

COST EARNINGS ANALYSIS ON AQUATIC PRODUCT E-COMMERCE

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Abstract: With the development of e-commerce in the global trade, e-commerce has brought substantial profits, so it's necessary to put e-commerce into Chinese aquatic enterprises. From the Angle of cost and earnings analysis, this article discusses the feasibility of e-commerce in Chinese aquatic enterprises. We got this conclusion that e-commerce can let purchase and trade cost down and increase the transition cost accordingly. In the early stage of e-commerce development, the switching cost is very high, but along with the development of e-commerce, the switching cost will drop, meanwhile, the earnings of aquatic product trade will rise.

1 INTRODUCTION

Conventional economic theories believe that land, labor and capital are the important resources. With the rapid development of internet and information technology in recent years, Information network has touched all economic activity space, and played an increasingly important role in the modern enterprise management and operation process, based on which all kinds of business models also were built. Especially e-commerce, which builds on the network technology, revolutionizes the transaction model, appears enormous economic trade potential in the economic resources allocation, cost reduction and the client relationship improvement, and has been one of the main ways of promoting economic increase.

From the global market, China is one of the biggest exporters for aquatic products. The proportion of Chinese aquatic products import and export has been increasing in recent years. International trade pattern of Chinese aquatic products is export-oriented self-produced domestic seafood and aquatic products processing. According to the data of Chinese agriculture ministry, by Oct 2010, Seafood exports continued first in agricultural commodities export, accounting for 27.7% of agricultural exports (384.5 million dollars). The main countries of seafood export is Japan, America, Europe, Korea respectively, and the export situation is better than last year, value of export is

significantly double-digit growth. Seafood trade development requests aquatic enterprises to keep pace with international information economy development and realize electronic and information.

2 CHINESE AQUATIC PRODUCT E-COMMERCE SITUATION & PROBLEM

Aquaculture is an important part of agriculture in China, and is one of traditional basic industries. Compared to other industries, aquaculture has its own development characteristics, for example, aquatic enterprises are small and scattered, technical ability is limited. Aquaculture has strong resource dependency and distinct regional characteristics, especially aquatic fresh products have high request for the storage and transport. Most current aquatic products' transaction still rely on the traditional way, information level is low. With rapid development of information technology and wide use of the Internet, it is possible to improve aquatic enterprises' informational level and change the transaction ways of aquatic products.

In terms of fishery website construction, at present, Chinese aquaculture websites have reached more than 300, and has initially formed an industry websites tribe including all kinds of aquatic website. Aquatic website development promoted the combination Internet technology with aquaculture,

but the high quality and sustainable development of websites are rare (WeiPing Lu & Ran Hua 2003).

In recent years, with the development of e-commerce and the increasingly popular for online shopping, domestic seafood online sale shows rapid development momentum. Besides aquatic product processing and sales enterprises established their own marketing and publicity websites, some seafood dealers also use domestic well-known C2C network marketing platform such as "taobao" and "baidu" to promote their products. They mainly sale ready-to-use seafood, secondly seafood dry including Boiled Black Ginseng with Shrimp, shrimp, dried shrimp, Shendai, seasoned shredded squid, Roast taipa crab, sea cucumber, abalone, dried cuttle fish, seaweed, jellyfish etc., These products are easy to store and ship, which provide the possibility for e-commerce. Besides, Some of Chinese frozen seafood enterprises also begin to use e-commerce for online trades, which mainly traded between producers and dealers, and it belongs to the pattern of B2B

(http://www.shuichan.cc/news_view.asp?id=30792).

Accordingly, aquatic fresh products online trading also gradually rise, especially online sales of freshwater hairy crabs, but because the transportation conditions of fresh products are limited, it is easy to cause death and decay, and it is common that crabs are dead when the buyers check goods, online sales of aquatic fresh products are still in the initial stage in China now.

In addition, Chinese aquaculture e-commerce studies are focus on web page design, assessment on website content and development stage, e-business influence, changes of aquatic enterprises and e-commerce marketing strategy, and so on. Throughout aquatic e-commerce research literature, it is rare to combine aquatic products trade with e-commerce. According to this, from the Angle of cost and benefit analysis, this paper will use the marginal benefit increasing theory of network economy to discuss that network technology brings aquatic trade enterprise reform and innovation.

3 COST AND EARNINGS ANALYSIS ON AQUATIC PRODUCT E-COMMERCE

3.1 Marginal Benefit Increasing Theory of Network Economy

In economics, Marginal means the change of the

output caused by input per unit. Marginal analysis method is more application in management economics. It is mainly used to analysis in a certain level of output, if enterprise increases each unit product, it will have an effect on the total profits. Formula as follows:

$$\text{Marginal value} = \Delta f(x) / \Delta X$$

Where:

X=input,

f(x)=output, Performance for X functions

Δ =Variable

Hypothesis basic value X is in changing, then, each increases input per unit, the increment of output caused by this unit is also changing.

In traditional economics, there exist scale returns diminishing law, that is, rate of output will be descending with increased input. However, in network economics, Electronic market unique cost structure and strong positive feedback and negative feedback effect, brought some extraordinary economic effect (Arthur, W.B. 1996), it shows opposite tendency, that is marginal benefit increasing, rate of output will be increasing with increased input. As figure1:

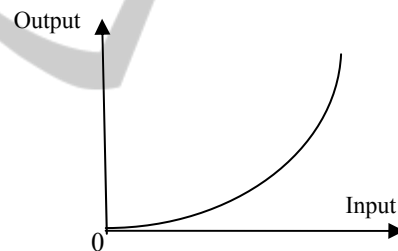


Figure 1: Marginal benefit increasing law.

The reason why appears marginal benefit increasing is that (ChunFang Xu 2007):

① Higher initial cost

In traditional economics, the lowest product marginal cost less than the sum of direct materials and direct labors. In network economics, Research development expense accounts for most, the sunk cost of products is high, the marginal cost is extremely low, close to zero. In addition, network consumption has a non-exclusive features and aggravate the marginal cost increasing trend.

② Monopoly effect

Inherit monopoly caused by technology innovation makes high excess profit not be equalized and makes reward not be diminished.

③ Network effect

Network effect forms an effective information

not destroy laws, that is $1-1=1$, $1=\infty$;

④ Inertia effect

Switching cost and locking enhanced monopoly. The traditional Matthew effect namely under certain conditions, something will appear some advantages or disadvantages, with the inertia, the two will have self-enhancement effect, and in the last, it will aggravate expansion. In network economics, Matthew effect is strengthened, reflect in economics is that first match wins, together with locking phenomenon, it forms the situation that the strong gets stronger, the weak gets weaker, the rich get richer, the poor get poorer, the winner takes all. All of this above aggravates marginal benefit increasing. As figure2:

Above all, in network economics, Marginal returns increasing law takes effect in most situations, especially for those enterprises based on technology and knowledge, and those are more focus on technology, supplemented by processing. However, Marginal returns decreasing law takes effect in those products based on raw material including some factors of technology and processing, besides, it also takes effect in the initial stage of network construction and network capacity expansion.

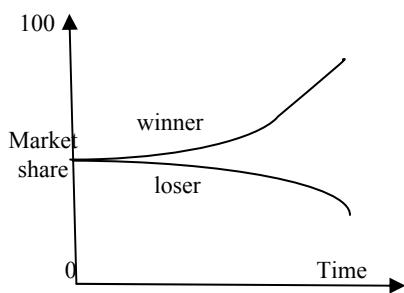


Figure 2: The winner takes all.

3.2 Cost and Benefit Analysis on Seafood e-Commerce

Foreign trade enterprise cost is the sum of normal and reasonable payment of the purchase cost, transaction cost and taxes in the process of import and export in a certain operating period (tax greatly influenced by the government, so this paper will not consider it temporarily (WenQingYu, 2005).

Transaction cost, Mainly refers to the cost needed in the process of deal, including information search, the formation and execution of contract, after-sale service, etc.. Fees paid to know and confirm transaction object is the information cost or information search fee, which comes from the preparation stage before trading; fees paid to get the

trading possibility is the formation and execution of contract cost, including the expenses of advertising, renting office, borrowing, inventory turnover expenses, trade consultation, etc., which is used in the preparation stage before trading and trading consultation and signing a contract stage respectively; in addition to, there are other costs such as after-sale cost. Commodity procurement cost is close to commodity purchase cost, it is the sum of merchandise cost and all costs consumed in the process of purchasing (ChunFeng Yang 2007).

In network economics era, International trade cost structure also includes switching cost. It is the inputs required by enterprise to develop international e-commerce. It includes fixed switching cost (Initial purchase for e-commerce hardware and software systems, and relevant personnel training expenses, etc) and variable switching cost (Daily system technology, security maintenance fees and network service fees, etc). Switching cost is not included in traditional international trade cost structure (ChunFengYang 2007). As figure3:

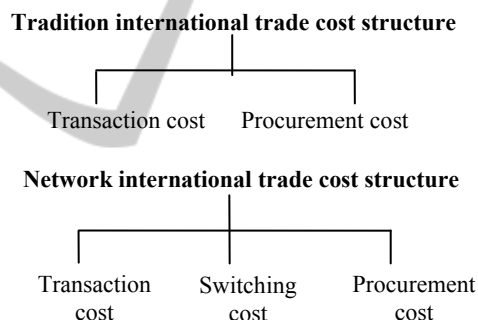


Figure 3: The different international trade cost structure in tradition and network.

As for aquatic product trade, although the implementation of e-commerce has increased seafood trade switching costs, but after inputting e-commerce, the enterprises' transaction and purchase cost is reduced accordingly, the reasons as follows:

1. E-commerce enabled the information of buyers and sellers more transparent, which changes the seller scale economy caused by information asymmetry in traditional trade. For example, the buyers can get more price information of raw materials, thus they can master more price initiative right in raw material procurement.
2. "Paperless" is one of the major advantages of e-commerce, it is easier and more efficient for transnational trade by the electronic contract,

E-mail and web video etc, the trade link is simplified, and the cost caused by mail contract and letters is cut, and thus trade operation efficiency is improved.

3. E-commerce greatly improves aquatic enterprises' international image by the global network, it provides convenience for aquatic enterprises to develop international market and promote international brand awareness, thus it's good to increase returns from foreign trade. According to IDC, the advertising on Internet can improve 10 times the volume of sales, and the cost is only a tenth of the traditional advertising.
4. The reduction of trade documents and trade intermediary and the rapid speed of trade information search will reduce the transaction cost.
5. E-commerce pursues "zero inventory" or "little inventory", less inventory cost makes transaction costs decrease accordingly.
6. E-commerce establishes an online communication platform and channel for enterprises and customers, through online feedback, the enterprise can quickly and accurately get customer's evaluation and demand information, it is good to strengthen customer relations and improve product quality. In the meanwhile, customer service costs integrate into the construction cost of e-commerce, and thus it can save enterprises' spending.

However, after e-commerce input into the enterprises, whether it can gain depends on whether the increased value of switching cost less than the total reduced value of transaction cost and procurement cost.

Switching cost of e-commerce mainly includes: technology cost (including hardware, Website construction and maintenance costs, etc.), risk cost (including the establishment of online payment system, customer trust, etc) and personnel cost (The website promotion and technology development personnel expenses). In the early e-commerce stage, switching cost is higher, because it needs to put enormous capital to build and run e-commerce team. During this stage, the e-commerce earnings will not appear immediately, because there is a cumulative effects and first-match-win effect, that is, the earlier the enterprises put into e-commerce, the higher the returns get from the market, and it can be cumulative along with the development of network, in other words, the longer your website exists, the higher the popularity and Internet search rate is, and

it's more easily for customers to visit.

We use weighting factor and Marginal analysis method to explain the changes of cost and returns after inputting e-commerce. If switching cost is higher in the initial e-commerce, we give the 20 weights, and transaction costs and procurement costs 10 weights respectively, increased cost is positive, reduced cost is negative, then, after inputting e-commerce, cost changes in the following figure 4:

cost		weight
switching cost	Technology cost	9
	Personnel cost	7
	Risk cost	4
transaction cost	trade documents	-1
	trade intermediary	-1
	Information search and delivery	-2
	Electronic settlement	-2
	storage expenses	-1
	Customer service cost	-0.5
procurement cost	Materials purchasing	-4
returns		weight
Brand built		3
incremental sales		5
strengthen customer relations		2

Figure 4: The changes of cost and returns after inputting e-commerce.

We will get,

$$\Delta X \text{ (the increased input)} = 20 - 11.5 = 9.5$$

$$\Delta f(x) \text{ (the increased output)} = 10$$

$$\text{Marginal value} = \Delta f(x) / \Delta X = 10 / 9.5 > 1$$

So, we can get conclusion that the marginal returns is increasing.

Here, what needs to explain is that as times go on, the e-business model will be gradually improved, especially after e-commerce enters the developing and mature periods, the e-commerce returns will be gradually remarkable, by then, the technology cost will continue to reduce (maintenance cost is dominate, risk cost will reduce and even disappear, personnel cost will be fixed), in addition to, with the

smooth development of e-commerce, procurement cost and transaction cost will reduce, too. Meanwhile, the returns will be increasing, and e-commerce will be a good development condition.

4 CONCLUSIONS

Aquaculture is one of traditional basic industry. With the development of network economy and e-commerce, aquatic product e-commerce also has preliminary development. But the practice in aquatic product e-commerce is still in the early input and development stage. From the angle of cost and returns, in the initial e-commerce, it needs input enormous manual labors and material resources, and at this time, it's in brand accumulation phase, profit effect will not immediately appear. However, According to the network economy development law and future e-commerce development potential, aquatic product trade e-commerce finally can save enterprise purchase cost, transaction cost and the increased switching cost, at the same time, it also can promote enterprises' international image and earnings, the marginal benefit present increasing trend.

REFERENCES

- Lu WeiPing & Hua Ran 2003, *Fishery informationization and Web technology application*, Fishery Modernization.
http://www.shuichan.cc/news_view.asp?id=30792
- Arthur, W. B., 1996, Increasing returns and the new world of business, *Harvard Business Review*, July/August,100-109.
- ChunFang Xu, 2007, *Developing law of internet economy and the theory of network information commodity and service price*.
- WenQing Yu, 2005, Foreign trade enterprise cost concept and the meaning of cost control, *Journal of Liaoning Administration College*.
- ChunFeng Yang, 2007, *Influence of network economy on cost structure of international trade*.