Customer Segmentation Model Research Based on Organizational Customer Life Cycle in Telecom Operator

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Abstract. As the competition between telecom operators is getting fiercer, both new market and stock of mobile communications market begin to fall, which makes organizational customers become the main competing objectives among operators. Based on the academic research results of relevant scholars and the actual situation of customer management in telecom operators, we redefined the organizational customer lifecycle. On the basis of the organizational customer hierarchical segmentation model, we put forward the corresponding segmentation variables, segmentation method and strategy plan according to the lifecycle stage of customer relationship, to maximize long-term interactive value between telecom enterprises and customers.

Introduction

In recent years, organizational customers become an important proportion in the communication market. The cooperation scale between organizations is also increasing. Organizational customers [1] not only bind a large number of individual customers one-time, but also to bring the strategic significance and demonstration effect to the enterprise as the pioneers of new business. In conclusion, the effect of reasonable customer segmentation is particularly important in expanding new markets, stabilizing stock market, enhancing the value of existing customers and reducing the service cost. At present customer segmentation method includes statistical segmentation, psychological segmentation and behavior segmentation, which are mainly suitable for the individual customer segmentation [2]. Compared with individual customer segmentation, the organizational customer segmentation has more influence factors. But the situation now is that telecom operators subdivide organizational market by evaluating the customer value simply, lacking systematic research.

Influential organizational market segmentation model include: "early organizational market segmentation model" [3], "two-step segment research" [4], "Nested-approach" [5]. Considering the characteristics of organizational customer and communication industry, Huang Yijun and He Jieqiao proposed segmentation variables suitable for telecom operator organizational customers based on the concept of customer value and nested-approach, consisting of customer value, demographics, operating variables, purchasing approach, situational factors and personal characteristics [6].
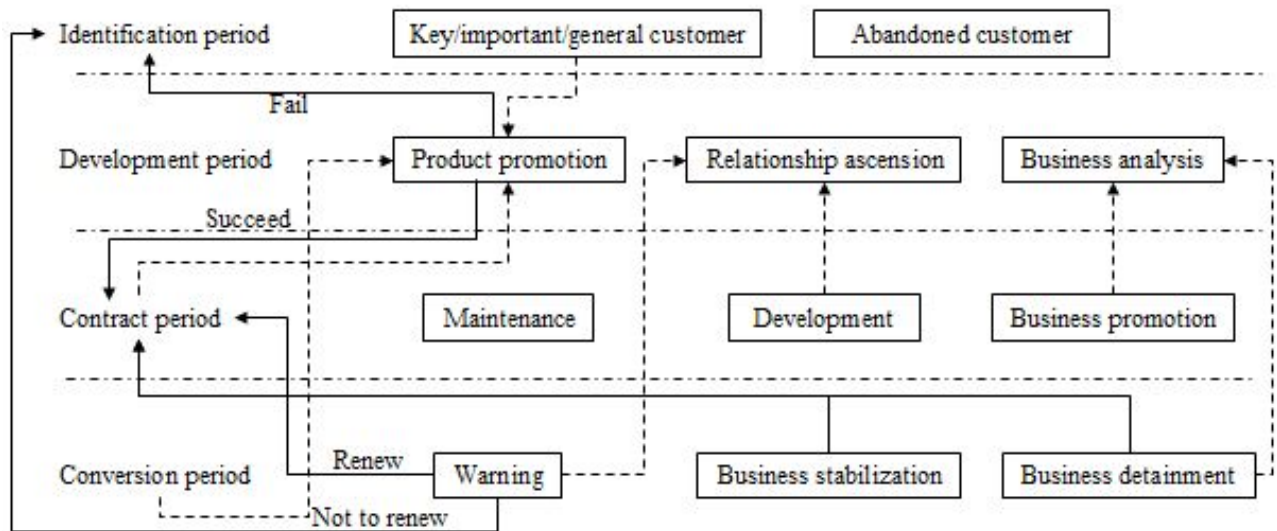
Fig.1 Segmentation result based on organizational customer lifecycle

The effective customer relationship management should be full-course and dynamic. In customer lifecycle management, customer segmentation can help to fully grasp the behavior of customers, to track footprint in the net and to find new consumption trend early in order to make flexible customer retention policies [7]. Domestic scholar suggested that the development of customer relationship should be divided into four stages: identification, formation, stabilization and degradation [8]. However, the periodicity of customer relationship is limited and not suitable for the characteristics of communication industry and organizational customer contract. Batonda (1998) also suggested that customer relationship is affected by external environment [9], leading the phase transformation changes irregularly.

So based on these, we decided to redefine the lifecycle stage of organizational customer and to segment customer market based on nested-approach and the characteristics of lifecycle stages. The types of customers in each stage can correspond or transform to another, forming a complete and dynamic segmentation system based on organizational customer lifecycle (shown as Figure1).

Stage division of organizational customer lifecycle

Existing telecom operator organizational customers belong to contractual customers, who make specific commitments to the enterprise in certain period. Based on the characteristics of contractual customer, we divided telecom operator organizational customer lifecycle into four stages: identification, development, contract, conversion.

Identification. Customers have not signed any product contract with enterprises in this stage, where to find the target customer source.

Development. A strategy implementation stage where to establish or strengthen customer relationships and to improve customer value.

Contract. Customers have signed product contract with enterprises in this stage, where to evaluate customer relationship stability and business using, to convert towards the development period according to customer type, implementing strategy to promote relations or to add value.

Conversion. This is a key observation stage where product contracts are coming to an end that may bring loss of business or customer relationship changes. That is at least a business contract is coming to an end (2 months before the end of the contract period). The main task is to evaluate the expiring contract business using, then to convert towards development period to strengthen customer relationships or to retain businesses.

Customer segmentation based on organizational customer lifecycle

According to the definition of lifecycle stage and the application of customer segmentation model, there are clear divisions among customer relationship stages and customer types. So we can judge the real-time customer relationship stage by dynamic tracking.

Identification. It is a stage that access to information of customer demand is insufficient and customer value is difficult to appear, where telecom operators usually provide mature and generic products or services according to group classifications of physical properties. Assessing potential value to reduce uncertainty is the focus in the stage. So in the nested model, variables are customer information which can be collected in the early. [10]

Table 1.Segmentation model indexes in the identification period

Nested model level	Evaluation object	Indexes
Demographics	Customer capacity	Customer staff size
Customer value/ Potential value/ Customer development potential[11]		Customer income, Customer industry influence, Customer society influence
Demographics	Demand intensity	The industry
Customer value/ Potential value/ Customer development potential		Information level, Communications expenditure proportion

In this model, the task is to analysis customers' capacity and demand. After judging the index weight by experts marking, designing index quantitative method and comprehensive evaluation, we divided organizational customers into key customer, important customers and general customer and abandoned customer. Customers of the first three types will enter into the development period to implement product promotion strategy. If customers contract business successfully, they will enter into the contract period as contractual customers, otherwise return to the identification period.

Contract. The main task of the contract period and the conversion period is to evaluate contractual customer's stability of customer relations and business using, analyzing consumption behavior [12].

Table 2.Customer relationship stability evaluation model indexes

Nested model level	Primary indexes	Secondary indexes
Customer value/ Potential value	Loyalty	Number of product using, "Share of wallet", Volatility rate of total income, Cooperate time, Satisfaction, Customer feedback
	Credit	Arrears rate, Arrears period
	Strategic value	Number of strategic product using, Strategic partnership

Table 3.Single product using stability evaluation model indexes

Nested model level	Primary indexes	Secondary indexes
Customer value/ Potential value	Loyalty	Volatility rate of product income, product using time, Product satisfaction
	Credit	Arrears rate, Arrears period
Situational factors[13]	Product type	Business development level
	Product dependence	Product usage, Product technical difficulty

In the contract period, we divided customers into Maintenance, Development and Business promotion three categories by evaluating the stability of customer relationship and product using.

Maintenance. Stabilities of both customer relationship and all business using are high. For the customer, we only need to carry on the business promotion of new businesses and to maintain the current customer relationship and business using.

Development. Customer relationship is not stable, whose relations preliminary build or decline. The type of customers corresponds to the relationship ascension customers in the development period, who need to be strengthened the stability of customer relationship.

Business promotion. Though the stability of customer relationship is high, there is instable business using. The type of customers' brand loyalty is high, but the satisfaction or loyalty to one or a few products is low due to their special requirements or product problem itself. So enterprises need to analyze the business, in the development period, to strengthen the stability of product using.

Conversion. Warning. That are customers whose all businesses contract are about to expire as well as the business using is declining. If enterprises don't take customer retention strategy to improve customer relationship timely, these customers will back to the identification period after contract. So these customers need to enter into the development period, where we should analysis of customer value and measure the cost of customer retention and customer value, considering whether to implement the strategy of customer retention. If retaining successfully, customers back to the contract period after business contract renewal. Otherwise, they will get into the identification period, whose contractual relationships come to an end.

Business detainment. Not belong to warning customers, but the customers have recessionary business about to expire. Although the customer relationship will not end, that is customers still enter into the contract period after conversion period, which may lead to reduce the number of product using of these customers, whose product using also need to be analyzed in the development period.

Business stabilization. The customers will back into the contract period after the renewal, whose all the business using is stable.

Development. In the period, enterprises integrate customer information from other stages, analyzing the characteristic of customer purchase and evaluating customer value. Not only divide development strategies into product promotion, relationship ascension, business analysis three types, but to implement strategy of different intensity according to different level of customer value.

Table 4.Customer value segmentation model indexes [14-16]

Primary indexes	Secondary indexes	3rd-level indexes
Current Value	Revenue	Information-based income, Amount of unity pay, Amount of personal customer pay
	Cost	Service costs, Marketing costs, Customer retention costs
Potential Value	Customer relationship stability	Refer to Table3
	Customer development potential	Customer staff size, Customer income, Customer industry influence, Customer society influence, Information level

Research process and data analysis

Empirical method. We tried to put forward segmentation model variables based on the studies of many scholars in organizational customer segmentation and customer lifecycle research field and then evaluated weight and screened again based on the conclusions of in-depth interviews and questionnaire surveys with scholars from universities and executives of telecom operators' organizational customer management department. In the aspect of data analysis, we designed the measure variables of customers and products according to the characteristics of the telecom industry (shown as Table 5). On the basis of measurements, we used "Mean quantization method" [17], a kind of linear dimensionless method, and additive synthesis method to calculate comprehensive evaluation results according to the weight.

Table 5.Measure variables

Collect directly	• Estimated cost of strategic product
• Income(total income and per product income per month)	• Proportion of the total Information-based spending of its information-based income
• Product using time	• Established strategic partnership or not
• Arrears rate and arrears period	• Operating income from the previous year
Questionnaire survey	• Response to enterprise's visit or investigation

Customer annual income	or number of complaints or suggestions
• Customer annual income • Development level and Product technical difficulty rating of products(Fixed-line voice, Data, Internet, Rental network elements, ICT, Mobile service) • Number of employees • Information construction investment plan	• or number of complaints or suggestions • Position of the industry • Brand radiation area • Satisfaction(to enterprise and to each product) • Cost rating • Product dependence (in operating management and in providing business services)

Data collection. Data can be obtained through the telecom operator's support system directly or indirectly. Data of application example come from 150 customer data selected from the Beijing Unicom list system big customer, business information and customer information acquired by questionnaire. We tried to apply the stage division of customer lifecycle and customer segmentation model mentioned above, taking 20 contractual customer data for example, named c1 to c20. C16 to c20 are conversion customers.

Data reduction. First we analyzed the stability of customer relationship (shown as Table 6).

Table 6.Dimensionless data of customer relationship stability

Customer samples		C1	C2	C3	C4	C5		C20
Loyalty	Number of product using	0.6667	0.5000	0.3333	0.5000	0.3333		0.3333
	Share of wallet	0.83	0.54	0.67	0.76	0.49		0.9
	Volatility rate of total income	0.5833	0.7167	0.5500	0.9000	0.2833		0.5500
	Cooperate time	0.25	0.55	0.15	0.1	0.4		0.45
	Satisfaction	1	0.8	1	1	0.6	...	0.6
	Degree of customer feedback	0.4	0.6	0.6	1	0.4		0.4
Credit	Arrears rate	1	0.75	1	1	0.3		0.6
	Arrears period	1.0000	0.8333	0.7500	1.000	0.3333		0.5833
Strategic value	Number of strategic product using,	0.6667	0.3333	0.0000	0.3333	0.0000		0.0000
	Strategic partnership	1	0	0	0	0		0
Customer relationship stability		0.7879	0.4917	0.3998	0.5594	0.2210		0.3375

The stability evaluation of single product using need concrete analysis of specific business. Taking ICT business for example, ICT business doesn't have contract deadline, whose income can be thought of no fluctuations. So we reduced the business data of customers who use ICT from c1 to c15 shown as Table 7. Data reductions of other businesses are similar to this.

Table 7.Dimensionless data of product using stability (ICT)

Customer samples		C1	C4	C7	C9	C10	C12
Loyalty	Volatility rate of product income	0.5	0.5	0.5	0.5	0.5	0.5
	Product satisfaction	1	0.8	1	1	0.6	0.4
Credit	Arrears rate	1	0.75	1	1	0	1
	Arrears period	1.0000	0.8333	0.7500	1.0000	0.3333	0.7500
Product type	Business development level	0.6	0.6	0.6	0.6	0.6	0.6
Product	Product usage	0.8	0.4	1	0.6	0.2	0.6

dependence	Product technical difficulty	0.6	0.6	0.6	0.6	0.6	0.6
Product using stability		0.7546	0.5929	0.7771	0.7065	0.3943	0.6120

We put forward each index's stability criteria by enterprise research and data collection preliminarily. After quantification and weighting, stability standards of customer relations and single business using are 0.48 and 0.54 approximately.

Result analysis. Through application of the stability evaluation model and customer segmentation method the article mentioned, segmentation result is shown as Table 8.

Table 8.Segmentation result based on organizational customer lifecycle

Customer lifecycle stage	Customer type	Customer samples
Development	Product promotion	C1 to C20
	Relationship ascension	C3, C5, C6, C8, C14, C15, C19
	Business analysis	C2, C4, C9, C10, C11, C12, C20
Contract	Maintenance	C1, C7, C13
	Development	C3, C5, C6, C8, C14, C15
	Business promotion	C2, C4, C9, C10, C11, C12
Conversion	Business stabilization	C17, C18
	Warning	C19
	Business detainment	C16, C20

Using the same method, we evaluated 150 customers' value by the customer value segmentation model, to divide c1 to c20 customers into A, B, C three types whose proportion is 1:2:7, representing key customer, important customers and general customer (shown as Table 9).

Table 9.Segmentation result based on customer value

Customer value level	Customer samples
A	C9, C12
B	C6, C10, C17
C	C1, C2, C3, C4, C5, C7, C8, C11, C13, C14, C15, C16, C18, C19, C20

Clear symbols of each stage and customer type make the segmentation easy to execute. So the focus of the model application refers to selecting indexes, judging weight or stability criteria and collecting data. In the process of data collection, not all the customer data of variables can be collected, so that they need to be modified, replaced, or redesigned quantitative methods. The purpose of customer segmentation is to identify target customers with strong ability or business needs and customers who need to be improved customer relationship or extended the business requirements, and then to adopt corresponding strategic measures. The customer segmentation method based on organizational customer lifecycle with strong dynamics can response to customer behavior change quickly, realize rational resource allocation according to the customer value and reduce the risk of resource input by judging the stability of customer behavior. For multiple business customers, analyzing each business using can avoid incorrect evaluation of customer relationship result from a certain one.

Summary and outlook

We divided telecom operator organizational customer lifecycle into four stages: identification, development, contract, conversion, considering the uncertainty of organizational customer relationship, which is suitable for atypical customers. Segmentation model in the identification period helps enterprises to find target customers. In the contract period and the conversion period, customers will be evaluated the stability of customer relations and business using, and then turn into the development period where enterprise can implement strategy accord customer type and customer value. So this is a segmentation model based on the customer value and customer behavior, conducive to rational allocation of resources, reducing the risk of resource input.

However, in practice, Customer contract types are plenty, related with the functions of enterprise management departments and product types. So stage division of organizational customer lifecycle

in the article is just a preliminary classification. Customer contract type and product characteristics need further analysis. Model indexes and stability standards still need to be adjusted according to different situations.

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