

Analysis of Marketing Strategy of Electricity Selling Companies in the New Situation

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Abstract. With the liberalization of the electricity selling side, the electricity selling market has changed from a single seller market to a buyer's market, that is, the buyer can buy electricity through multiple sellers, and the competition in the electricity selling market has gradually increased. Successful marketing strategy can enlarge the popularity of power selling companies, attract more users, and make them invincible in the competition. This paper first analyses the marketing strategies that can be adopted in the competition. Subsequently, through the system dynamics model, the benefits brought by the strategy are studied and simulated to verify the effectiveness of the strategy. Finally, this paper concludes that the strategies that electricity sales companies can adopt are: diversified products, differential pricing, broadening channels and deepening cooperation, and using big data analysis to promote users' electricity consumption behavior.

1. Introduction

With the transformation of China's economic system from a planned economy to a socialist market economy, enterprises focus more on marketing. On March 15, 2015, "Some Opinions of the Central Committee of the CPC and the State Council on Further Deepening the Reform of the Electric Power System" marked the beginning of a new round of reform of the electric power system, which meant that the companies directly in contact with users were transformed from power grid companies to newly established power selling companies. Due to the short time of selling electricity companies, there is not enough research foundation for them. Therefore, this paper decides to use Vensim software to analyse the impact of different marketing strategies on the electricity sales of power companies.

The research on power marketing in China has been carried out before the opening of power selling side. The main research focuses on the business optimization of power supply enterprises, State Grid [1]. In terms of marketing of electricity sales companies, the marketing strategies of foreign electricity sales companies can provide some references for newly established electricity sales companies in China. Through the analysis of the marketing strategy of American power companies, it is concluded that Chinese power companies should occupy the market through abundant products, develop users' use habits and form product dependence [2]. Germany's marketing package includes price package



marketing, comprehensive energy marketing, green marketing, client marketing and internet preferential marketing [3]. China's electricity sales companies can learn from the current actual situation. EDF's marketing strategy in France brings enlightenment to China's electricity sales companies: it should attract customers through differentiated marketing strategies [4]. The service model of British power supply enterprises is designed according to customer orientation, and the market share of enterprises is maintained by customer satisfaction [5]. China's power sales companies should establish their customer satisfaction survey system in line with international standards, and improve the service system according to the survey results.

China has not yet carried out the research on the marketing strategy analysis of power selling companies, while system dynamics is suitable for studying the dynamic trend of complex information feedback systems, and can be used to analyse the relationship between various factors. In this paper, the system dynamics model is used to analyse the marketing of the power selling company, and the impact of different marketing strategies on the revenue of the power selling company is analysed.

2. Marketing strategy of electricity selling company

2.1 Product and service strategy

The main product of the power company is electricity. In addition to selling electricity, sales companies can also provide products and services for users.

2.1.1 Smart meter

China's smart grid has entered a comprehensive construction stage. The demand for smart meters at the user end will increase dramatically. Smart meters no longer need manual meter reading. The historical purchase data can be saved. It is convenient for customers to inquire and for power companies to carry out power analysis.

2.1.2 Electricity consumption analysis

For commercial or industrial users with large power consumption, the monthly power consumption analysis provided by power selling companies can help users to strengthen load management. By analyzing the characteristics of users' electricity consumption, power selling companies can provide users with power packages and save costs for users.

2.1.3 Demand response service

For power users, demand response service can increase energy efficiency, reduce the cost of enterprise operation and family life; for power selling companies, it can reduce the peak period of electricity purchase, improve power supply reliability and service level; for society, it can rationally allocate power resources, promote the coordinated development of the economy, promote the use of electricity equipment, and increase the demand for energy-efficient equipment.

2.1.4 The "Internet +" service mode

Power mobile terminal transmits power consumption, data analysis, power load and real-time electricity price to users. At the same time, power mobile terminal and intelligent household appliances are interconnected to realize one-button switch, which can not only reduce the peak load of power grid, but also save users' expenses.

2.1.5 Green power

Overseas electricity companies have already sold clean energy. More than 800 of Germany's more than 1100 electricity companies have offered green power packages. The proportion of end users who buy green power has also exceeded 15%. More than one third of the residents have chosen the green power tariff scheme. It shows that users are willing to pay for cleaner energy with higher price. Green Mountain Energy in the United States shows the amount of carbon emissions that its users have

reduced on its official website and converts it into the amount of trees planted. This intuitive display is conducive to users' understanding of the benefits of clean energy to environmental protection.

2.2 Price differentiation strategy

2.2.1 TOU price

Prices vary at different periods, but prices remain stable over the same period. In a week, there are three kinds of electricity prices: peak, flat and low. This pricing model comes from the electricity demand predicted by the market, and it will be set up one month ahead of schedule. Users reduce electricity consumption during peak hours, and the sale company gives them a discount or compensation.

2.2.2 Combined package pricing

Users can choose a set meal according to the amount of electricity they use each month, or they can choose a suitable set meal according to different usage habits, so as to get a price discount. Electricity companies can offer various combination packages on their own APP, and give discounts to users who pay for the packages in advance on the APP.

2.3 Channel diversification strategy

2.3.1 Wholesale channels

Electricity selling companies can not only sell electricity to resident users, but also sell electricity to other power selling companies and large users in large quantities.

2.3.2 Retail channels

Electricity sales companies use the opening of business halls to provide electricity sales services for users, while competing with other power sales companies to compete for users. Electricity sales companies sell electricity through websites to achieve one-click online power purchase with provincial users.

2.3.3 Chain operation

The sale of electricity companies through the establishment of chain agencies to achieve a wider range of electricity sales.

2.3.4 Cross-border cooperation

In the future, the electricity sales industry will become a new cross-border industry, which includes the theories of energy, finance, science and technology, applied mathematics, psychology and so on, and forms a multi-dimensional integration of profit models.

2.4 Promotion strategy

2.4.1 Staff promotion strategy

Personnel of power selling companies enter the community to carry out training on electricity use and energy conservation, publicize the concept of cleanliness and environmental protection, and carry out popular science of corresponding services on demand side.

2.4.2 Big data marketing strategy

Electricity sales companies directly provide energy companies with user information and grid investment information in order to obtain revenue. Based on the analysis of big data, this paper puts forward energy-saving suggestions and personalized packages for users.

2.4.3 Advertising strategy

Electricity companies use existing network sales platforms to publish contract information and service information, expand online and offline electricity sales business, publish advertisements in search engines, portals, social media, publicize and promote through local newspapers, television, radio and other traditional media, and use sponsors or titles to put advertisements.

3. Strategy analysis

3.1 System causality analysis

In this section, we analyse the causality of variables between strategies. The arrows in the figure below represent the causality, while the positive and negative symbols represent the positive and negative effects respectively.

3.1.1 Product and service strategy

As can be seen from Figure 1, the installation of smart meters is the premise of power consumption analysis. The analysis of power consumption is the premise of demand response service development. At the same time, "Internet +" service is the bridge between users and Load aggregator, and is the foundation of demand response. Peak load and valley filling serve as demand response, and its role can increase the total revenue of the sales company. Before demand response, peak demand is too high, peak time electricity price is relatively high, and voltage is unstable. Demand response services provided by power selling companies or load aggregators will reduce peak-time demand, thereby reducing peak-time electricity sales and increasing low-trough electricity sales.

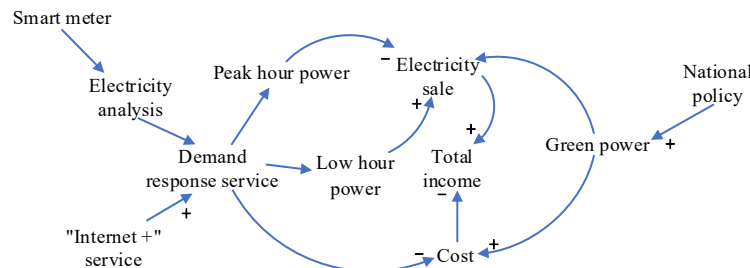


Figure 1. Relationship between product and service strategy, electricity consumption and cost

The development of green power requires the pre-investment of the power selling company, including the cost of green power and the cost of development and maintenance of mobile terminals. In the short run, green power can attract users with environmental awareness to buy electricity from the power sales company. In the long run, green power is beneficial to the future, laying the foundation for ecological harmony.

3.1.2 Price differentiation strategy

It can be seen from Fig. 2 that both the TOU price and the combined package can increase the electricity consumption. Time-of-use tariff includes peak and trough tariffs. Higher tariff in peak period will reduce electricity sales, lower tariff in trough period and increase electricity sales. Price regulation is also a way to regulate the load of power grid. Combo packages attract users to increase electricity sales through their customized customization and relatively preferential prices. Affordable electricity prices can effectively improve customer satisfaction, increase the reputation and popularity of sales companies, retain old users, attract new users, and increase sales.

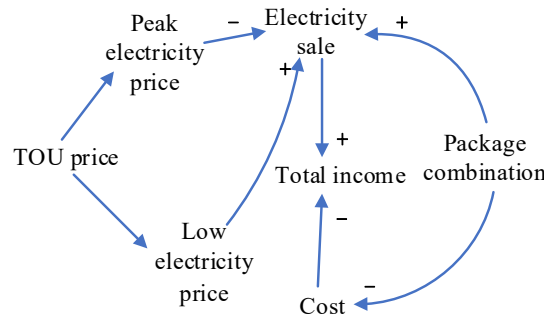


Figure 2. Relationship between price strategy, cost and electricity consumption

3.1.3 Channel diversification strategy

The same sales company can sell electricity in multiple distribution areas in the province, which can increase sales channels. Cross-border cooperation is to cooperate with other brands, expand visibility, and provide power for cooperative brands. It can not only broaden the channels of electricity sales, but also increase the volume of electricity sales. Wholesale and retail channels can't deepen their depth, but can broaden their scope, which requires power companies to carry out customer relationship management. Old users' satisfaction can bring new users and thus increase electricity sales.

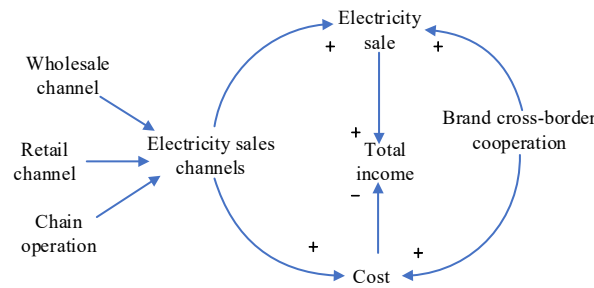


Figure 3. Relationship diagram of channel strategy with cost and electricity sales

3.1.4 Promotion strategy

As can be seen in Figure 4, staff promotion and advertising can effectively enhance the popularity of electricity companies, but also accompanied by cost consumption. The selling company should pay attention to the cost in the process of popularization, and prevent the risk of shortage of funds. In cooperation with big data platforms, power companies can provide users with power analysis, professional power-saving solutions, and help users to conduct power-saving management, which will increase the cost of power companies. Although it may not necessarily enhance its popularity, the power sales company will provide users with analysis and power consumption programs, which will enable users to fully understand their own situation, develop good electricity use habits, and improve the quality of power sales company users.

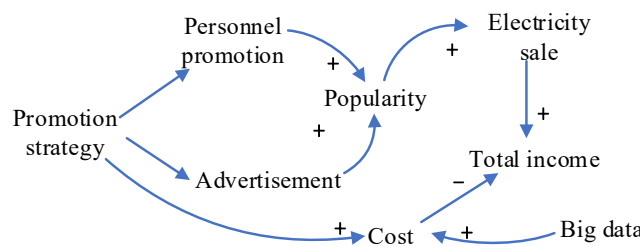


Figure 4. Relationship between promotion strategy and cost, electricity sales

3.2 Establishment of system model

3.2.1 Determination of system boundary

Table 1. Determination of system boundary.

System variables	Specific variables
Product and service strategy	Smart meter input quantity
	Peak time compensation amount
	Low preferential amount
	Green power subsidy
Price differentiation strategy	Difference between package price and general price difference
	TOU price peak low price difference
Channel diversification strategy	Wholesale channel discount price
	Chain operation input cost
	Brand cooperation investment amount
Promotion strategy	Advertising investment amount
	Number of sale staff
	Big data analysis cost
	Big data ad delivery accuracy
	Advertising ratings
Other variables	Cost
	Total income
	Electricity sale

3.2.2 System causality diagram

After determining the boundary of the system, the relationship between the elements in the system is analysed, and the causality diagram is obtained. The power marketing system of the power selling company is affected by many factors. This paper only considers the impact of different marketing strategies on the total revenue of the power selling company, and draws the causality diagram of the marketing system as shown in Figure 5.

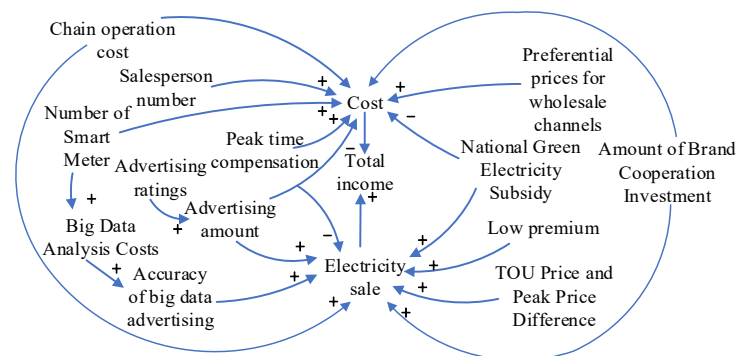


Figure 5. Causality diagram of marketing system

3.2.3 Establishment of system model

Based on the analysis of the causality among the above strategies, the storage flow chart of the marketing system of the power selling company is established by using the system dynamics software

Vensim, as shown in Fig. 6. Some of the parameters of the model are shown in Table 3. Part of the equation of the model is shown in Table 4.

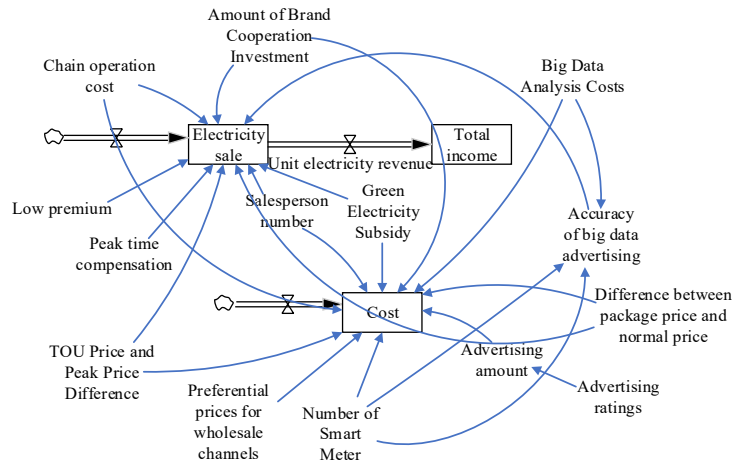


Figure 6. Flow chart of marketing system of power marketing company

Table 2. Parameter description table of marketing system dynamics model of power marketing company.

Model parameter	Representative meaning
P_z	Smart meter input quantity
P_M	Peak time compensation amount
V_M	Low valley discount amount
G_V	Green power subsidy
D_P	Difference between package price and general price difference
D_T	TOU price peak low price difference
M_P	Wholesale channel discount price
C_C	Chain operation input cost
C_{BC}	Brand cooperation investment amount
C_A	Advertising investment amount
M_N	Number of sale staff
C_{BD}	Big data analysis cost
A_{BD}	Big data ad delivery accuracy
A_R	Advertising ratings
V	Unit price
C	Cost
V_t	Total income
S	Electricity sale

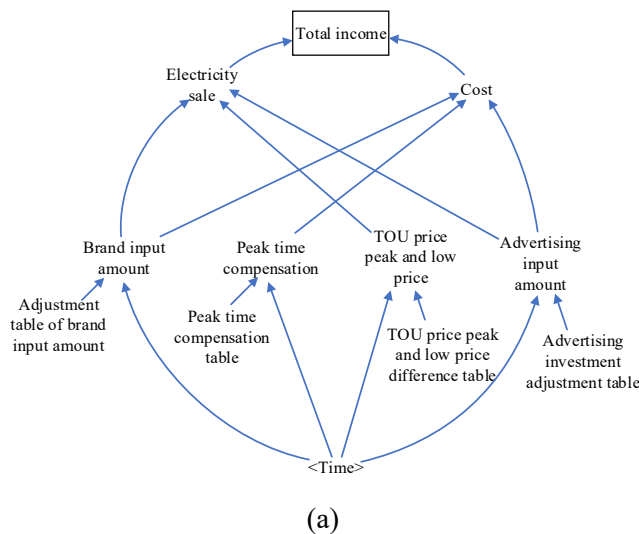
Table 3. Partial equations for the marketing system dynamics model of the electricity sales company.

Serial number	Mathematical expression
1	$V_t = S * V - C$
2	$S = S_0 - \alpha * P_M + \beta * Y_M + \gamma * G_V + \delta * D_P + \epsilon * D_T + \theta * C_C + \vartheta * C_{BC} + \mu * C_A + \rho * M_N + \sigma * A_{BD}$
3	$C = C_0 + a * P_z + C_{BD} + C_C + C_{BC} + C_A - G_p + b * D_P + D_T + M_P + c * M_N$
4	$A_{BD} = e * P_z + f * C_{BD}$
5	$C_A = g * A_R$
6	INITIAL TIME=1
7	FINAL TIME=12

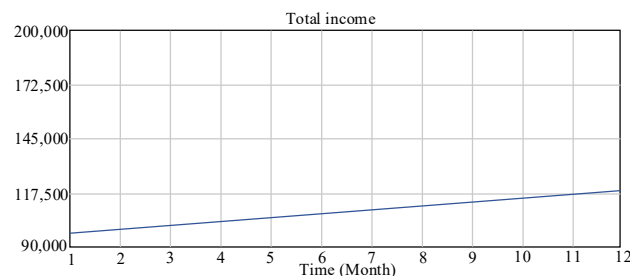
8	TIME STEP=1
9	UNIT OF TIME: MONTH

4. Model simulation analysis

In this paper, a power company is taken as a sample for simulation analysis. The starting time is January, the ending time is December, and the step size is 1. The simulation considers the effects of compensation amount, peak-valley price difference, brand cooperation investment amount and advertising investment amount on the total income change, and draws the following figure. Figure 7 (a) is the calculation model, and Figure 7 (b) is the output result. From Figure 7 (b), we can see the impact of several marketing methods on the total revenue. With the increase of input, the total revenue increases.



(a)



(b)

Figure 7. Simulation results

5. Conclusion

With the start of a new round of power system reform in China, the market of power selling side has gradually opened up, and power selling companies have entered into people's lives. Electricity companies should not stick to the middle price difference by buying and selling electricity. They should fight price war instead of always lowering the price. Electricity companies should increase marketing efforts, cultivate user habits, establish brand image, and make long-term plans for the follow-up development. It can be sold from the model simulation diagram. The company should strengthen the following aspects.

5.1 Rich products

Electric power is the main product of power selling companies. The potential of China's power selling companies in personalized product customization and series of value-added services still needs to be tapped. According to the big data, the power selling company should deeply analyse the users'

electricity consumption habits and design different products and value-added services for different types of users. Let users fully understand their power consumption and electricity usage, and help users develop the habit of saving electricity. It can provide users with comprehensive services such as demand side response, electricity consultation and one key payment.

5.2 Different prices

Before adjusting the electricity price, the power selling company should subdivide the user groups and provide different prices and services for different users. Environmental users are willing to pay more for green electricity, and economical users are willing to reduce the cost of electricity. For environmentally friendly users, power companies can provide relatively high-priced green energy for them, and recommend smart home services to them, so that users can experience the convenience of green and intelligent life. For the energy-saving users, the power sales company can customize the energy-saving scheme for them, and provide them with energy-saving renovation services and electricity consulting services.

5.3 Broaden channels

“Cross-border” is no longer a strange term for Chinese enterprises nowadays. Electricity companies should not only strengthen cooperation with water supply, heating, gas supply and other service enterprises, but also cooperate with scientific research institutions and small and medium-sized enterprises to enhance their popularity and increase electricity sales at the same time. Off-line stores can increase the interaction between power companies and users, solve the problem of power consumption for users, but also is a kind of “advertisement” without paying advertising fees. Potential users can deepen their understanding of power companies through stores.

Acknowledgement

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