

Data-Driven Precision Marketing Strategy on Agriculture: The Application of Machine Learning in Evolutionary Consumer Psychology towards New Media Communication

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Abstract: The article considers the application of Machine learning into digital marketing strategy and the prospects for its use in modern agribusiness. The availability of new media communication tools for most enterprises provides an opportunity to precisely figure out consumer profile and markets capacity. The article analyzes the evolution of consumer insights in the digital economy Era and consumer psychology towards agriculture and applies the AIDEES model to explore the data-driven precision marketing strategies in the agricultural sector. The ongoing transformations in purchasing preferences were excavated by semi-structured interviews. It revealed that for effective work in the field of internet communications, it is necessary to create precision user-generated content presenting personalization and high value, conduct a marketing matrix based on big data, and establish immersive sales scenarios from data analysis and classification.

1. Introduction

The strength of firm-based DDPM (Data-Driven Precision Marketing) includes posing algorithms to parse and train data and make decisions and predictions about consumer purchasing behavior^[1]. Correspondingly, DDPM may consequently diminish the usage for ineffective advertising aiming at touching target customers, and evidence suggests that content marketing costs 62% less than traditional marketing efforts, three times as many [sales] leads^[2]. A major current focus in digital marketing is empirical research, exploring strategy utilization by literature review^[3]. Relatively, despite DDPM 's growing importance, academic understanding in this area lags to date and lacks research on agribusiness, generating an important knowledge gap. To investigate the gap, the authors conceptualize DDPM and excavate consumer-purchasing psychology towards agriculture according to the AIDEES framework, thus serving as a theoretical foundation for developing an outline of in-depth interviews, offering useful insight for DDPM practice and further research.

2. Evolution of Consumer Psychology

Despite significant consumption upgrading, consumer psychology experience evolution in purchasing perspective^[4], which indicates the motivation of chasing the consistency between personal identity and consumption image^[5]. In addition, the customers are penetrated on the social-driven purchasing atmosphere^[9], which implicated the “sharing-economy” enables them to absorb consistent content to their relatives^[10], rewarding the sentimental value in exchange. Furthermore, to derive insight into their demands, customers engage in initiatively searching their expected items. Digital content marketing represents promotion activities executed by opinion leaders subverted past consumption habit. The opinion leaders show the veritable function of tested products^[11], leading the customer to highly touch the intended product at relatively low cost^[12].

3. Methodology

3.1 Data collection

This paper conducts 30-minutes in-depth interviews with 20 people, applying the AIDEES model to outline interview questions, in order to dig out consumers' opinions on purchasing agriculture aid products (PAAP) in new media channels from Sanjiang Guangxi, the in-depth interviews included the following dimensions: sales channels, brand cognition, perceived value, brand trust, consumer behavior. The profiles of participators are displayed in table 1.

Table 1 Profiles of Participators

ID	Age	Education	Job	Gender	Experience in PAAP
P01	36	High school	actress	F	7years
P02	65	Master's degree	Lecturer	M	6 years
P03	43	PH.D	Lecturer	F	2 years
P04	20	Bachelor's degree	Student	M	5 years
P05	18	Bachelor's degree	Student	M	10 years
P06	38	High school	E-commerce	F	1 years
P07	31	Junior high school	Doctor	M	4 years
P08	42	Master's degree	Businessman	M	2 years
P09	53	High school	Retire	F	3 years
P10	56	Junior high school	Waitress	F	2 years
P11	57	Bachelor's degree	Retire	M	1 years
P12	47	Bachelor's degree	Bookseller	M	3 years
P13	41	Master's degree	Policeman	M	1 years
P14	47	Bachelor's degree	Bank staff	M	2 years
P15	28	Bachelor's degree	Accountant	M	3 years
P16	26	Junior high school	Tailor	F	3 years
P17	36	Master's degree	Manager	M	2 years
P18	39	Bachelor's degree	Server	F	2 years
P19	41	High school	E-commerce	M	1 years
P20	45	Bachelor's degree	Driver	F	1 years

Table 2 Summary of coding results

Core Context	Second-level Coding	Key Words	Representative Context	Finding
Visual orientation	Visual effect Attraction	Striking color; Personal branding;	P01 We generally are attracted by the surface pictures, which show the deliciated product picture. P15 The performance of the actor in the first three seconds is the key reason attracting me. P20 No one refuses the striking color of the video cover page in social media. P09 The obvious price label showed in specific space motivate me to open the content.	Insights #1
Pain point catering	Unique product; Additional value; Traceable source;	Quality ; Taste; Convenience; Price; Delivery service;	P13 I hope we receive a healthy product, and its taste is perfect; P09 Taste and product quality are the first factors to be considered. P08 I would undoubtedly want to purchase green and healthy food. P17 Vegetables and fruits in the market have been tested pesticide residue;	Insights #2
Consuming habits mapping	Service marketing;	Logistic system; Price system;	P03 The price online is very transparent, the prices of tea and cumquat continually increase, and sharply P9 Online shopping in new media channels. enables us to compare the price between each store, and enjoy efficient delivery services.	Insights #3
Evaluation on product	Pre-sale service; After-sale service;	Sense of Gain;	P01 The low price is the critical factor in my consideration in purchasing. P02 the after-sales service is excellent;	Insights #4
Expectation reaching	Close psychological distance; consumer needs satisfaction;	Needs; Demands; Guarantee; Transportation;	P20 I would share my buying experience to obtain the sense of gain; P14 the guarantee service enable customer replace product without reason in 7 days; P11 Once the product satisfy my expectation, my needs of sharing will be released;	Insights #5
Morality	Sense of Gain; The social responsibility; Public Interests;	Public welfare; nature; Good evaluation; Contribution for national poverty alleviation policy;	P01 I can help farmers, and feel very honored; P02 I implicate the national poverty alleviation policy, which leads people have a better understanding of these areas as hometown symbol;	Insights #6

This study analyzed the semi-structured texts collected in in-depth interviews, by conducting open coding and sorting out the consumer evaluation information. The original context sample was broken up, exploring the code sentence by sentence to form the original category. Finally, six categories (second-level coding) are created. Then, the six secondary codes determined in the previous step are spindle coded, grouped, and clustered. Specific results are shown in Table 2. Due to space limitations, some typical comments are displayed

4. Data-Driven Precision Marketing Strategy on Agriculture through Machine learning

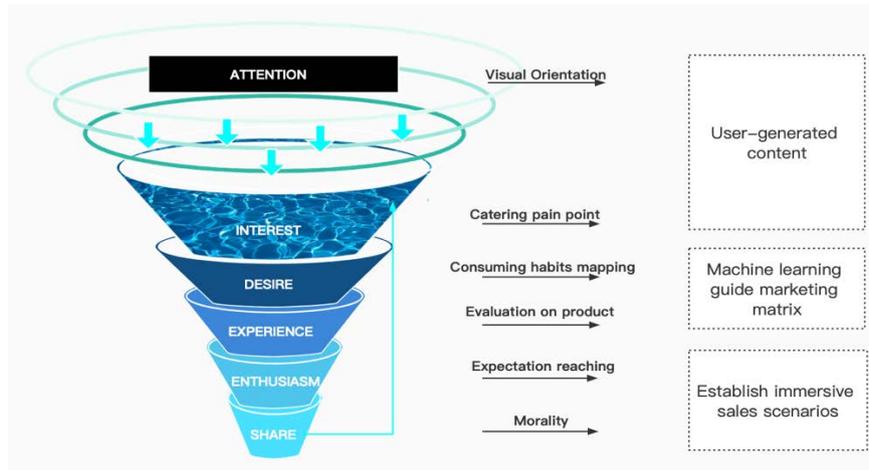


Figure 1: DDPM developed from AIDEES Model

4.1 Precision user-generated content presents personalization and high value

Insights #1: Visual orientation

The customer is continually attracted by characteristic visual effects, displayed through pictures, video, and audio.

Insights #2: Catering pain point

The key factor in gaining the customer's perception of products value and brand belief is to precisely recognizing pain points, stimulating and driving the ongoing interest, satisfying it properly.

Typically, firm-based DDPM should apply machine learning to train customers' data, thus realize customer segment, figuring out the high-frequency color, composition, visual effects the competitors use and form the user portrait, to obtain more traffic. The process of designing digital content is user-generated, thereby building and maintaining consumers' long-term engagement rather than attempting to convince prospects to purchase the firm's offerings directly. Thus, while DDPM is still focused on increasing long-term sales, it develops consumer engagement and catering pain points by figuring out the customer persona. For example, the official Douyin page of Dong Tea company serves to educate (female) consumers and help raise appreciation for improving life quality.

4.2 Marketing matrix based on big data

Insights #3: Consuming habits mapping

The expectation of customers would be satisfied based on the perceived product, and associated price, logistic system, and product value.

Insights #4: Evaluation on products

The level of perceived risk should be controlled relatively, allowing customers to perceive the pre-sale service and after-sale service, and generate purchasing behavior.

In particular, the personalized advertisements that appear in real-time whilst social media browsing are based on the passive collection of variables and their seamless input into machine learning algorithms. The principle is that machine learning technical guide the appearance in which the actor performs in the advertisement, the cognitive cost of customers is decreasing. The designed advertising of digital marketing should precisely express the brand equity and product value by achieving the consistency between presentation and the true product. DDPM offers structured, valuable, useful content to (prospective) customers by posing a marketing matrix in varieties platforms to form a content framework, thereby attempting to establish consistent brand equity.

4.3 Establish immersive sales scenarios from data analysis and classification

Insights #5: Expectation reaching

The original of sharing desire is the objective evaluation of product higher than expectation.

Insights #6: Morality

The customer obtains the sense of gain from sharing agricultural product, which realize the social responsibility and public interests.

In this case, machine learning would guide the DDPM to earn its audience by establishing immersive sales scenarios. Through big data technologies, the expectation of customers will be tested precisely, enabling the marketer to present the feature of product avoiding running into diminished expectations. Correspondingly, the company of agricultural product should cultivate the customers to subjectively to obtain self-value by sharing items. So the identifying digital content referring to morality and social responsibility can be designed to motivate the sharing incentives of customers. Because consumers seek out particular DDPM content they are referred to as an earned audience that will tend to appreciate the content, rendering them more highly engaged not only with the content but also with the brand advertising.

5. Conclusion

5.1 Machine leaning technical consistency between personal identity and consumption image

Contrary to traditional advertising that is designed to persuade consumers to establish a price differentiation system and purchase focal offerings^[6], new digital marketing focuses on increasing potential customers' appreciation of the brand or firm by accurately analyzing customer purchasing data and cultivating them the brand equity to spiritualize and visualize high life into products^[7]. Customers also emphasized user-generated content (e.g., via electronic brand-related word-of-mouth), thereby exhibiting acceptance to be the voluntary, and casual audience.

5.2 Marketing matrix caters social-driven purchasing habit

Designed to teach, enhance, or instill product (prospective), traditional single marketing communication channel has been defined as only fostering brand awareness, lacking the capability to realize customer engagement^[8]. The marketing matrix is established by publishing advertising in multiple digital content platforms, which owning diversified consumer segments. Thus, customers with multiple ages、 occupations and consumption level would be touched roundly.

5.3 Emphasis on the function of opinion leaders by establishing immersive sales scenarios

Today's consumers are becoming increasingly skeptical of advertising which intends to break through the trust boundary by emotional advertising^[13], thereby paving the way for the development of digital marketing by extending the opinion leaders function. Therefore, the intellectual property of opinion leaders can apply immersive sales scenarios to reinforce the impression of customer. Digital marketing content noticed by customers, is based on the premise of a genuine, sincere desire to add value to the consumer's life in some relevant way, thereby facilitating customer acquisition or retention.

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