Research on Feature-Based Classification of Consumption Internet Products

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Abstract. With the development of Internet technology, China consumes millions of Consumption Internet products, and the business models of different products vary greatly. In order to explore the law of Consumption Internet Products and guide enterprises to carry out the R & D and operation of Consumption Internet Products, this paper makes a cluster analysis of some Consumption Internet Products based on the core resources, profit model and financial performance segmentation indicators of Consumption Internet Products. Dividing Consumption Internet Products into five types: entrance products, functional products, platform products, service-oriented products and content-based products can effectively guide the product resource investment, profit model design, product development planning and company product system planning of Consumption Internet Products.

Keywords: Consumption Internet Products · product classification · Features · core resources · profit model · financial performance

1 Introduction

In the era of digital economy, Internet technology has developed by leaps and bounds, and Internet hardware and software have developed rapidly. As an important part of Internet software, Consumption Internet Products continue to promote the development of Internet technology. At the same time, how to effectively invest resources in Consumption Internet Products, design a reasonable business model and plan the development path of products has become an important problem perplexing Internet enterprises. Although there have been a series of successful consumer Internet products, due to the lack of a clear and independent Consumption Internet Products classification system, it is difficult for Internet companies to compare with successful products and learn successful product experience when making product decisions. There are often problems such as unclear product positioning, disordered resource investment and difficult collaborative development. Therefore, a scientific classification method of Consumption Internet Products is not only of great significance to the development of consumer Internet products, but also an important contribution to the development of Internet technology.

2   Journals Reviewed

Consumption Internet Products refer to products that take individuals as users and daily life as application scenarios to meet consumers' consumption needs in the Internet. Corresponding to the consumer Internet is the industrial Internet, which together constitute the Internet industry.

Classification refers to a method of recognizing things by taking the type, grade or nature of things as the distinguishing standard, classifying things that meet the same standard into the same category and things that do not meet the standard into other categories. Things in different categories need to be independent of each other without overlap.

At present, Consumption Internet Products are mainly classified through a single dimension. For example, from the perspective of user demand, products can be divided into social products, trading products, entertainment products, etc.; From the perspective of operation platform, products can be divided into mobile products, PC products and other intelligent terminal products; From the perspective of product realization mode, products can be divided into advertising realization products, e-commerce realization products, financial realization products, etc.; From the perspective of user relationship, products can be divided into single point of use products, unilateral user products, multilateral user products, etc.; From the perspective of key resources, products can be divided into technology driven products, operation service products and capital driven products; From the perspective of product life cycle, products can be divided into cultivation products, growth products, mature products and decline products.

Single dimension product classification can meet the needs of specific scenarios. For example, classification based on user needs can meet the needs of product planning scenarios, but it is difficult to meet the needs of multiple scenarios such as Internet product planning, R & D and operation. Therefore, based on the single dimension classification, this paper explores the multi-dimensional classification method based on the Features of Consumption Internet Products, so as to meet the multi scenario needs of product decision-making.

3   Research Method

Aiming at Consumption Internet Products, this paper proposes the model of Consumption Internet Product classification based on feature. The construction of the model is divided into five steps: the first step is to determine the features of Consumption Internet Products; The second step is to select the head of representative listed companies to consume Internet products; The third step is to extract the product feature data of head consumption Internet products through financial reports; The fourth step is to cluster the feature data of Internet products; The fifth step is to take the results of cluster analysis as the feature-based Consumption Internet Product classification model.

3.1   Determine the Features of Consumption Internet Products

Looking at the essence through the phenomenon, the essence of Consumption Internet Products is also a product. Products can only produce value through exchange. The

premise of exchange is that products have their own core resources that other products lack. The mode of exchange is the profit model of products, and the result of exchange is the financial performance of products. Therefore, this study takes the core resources, profit model and financial performance of products as the basic features of the classification of Consumption Internet Products.

3.1.1 Core Resources

Core resources are important resources that enable products to create and provide value propositions, contact the market, establish relationships with customer segments and create value. The core resources of Consumption Internet Products mainly include content copyright, technology, channel, operation, assets, user stickiness and user scale, as follows:

Copyright. Content copyright refers to the copyright of video, audio and literary works that can produce economic value.

Technology. Technology refers to the resources invested in product R & D, including amount, number of R & D personnel, etc.

Channel. Channel refers to the online and offline self owned, distribution/dealer and other channel capabilities.

Operation. Operation refers to product operation, user operation, brand operation and other capabilities.

Assets. Assets refers to the tangible assets such as equipment and infrastructure held by the enterprise.

User Stickiness. User stickiness refers to the retention rate, frequency and duration of users.

User Scale. User scale refers to the number of monthly activities, paid users, sales volume, etc.

3.1.2 Profit Model

Profit model is a way for products to realize value creation, value acquisition and benefit distribution. The profit models of Consumption Internet Products mainly include advertising, member subscription, copyright resale, commission, product sales and live broadcast & derivative, as follows:

Advertising Model. Advertising model refers to the profit model that obtains income from brand advertising, search advertising, information flow advertising and other forms.

Member Subscription Model. Member subscription model refers to the profit model of obtaining income through user paid subscription.

Copyright Resale Model. Copyright resale model refers to the profit model of transferring its own content and purchased third-party content to other companies to obtain income.

Commission Model. Commission model refers to the profit model of obtaining a certain proportion of income from the transaction value of goods sold or services provided by third-party merchants.

Product Sales Model. Product sales model refers to the profit model of directly selling goods or services to users to obtain income.

Live Broadcast and Derivative Model. Live broadcast and derivative model refers to the profit model based on users' consumption and derivative consumption on the live broadcast platform.

3.1.3   Financial Performance

Financial performance represents the ability of products to create economic value for the company in a specific period. This study mainly selects two core indicators: revenue and gross profit margin.

Revenue. Revenue refers to the total revenue obtained by products through different profit models.

Gross Profit Margin. Gross profit margin refers to the proportion of gross profit of products in revenue. Gross profit is income minus cost, excluding taxes and surcharges.

3.2   Select Representative Consumption Internet Products

China has millions of Consumption Internet Products, most of them belong to long tail products. The product features of head products are more prominent and have more guiding significance for product development. Therefore, this research plan selects head Internet products as the research object. Because all countries put forward high management requirements for listed companies, and the relevant data of listed companies are relatively transparent and accurate, this study takes the head Internet products of listed companies as the research object.

In order to ensure the effectiveness of the sample, this study selected 29 head consumption Internet products from 22 listed companies in 15 sub industries as the research sample, as shown in Table 1.

3.3   Extract Product Feature Data

Based on the financial reports of listed companies, 15 feature data of the above 29 products are extracted respectively (as of June 2020). Among them, because some products do not completely match the profit model, only the relevant data of the profit model involved in the product are extracted.

Table 1. Representative Consumption Internet Products

Serial number	Sub industries	Products
1	Video service	Iqiyi, Tiger Tooth, BiliBili, Mango TV
2	Electronic Commerce	Taobao, JD.com, Pinduoduo, Vipshop
3	Music audio	QQ Music, Kugou Music, KuWo Music, National Karaoke
4	Utilities	Sogou Input Method, Sogou Browser, 360 Security Guard, 360 Browser
5	Social networks	Wechat, QQ
6	Intelligent hardware	Xiaomi Mobile Phone, Xiaomi Smart Speaker
7	Travel	Ctrip
8	Real estate services	Shell
9	Short video	Kwai Fu
10	Gourmet takeout	Meituan
11	Comprehensive information	Sohu
12	Electronic reading	QQ Reading
13	Search service	Baidu
14	Medical cosmetology	Neooxygen
15	Car service	Car Home

3.4 Cluster Analysis Based on Feature Data

The K-means clustering algorithm is used to cluster the above data, in which the distance is used as the similarity evaluation index, that is, the closer the distance between the two objects, the greater the similarity. The algorithm takes the compact and independent clustering results as the final goal.

Through multiple rounds of experiments, it is found that when the number of clusters is 5, the features within the group are the most significant and the difference between the groups is the most obvious. When the number of clusters is 4, the features in the group are not significant enough. For example, one group includes Xiaomi speaker, Tiger Tooth, Baidu, Sogou Browser and 360 Browser, which is difficult to extract the common features of products; When the number of clusters is 6, the difference between groups is not obvious. For example, group 1 includes BiliBili, QQ Music and Tiger Tooth, and group 2 includes Iqiyi, Mango TV and QQ reading. The core resources of these two categories are content copyright. If the two categories are combined, more common features can be found (Fig. 1).
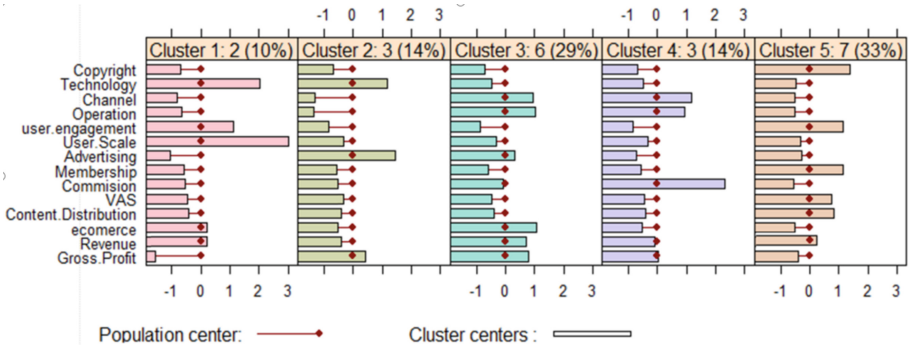
Fig. 1. K-means clustering results

3.5 Refine the Classification Model of Consumption Internet Products

Combined with the product features and analyzing the product clustering results, it can be found that:

The core resources of cluster group 1 are prominent in terms of technology, user stickiness and user scale. They lack a prominent profit model and obvious financial performance. The representative products are QQ and Wechat. Based on its features, it is named entrance products.

The core resources of cluster group 2 are prominent in terms of technology, the profit model is mainly advertising, and the gross profit margin is prominent in financial performance. The representative products are Sogou Browser, Baidu, 360 Security Guard and 360 Browser. Based on its features, it is named functional products.

The core resources of cluster group 3 are more prominent in channel and operation. The profit pattern is mainly advertising, commission and product sales. The financial performance is more prominent in terms of income and gross profit margin, representing Taobao, JD.com, Pinduoduo, Vipshop and Kwai Fu. Based on its features, it is named platform products.

The core resources of Cluster 4 are prominent in terms of channel and operation. The profit model is mainly Commission. In terms of financial performance, the income and gross profit margin are prominent. The representative products are Ctrip, Meituan, Shell, Newoxygen and Auto Home. Based on its features, it is named service-oriented products.

The core resources of cluster group 5 are prominent in terms of content copyright and user stickiness. The profit model mainly focuses on member subscription, live broadcasting and derivatives, and copyright resale. The financial performance income is relatively prominent. The representative products are Iqiyi, Mango TV, BiliBili, QQ Music, Kugou Music, KuWo Music, National Karaoke, Sohu, Tiger Tooth, and QQ Reading. Based on its features, it can be named content-based products.

Therefore, based on the above clustering results, the above five categories of Consumption Internet Products can be classified and defined to form a feature-based Consumption Internet Product classification model, namely:

3.5.1   Entrance Products

Entrance products usually refer to products that are heavily connected with large-scale users and can be used by users with high frequency.

3.5.2   Functional Products

Functional products usually refer to the products developed to meet a specific demand such as user efficiency and safety.

3.5.3   Platform Products

Platform products usually refer to products that provide commodity trading, information exchange and other platforms for both parties.

3.5.4   Service-Oriented Products

Service-oriented products: usually refer to products that make online reservations and provide users with offline services.

3.5.5   Content-Based Products

Content-based products usually refer to products that meet users' content consumption needs and attract users through content.

4   Model Application Analysis

The feature-based Consumption Internet Product classification model can classify one or more products by means of decision tree. The classification results have four application values: First, plan the resource investment of products under the guidance of product classification results; Second, plan the profit model of products under the guidance of the classification results of products; Third, plan the development direction of products under the guidance of the evolution path of product types; Fourth, under the guidance of different types of product layout of the head company, plan the product layout system of multi product companies.

4.1   Plan the Resource Investment of Products

For a Consumption Internet Product, the classification type of its benchmark product can be taken as the target type of the product, and the resource investment planning of the product can be carried out according to the resource investment of this type of product. For example, a company plans to benchmark Iqiyi to make a long video product. Iqiyi is a content-based product, and its core resources are content copyright and user stickiness. Therefore, the company's product resource investment should be inclined to expanding content copyright and increasing user stickiness; If a company plans to make a functional product, it can benchmark Baidu, strengthen resource investment in technology and establish technical barriers to products.

4.2 Plan the Profit Model of Products

For a Consumption Internet Product, the profit model of the product can be designed and planned according to the profit model of its target product type. For example, if a company plans to make a platform product, it can design the profit model of the product according to the triple profit model of platform product advertising, commission and product sales to maximize revenue; If a company positions a product as an entrance product, it means that it should not design a profit model for the product, and the product itself should not take profit as its development goal.

4.3 Plan the Development Direction of Products

Product types will evolve with the development of products. Take Taobao as an example. From 2003 to 2007, Taobao was an entrance product. At this stage, the product was mainly accumulated users, and the commission free strategy was adopted to continuously expand the scale of users; After 2007, as Taobao began to charge service fees for B2C merchants, Taobao developed into a platform product, with multiple profit models such as commission, advertising and commodity sales running parallel, and its revenue continued to expand. Look at Kwai Fu, 2011–2012 years, Kwai Fu was a functional product, positioning as a short video production tool, with tool technology, to stimulate user growth; Kwai Fu had evolved into an entrance product in 2013–2018 years. In 2013, it quickly transformed from tools to short video communities, and rapidly promoted growth. Since 2018, Kwai Fu has developed into a platform based product. In 2018, it established a commercial team quickly, and began to develop e-commerce business, and constructed a multiple profit model.

Therefore, for a company's product, it can plan the product development path through product type evolution, such as reference Kwai Fu's "Functional product-entrance product-Platform product" development path, from accumulating technology to accumulating users to platform profitability.

4.4 Plan Product Layout System

Based on the product classification results, the product layout of large companies can be analyzed.

Taking Tencent as an example, Tencent takes QQ and Wechat two entrance products as the core, strengthens user scale and stickiness through functional products, realized by content-based products, makes foreign investment in platform and service products, and guides them to obtain investment income. Tencent is a social leader. Its core advantages are technology and users. Its core appeal is value realization. Therefore, the key to its product layout is to realize flow realization through diversion (Fig. 2).

Then analyze Alibaba. Alibaba's product system takes Tmall + Taobao platform products as the core, and guides the core platform through mergers and acquisitions of content-based products, self-developed or invested entrance products, functional products and service-oriented products. As a leading enterprise of e-commerce, Alibaba's core advantage is channel and operation, and its core demand is flow. Therefore, the key to its product layout is flow mutual introduction (Fig. 3).
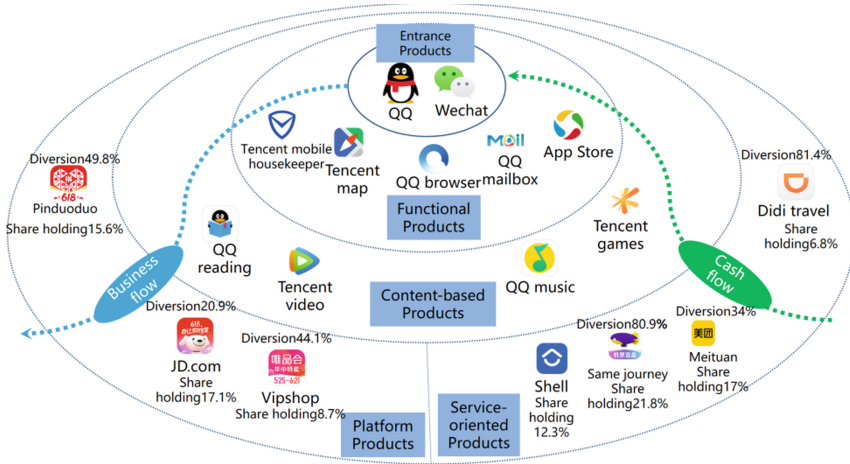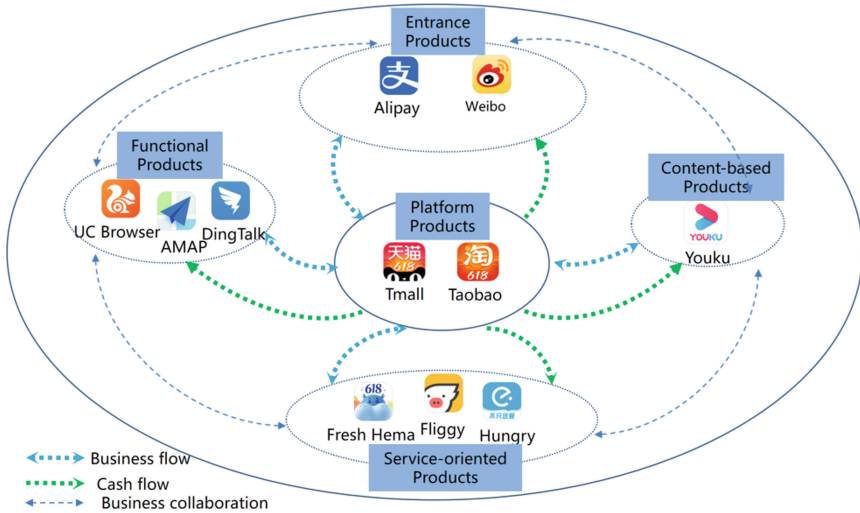
Fig. 2. Tencent product system layout

Fig. 3. Alibaba product system layout

Therefore, for a company with rich products, it can refer to the product layout system of Internet benchmarking enterprises such as Tencent or Alibaba according to the attributes of its core products, and carry out the layout design of its own product system to maximize the overall interests of the company.

5   Conclusions

Based on the three core features of core resources, profit model and financial performance of Consumption Internet Products, this study divides the seemingly complex

Consumption Internet Products into five types: entrance products, functional products, platform products, service-oriented products and content-based products, constructs an analysis perspective of Consumption Internet Products based on product types, and can invest in product resources according to product types, and plan the product profit model, the product development and the product layout system.

Theoretically, this study is an exploration and attempt to carry out multi-dimensional classification of Consumption Internet Products. Limited by the time and resources of this study, the research samples and data are limited, which does not cover the head Internet products of all listed companies, but gives a set of effective Internet product analysis methods. In the future, we can expand the sample data on the basis of this method to further carry out research, or apply this research method to other products to gradually improve the product research theory based on multi-dimensional classification.

In practice, this study only analyzes some examples of Tencent, Alibaba, Kwai Fu and other products. This method can expand the products of many companies. From the perspective of product type, it can further dig out the evolution and layout of benchmarking products, which has a strong reference for the planning of companies and products.

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