brand from three aspects of convenience, reputation and selectivity, and put forward adaptive suggestions for the brand.

Figure 5. Variance analysis of brand co-branding of Zhouhei Duck Store based on convenience, reputation and selectivity of purchase under big data

Dependent variable	Mean	F	P
purchase convenience	189.16	116.866	0.000
Word of mouth	60.350	23.455	0.000
selectivity	34.93	6.606	0.002

Figure 6. Multi-comparison analysis of the convenience, reputation and selectivity of the purchase of the co-brand of the Black Duck Store next week.

Dependent variable	I	J	P
purchase convenience	10-16 years old	18-25 years old	0.281
	18-25 years old	30-40 years old	0.000
	30-40 years old	30-40 years old	0.000
Word of mouth	10-16 years old	18-25 years old	0.312
	10-16 years old	30-40 years old	0.000
	18-25 years old	30-40 years old	0.024
selectivity	10-16 years old	18-25 years old	0.413
	10-16 years old	30-40 years old	0.001
	18-25 years old	30-40 years old	0.009

*The significance level of the average difference is 0.05.

From the data in Table 5, it can be seen that there are significant differences in convenience, word-of-mouth and selectivity ($P < 0.01$). Now, the brand co-branding of Zhouheiya Store should pay attention to the differences in three aspects in order to obtain a good consumption effect. It can be seen from the data in Table 6 that there are significant differences between the multiple comparisons between 10-16 years old and 30-40 years old, 18-25 years old and 30-40 years old ($P < 0.05$), but there is no difference between 10-16 years old and 18-25 years old ($P > 0.05$). It can be concluded that the older the people are, the more convenient they need to buy, but there is no difference for the younger people. The brand co-branding of Zhouhei Duck Store should consider this difference and formulate specific countermeasures. There was a significant difference in word-of-mouth among 10-16 years old, 18-25 years old and 30-40 years old ($P < 0.05$). In the brand co-branding of Zhouheiya Restaurant, different word-of-mouth publicity should be carried out at each age stage, and special distinction should be made between age groups. In terms of selectivity, the multiple comparisons of 10-16, 30-40, 18-25 and 30-40 age groups were significantly different ($P < 0.05$), but there was no significant difference between 10-16 and 18-25 age groups ($P < 1.05$). Now, brand co-branding of Zhouheiyadian should focus on selectivity and achieve great success.

With the sudden outbreak of COVID-19, many industries have been hit hard and brought anxiety and panic. As consumers recover their consumer psychology, brands create freshness and topicality in order to seize the psychological needs of consumers and activate brand traffic. In the brand co-branding brand of Zhouhei Duck, Zhouhei Duck chose to launch a new spicy product - 'spicy chicken thigh hamburger' with KFC, bringing consumers a new taste experience. It is worth mentioning that the joint brand promotional film of Zhou Hei Duck and KFC, through simple and unforgettable lyrics and vivid and interesting images of chickens and ducks, sings delicious food into the hearts of consumers, so that the audience can understand the understand the product characteristics and generate interest in the shortest time. The brand alliance of Zhouhei Duck Store should pay attention to the differentiated design of consumers in terms of purchase convenience, reputation and selectivity, so as to achieve great success.

4.3.C. Experimental data research and factor analysis on the impact of purchase price, brand and publicity mode on the brand co-brand of Zhouhei Duck Store under big data

The experiment also adopts the method of combining big data with questionnaire survey. Many useful information can be searched through data mining and questionnaire star search. These data will be analyzed by SPSS to obtain the most accurate results. The subjects in this study were divided into three groups, ranging in age from 10 to 40. Explore the factors that affect the joint brand of store brands from three aspects of price, brand and publicity mode, and put forward suggestions on brand adaptability.

Figure 7. Variance analysis of the co-brand of Zhouhei Duck Store based on the convenience, reputation and selectivity of purchase under big data.

Dependent variable	Mean	F	P
Price	72.208	65.238	0.000
Brand	122.97	55.376	0.000
Publicity	98.08	21.380	0.000

Figure 8. Multi-comparison analysis of the purchase price, brand and publicity method of the brand co-brand of Black Duck Store next week

Dependent variable	I	J	P
Price	10-16 years old	18-25 years old	0.935
	18-25 years old	30-40 years old	0.000
	30-40 years old	30-40 years old	0.000
Brand	10-16 years old	18-25 years old	0.000
	10-16 years old	30-40 years old	0.149
	18-25 years old	30-40 years old	0.000
Publicity	10-16 years old	18-25 years old	0.399
	10-16 years old	30-40 years old	0.001
	18-25 years old	30-40 years old	0.022

*The significance level of the average difference is 0.05.

From the multiple data obtained from table 7, it can be seen that there are significant differences in purchase price, brand and publicity methods ($P < 0.01$). At present, the brand alliance of Zhouheiya storefront should pay attention to three differences in order to obtain good consumption effect. It can be seen from the data in Table 8 that there are significant differences in price multiple comparisons between 10-16 years old and 30-40 years old, 18-25 years old and 30-40 years old ($P < 0.05$), while there is no difference in price multiple comparisons between 10-16 years old and 18-25 years old ($P > 0.05$). The following conclusions can be drawn: the younger people have a demand for the purchase price, but there is no difference for the older people. Zhou Hei Duck Store considers this difference and makes specific countermeasures. There was a significant difference between 18-25 years old brands and 30-40 years old brands ($P < 0.05$), and there was no significant difference between 10-16 years old brands and 18-25 years old brands. Therefore, it can be concluded that young people aged 18-25 pay special attention to brand effect, and the brand alliance of Zhouhei duck shop should also make different joint branding for young people. There were significant differences in publicity methods among 18-25 years old, 18-25 years old and 30-40 years old ($P < 0.05$). The brand alliance of Zhouheiya restaurant should have great innovation in publicity.

During the epidemic, the domestic prevention and control policies forced the suspension of commercial activities across the country. Grasp the emerging live consumption mode and enhance the interactive experience of products. However, surveys by Colliers International show that since COVID-19, offline restaurant traffic has declined by more than 80 % year-on-year, and more than half of the impact of the epidemic has been suspended.^[7] However, at the same time, the live broadcast and commodities brought about by the development of the network have risen rapidly during the epidemic, becoming an emerging economic phenomenon during the epidemic.

Zhou Fufu, the founder of Zhou Heiya, appeared in the live studio of Weiya and brought the goods himself.

According to the data provided by Zhou Heiya, the sales of the live studio reached nearly 7.6 million yuan. In addition to selling during the live broadcast, Yang Hongchun also repeatedly mentioned the measures taken by Zhou Black Duck during the epidemic, how to ensure food safety and promote the commitment of Zhou Black Duck 's excellent snacks. Taking self as the quality assurance, it sets up good values and value demands for the brand, so that consumers can feel at ease when buying and eating. In the brand alliance of Zhou Hei Duck Store, more factors such as price, brand and publicity should be considered to put forward appropriate methods.

5.Optimization of joint innovation strategy in post-epidemic era

Brand alliance is a hot issue, accompanied by high risk and high return. The rapid sharing of the brand joint user group brings high profits, but there is also a risk of collapse at the expense of both parties. At present, online promotion is developing rapidly. Generally speaking, online sales include the following types : price reduction promotion, new products with limited time and quantity, products endorsed by Star Modern.^[8]Price reduction promotion is a sales plan with low profit but large quantity. It attracts consumers to buy through direct price reduction, which is very challenging and achieves the effect of small profit and fast sales. Limited release refers to the introduction of new products in the brand broadcast room, showing the star 's related peripheral or other special products, stars used to attract shopping. In the wave of webcast sales, sales methods are constantly changing. Changing the order and permutation can bring double or even multiple benefits. However, blind price reduction is not conducive to brand value and image, and is more likely to bring vicious competition.

5.1.A. Establish a sense of brand responsibility

In the post-epidemic era, people began to attach importance to brand responsibility. Brand trust is an important standard for brand development. This year, the "wild donation" of the boss of Erke, the red star of Henan disaster relief, set a good example for other brands. This wild behavior has won unanimous praise from netizens. This sense of responsibility moved consumers and made this precarious brand instantly popular, and the product sales doubled. This also confirms the importance of brand responsibility, and the selection of reliable enterprises in brand co-branding also provides guarantee for the success of co-branding.

5.2.B. Focus on the development of Generation Z, use private domain traffic to strengthen the relationship between brands and consumers

According to the latest seventh census, more than 200 million people in China have university degrees and have achieved excellent results in quality education. Similarly, the average quality of consumers has also been greatly

improved. Generation Z consumers love life more, the pursuit of value is more and more intense. As the main force of consumption in recent years, in the context of the new era, their private desire flow is also a sales space that needs to be developed. The circle of friends is its own small circle. Receiving advertisements and private letters will not only disturb customers, but also disgust and even disgust consumers. How to obtain such a marketing market is indeed a problem. There are many ways on the Internet. The most effective way is to publish some information set by people through the circle of friends, then chat with customers who like to leave messages and do not actively sell, and introduce products at the appropriate time. Such friendly behavior rarely causes people 's disgust. In this silent chat, the brand has been popular. In daily life, this subtle dating relationship allows consumers to speak up for the brand in the process of sharing and communication. This new marketing method also provides a new way for the brand. We must consider brand alliance and customer respect. For market-saturated brands, this new method is worth learning.

6.Conclusion

The post-epidemic era is irreversible. In the new era, key and effective information data can be obtained by combining big data analysis data. Wuhan brand co-brand should seize the opportunities and characteristics of the new era, make reasonable use of existing resources, carry out innovative design, seize the opportunities, seize the changes of the times, seek breakthroughs, and create a sales model suitable for Wuhan brand. Today's brands do not want to be eliminated in the fierce and complex market in the post-epidemic era. They must keep pace with the times and always update their brand image. Nowadays, the most popular way is brand co-branding and timely brand event marketing planning. In the current Z era, consumers promote the confrontation and resonance between modern art and brands, and promote the common development of brands to a higher level. Therefore, in order to further improve the joint effect of the brand and pay more attention to the product itself, we need to further develop the market channel, actively develop the online channel of the brand, make up for the deficiency of the offline channel, and timely find the spokesmen of teenagers' favorite traffic stars to make the brand more popular

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