



Research on Electric Power Marketing Service System Based on Alipay Applet

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Abstract. In order to improve the quality of electric power marketing service, this paper puts forward the research of electric power marketing service system based on Alipay applet. The architecture of Alipay applet system for online channel of electric power marketing designed in this paper mainly includes three aspects: marketing mobile application module, application management module and integrated management module. The functions of electric power marketing service system are designed, including homepage management, user payment and withholding, electronic bill, electric power service and other functions. This article fully relies on Alipay channel's real-name authentication members, small program service construction and Internet promotion capabilities, and builds Alipay small program system. By taking Alipay as the online service position of power marketing, it can greatly improve the overall service level of power marketing, enhance customer satisfaction and help optimize the business environment.

Keywords: Alipay applet · Electric power marketing · Service system · standard of service

1 Introduction

Power service is the core link between customers in the power market and power enterprises, and the grass-roots power supply station is the most direct bridge carrying power services [1]. In the past ten years, grass-roots power supply stations have been adhering to the guidance of creating value for customers and companies, constantly expanding customer service channels, and aiming at continuously promoting the innovative development of new businesses. However, in the process of service transformation and upgrading, there are some shortcomings in the power service work of grass-roots power supply stations: First, the current power service data mining ability is lacking, and there are some shortcomings in data processing. The operation analysis is classified only by indicators, businesses, etc., and the business situation can only be statistically analyzed afterwards, and the hidden problems in the deep data cannot be investigated [2–4]; Second, the analysis of electric power service data only depends on the output of single and linear statistical results, and no effective results have been made for the logical relationship discrimination, correlation analysis, data interaction and visual display among data [5, 6]. This article fully relies on Alipay channel's real-name authentication members,

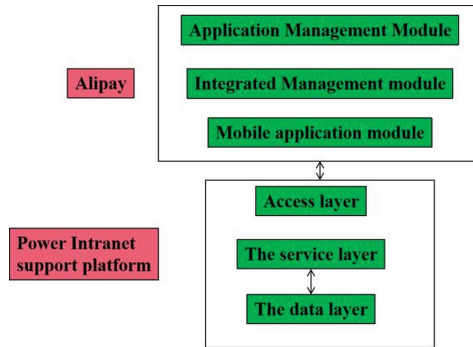


Fig. 1. Technical architecture

small program service construction and Internet promotion capabilities, and builds Alipay small program system. By taking Alipay as the online service position of power marketing, it can greatly improve the overall service level of power marketing, enhance customer satisfaction and help optimize the business environment.

2 System Architecture Design

The architecture of Alipay applet system of electric power marketing online channel designed in this paper mainly includes three aspects: marketing mobile application module, application management module and integrated management module. The main technical architecture is shown in Fig. 1 [7]. The marketing application module is mainly designed based on Alipay's small program architecture to meet the marketing mobile support function [8, 9]. The application module includes eight application modules: homepage management, user payment and withholding, electronic billing, power service, electricity safety, message reminding, customer real-name registration system, and "Online State Grid" App promotion. The integration module mainly integrates the intranet support platform of the power marketing system to meet the application of Alipay to the data of the power marketing system. Table 1 shows the whole chain of "Life account+" brand marketing [10].

3 Power Service Big Data

Electric power service has accumulated massive electric power customer data and has the condition and foundation of mining related information and knowledge from the perspective of data analysis. By using big data technology, useful information and knowledge can be extracted from a large number of incomplete, noisy, fuzzy and random data, so as to create data value-added value and provide and derive a variety of new power services.

3.1 Types of Power Service Data

Taking the data with the highest application frequency in basic power supply stations as an example, it can be divided into three categories: customer information, grid information and work order information. Customer information refers to the archival information

Table 1. “Life account+” brand marketing link of merchants.

Publish content	Content recommendation	Vermicelli precipitation	Follow-up recall
Content creation	Private domain recommendation	Life channel home page attention	Life channel
		Life account+ Homepage Concern	
content marketing	Public domain recommendation	Content details page attracts attention	Alipay search
		Pay attention to offline material scanning code	

stored by power customers in the marketing business system and the external information collected by the customer manager through visiting services and exchange discussions, including but not limited to customer number, customer name, customer address, meter reader, smart meter number, metering point number, terminal address, metering box bar code, contact person, contact telephone number, etc. Regional information can be divided into substation, platform area, grid, etc. The work order information can be divided into urgent repair, non-urgent repair, quality service, measurement, marketing business, 12,345 and business expansion and installation according to the business type. By sorting out the correlation between the data fields in these three categories of information and constantly mining the effective information contained in the data, it can promote the daily work of the front-line personnel of the basic power supply station.

3.2 Power Service Data Processing Technology

The data processing technology used by the existing basic power supply is mainly carried out by different types of business support systems, such as marketing business application system, power customer electricity information collection system, platform lean management system, PMS2.0 system, marketing inspection and monitoring system, etc. Although the existing various systems can meet the power demand proposed by users to some extent, the data of each system lacks effective correlation, the data integration degree is at a low level, and the mechanism of active analysis and mining of existing data is lack, which is not conducive to the complete analysis of customers' power consumption behavior, and further affects the basic power supply offices to understand the real power demand of customers.

In addition, from the perspective of daily operation and maintenance of basic power supply staff, the existing support system is relatively independent, and the compatibility and correlation between the various systems need to be improved, which leads to repeated work, invalid filling and other problems often occur in the work of operation and maintenance staff.

4 Functional Design

4.1 Home Page Management

Function aggregation. The main functions of the “Online State Grid” Pocket Power (2019 edition) promoted by the State Grid, as well as the government-led “cognitive functions of coal, water and electricity public facilities protection and use safety”, “take photos of potential safety hazards” and “take photos and change them”, etc., are integrated into self-operated small programs through interfaces and application deployment [11]. The functions can be presented to users for selection as a whole, providing users with a convenient operation experience similar to App [12].

Homepage configuration. The functions and modules of the homepage support configuration, the top picture supports uploading configuration, the operation area can be displayed or not displayed according to needs, and the function area can be configured with order, jump links, icon and so on.

4.2 Payment and Withholding by Users

Top-up payment. According to the instant arrears information obtained by the account number, the user confirms the payment amount (the payment amount can be modified), submits the payment request (the payment password is input), and the applet deducts money from the user’s Alipay balance or balance treasure or bound bank card. After the deduction is successful, it initiates a payment write-off request to the electric power, and the electric power marketing system makes payment write-off, and returns the result information after the write-off.

Withholding payment. The applet directly supports the automatic withholding function, and the withholding and withholding management function can realize the withholding payment by using the simple interface and channel of “Online State Network”. Docking Alipay withholding function, users can sign/cancel the contract online for withholding [13, 14].

4.3 Electronic Bills

My bill. In the small program, the electronic bill function is added, the electronic bill subscription process is added, and the electricity quantity can be queried.

Daily electricity consumption. For remote charge control users, check the recent electricity consumption information after binding the account number. Show the daily electricity consumption trend chart for nearly 7 days in the form of trend chart, and plan the electricity consumption in different levels to advocate and encourage users to save energy and use electricity.

Annual bill. Plan and implement the annual electricity bill, and provide services such as taking stock of customers’ annual electricity consumption trend, peak-valley value analysis, monthly average electricity consumption analysis, crowd analysis and comparison, and knowledge sharing of energy conservation. Configure the interactive interface of the annual electricity bill with interest, topic and communication, use the Internet channel combined with the power’s own channels, expand the publicity coverage

through topic interaction, event marketing and other means of communication, enhance the publicity effect, convey care, warmth and affection, and enhance the power brand service image while enhancing the power customers' sense of acquisition [15].

4.4 Electric Power Service

Electricity price of residents. Residential electricity price release module, through which users can inquire about residential electricity price related information. This module is a static page, which is updated according to the power demand.

Network inquiry. In the small program, implement the network inquiry function module, connect with the GIS function of Gaode Map by guiding people's business network information and latitude and longitude data, and build a network inquiry service, which is used for users to inquire about nearby institutions' business networks, including business network address, contact telephone number and map information, etc. At the same time, GPS navigation service is provided to guide users to the nearest business outlets [16].

General knowledge of electricity use. Build the module configuration of power consumption common sense, and the front desk will show users the power knowledge and power consumption common sense content; At the same time, it provides the publishing and maintenance service of background power usage knowledge, conveys the knowledge of safe power usage to users through applet service, and improves the interactive service ability between applets and users and the activity of applets [17].

Beginner's Guide. In the novice guide module of small program construction, the front desk shows the user the novice guide content such as the introduction of small program function, account number query, etc. At the same time, provide background novice guide publishing and maintenance services; You can also display the normalized novice guide service in the form of static pages.

Password recovery. The small program implements the password retrieval function, and provides the password retrieval service on the account number binding page and the power service. Users can retrieve and reset their passwords by means of SMS verification of the reserved mobile phone number in marketing.

4.5 Message Reminder

Announcement information. Through Alipay applet, it uniformly publishes announcement information to users, including: public information such as enterprise dynamics, electricity laws and regulations, and news release. Users can view the information of power announcement in the applet. As shown in Table 2, the basic settings of Alipay Life Group Message are as follows.

Notice of bill. After the electricity bill is paid, the billing notice is sent through Alipay PUSH, Alipay Home CARD, etc., to inform the user of the current expense bill and the arrears amount or current balance. The user can click the billing notice to enter the detailed bill display page, and pay the bill immediately [18].

Notice of urging fees. Used by institutions to send reminders. When the user fails to pay the fee within the time limit and has reached the demand for payment, a demand

Table 2. Basic Settings of Group Message of Alipay Life Account

Send object	visible range	Friends list message reminder	Merchant windable number
All visitors	Visible to all visiting users (including fans and non-fans)	no	5 /day
All vermicelli	All fans are visible	yes	1/week
Grouping vermicelli	Only fans of this group are visible	yes	5/week

notice will be sent to the user through Alipay PUSH, CARD, etc. to inform the user to pay the fee in time. Users can click on the call notice to enter the detailed bill display page and pay immediately.

Balance reminder. Prepaid users send balance reminding notice when the balance is about to be insufficient. Give users early warning reminders through Alipay applet, PUSH, CARD, etc. Users can click the warning notice to enter the current balance page and pay immediately [19].

Notice of power failure. It is used to query the power outage notice, mainly for fault and temporary power outage, involving users within the power outage range. Users can view the power outage notice through small programs, and click the notification information to enter the detailed information display page of planned power outage [20].

5 User Evaluation Results

Guided by optimizing the business environment, we designed and piloted the application of Alipay applet power marketing service system functions to conduct satisfaction surveys in a certain area. Before the application of the functions, 3000 questionnaires were issued, 1035 were effectively recovered, and after the application of the functions, 3000 questionnaires were issued, 1760 were effectively recovered, and the compliance of the questionnaires was increased from 33.4% to 57.6%. In the questionnaire, users are required to give 0 to 10 points for the overall subjective feeling of rural power services, of which the full score is 10 points. The actual summary results of the questionnaire are shown in Fig. 2.

As shown in Fig. 2, the users who gave a full score evaluation increased from 18.7% before application to 26.7% after application, with an increase of 40.3%. The users who gave a zero score evaluation decreased from 9.3% before application to 1.5% after application. The decrease of 0% was 88.3%. The comprehensive evaluation score was 9.32 points after application and 7.41 points before application, up 24.3%.

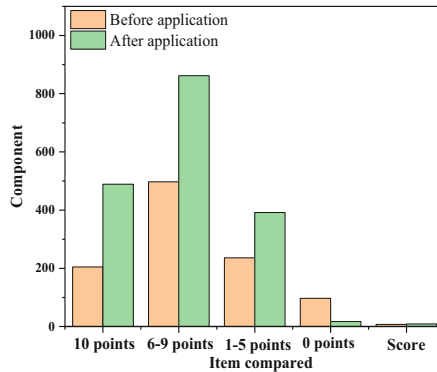


Fig. 2. Comparison of user evaluation changes

6 Conclusion

Based on the customer's demand, this paper makes an in-depth study of online service technology for power customers, and relies on Alipay's massive real-name authentication membership ability, small program service construction ability and Internet promotion resources to build online channel service function for power marketing. Effectively improve the customer's power marketing service level, enhance the publicity of "Online State Grid", respond to the national slogan of "Optimize the business environment" and "Run at most once", and enhance the overall image of the power company. To sum up, the power system dispatching work is comprehensive, and electric energy plays an important role in the process of social development, and its status is also indispensable. At the same time, electric power enterprises constantly update their internal dispatching operation level, and carry out professional quality training for professional personnel, which will be conducive to the implementation of electric power dispatching work, strengthen the ability of electric power dispatching operation, and strengthen the overall improvement of in-service personnel, not only in technical aspects. Psychological training should also be carried out.

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