Research on Freshwater Fish Information Service Mode for Modern Production and Circulation in the Internet + Era

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Abstract. In the traditional information service for freshwater fish, there existed several crucial problems involving in the information classification and content organization, which was not clear and specific to serve market and consultancy etc., information refreshing not timely, and information sharing difficult to take, and so on. These problems seriously restricted the development of the freshwater fish and the other relative industries. The "Internet + Strategy", which has been advocated and carried out in China since 2015, has promoted the formulation of new ideas for information service model to construct and enhance modern production and circulation of the freshwater fish. Based on the analysis of the core and characteristics of information service in the production and circulation for the modern freshwater fish, this study constructed a new information service model consisting of production, sale, transaction and circulation. In the development of the freshwater fish industry for the future, it is necessary and beneficial to accelerate the construction of the information service platform, integrate the information service as well as the improvement of information resources with the merchandise production and circulation, and strengthen the brand building of enterprises, especially the leading enterprises.

Keywords: Internet plus · Freshwater fish · Modern production and circulation · Information service

1 Introduction

The articles specific to the information service model of the freshwater fish are reported few until now, but the information service model is similar with the agriculture industry, which is well developed and could be referenced.

The information service models of the agriculture industry are well developed and widely reported. In 2005, it was suggested by Zheng and Hu that there are three models: traditional model, web information service model and blended model. Dang and Cen pointed out that there are three types: web service platform, mobile newspaper SDI, and mobile Internet for the agriculture information service model [1]. Zhong and Wan stated that the agriculture information service model is a multiple model consisting of many systems such as network system, sound system, video, short message, remote video, etc. [2]. Sun et al. explored the new models of integrating modern

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information technology with professional cooperative information service [3]. It was suggested by Jiang that there existed several types of information service model – "government + farmer", "government + rural cooperative organization + farmer", "government + IT enterprise (communication enterprise) + farmer", "government + agriculture-related enterprise + rural cooperative organization + farmer" and "rural cooperative organization + farmer" [4]. Wang et al. advocated the models of "government + farmer", "government + association + farmer", "government + communication enterprise + association + farmer", "government + enterprise + association + farmer", "agricultural leading enterprise + farmer", and so on [5].

In another hand, the information service models of the agricultural product and the extension of agriculture technology are well studied, too. Hu proposed three types of agricultural technology extension model including the base type, the industry type and the universal type [7]. Zheng believed that there existed five kinds of information service models according to the service suppliers: the government, the industrial organization, the regional organization, the exporting market and the domestic market [8]. Wu made a deep analysis on the problems in freshwater fish production and circulation chain in China and its possible reasons, and proposed the strategies to upgrade the freshwater fish circulation chain [9].

At present, the existing and running information service models for agriculture, agricultural products, and the freshwater fish all were constructed and improved before the strategy of "Internet +", and are marked by the traditional information concepts, which were government-oriented, mid-scale organization-oriented, enterprise-oriented. These information service models often failed to clearly and specifically classify and organize the necessary information, to refresh information timely, and share the information widely, and so on. In the era of "Internet +" and the competitive domestic and international market economy, it is urgent and necessary to refresh the old or develop new information service models to serve and keep up with the rapid development of modern production and circulation in freshwater fish in China.

2 The Core Elements and Features of the Information Service Model of Modern Production and Circulation in Freshwater Fish

All the procedures in the freshwater fish production and circulation, including production information, sale information, transaction information and circulation information, should be accomplished by leading enterprises of large-scale fishery industry. Besides, production enterprises should build an information platform about production, sale, transaction and circulation information so that all the information can be acquired on the platform. In this way, information can be achieved timely and accurately at any time and intermediate links can be reduced. As all the intermediate links can be displayed on the information platform, the direct link of "freshwater fish to consumer" can be achieved in that freshwater fish can be delivered from the place of production to consumers quickly and directly, hence the freshness of freshwater fish can be guaranteed.

The most fundamental requirements of freshwater fish production and circulation are rapidity and freshness, which means that the rapidity of circulation and the freshness of the product are the core goals of freshwater fish production and circulation procedure. While the Internet plus Era has made these two requirements become possible. To make the core goals of "freshwater fish to consumer" come true, the following two aspects need to be fulfilled at least:

First, the network information platform must be built to present all the relevant information including production information in the production process, supply and price information of enterprises' sales, demand and preference information of consumers, payment and trade information of the transactions. In addition, the third party represented by government, industry associations and research institutes will also provide information of the industry, policies and researches to enrich the information platform and build up the big data net of freshwater fish modern production and circulation.

Second, all the intermediate procedures need to be fulfilled on the information platform so that product flow can be cut down greatly. The information flow in the platform will be clearer and more easily to access, at the same time, production enterprises and consumers can get all kinds of relevant information by web searching in real time. Therefore, all the intermediate procedures can be completed based on network information. Consumers can get production and sale information to decide whether to close a deal, if so, the transaction can be completed directly with trade and payment information. Once the production enterprises gain the information, the

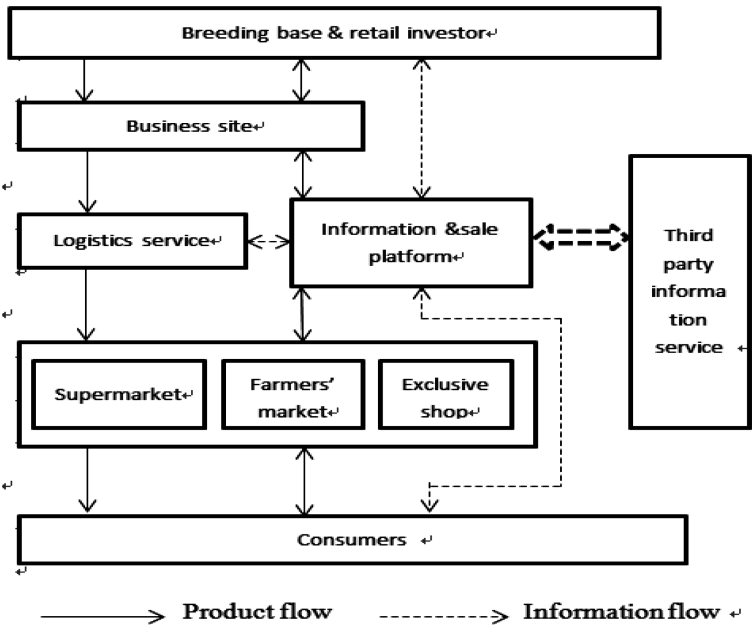

Fig. 1. Production flow and information flow of freshwater fish modern production and circulation in the Internet plus era

products will be delivered immediately. The breeding base and retail investors can bring the products together to the point of sale and transportation based on the directions from the information platform, and the logistics service will deliver the products to the supermarkets, farmers' markets and exclusive shops immediately, then the fish will be butchered based on the demand information of consumers from the platform and delivered to consumers' home through cold-chain logistics within one kilometer. As a result, all the procedures including sale, transaction, payment, supply and demand can be completed online to achieve the goal of linking production enterprises to consumers directly. The whole product flow chain covers production base, logistics sites, intermediate logistics, retail stores and consumers. Compared with traditional ways, some intermediate steps can be cut down thus the whole process is reduced greatly and the circulation efficiency is also improved significantly to ensure the rapidity and freshness of fresh fish. While all the intermediate procedures are based on the information monitoring of the Internet of Things around the clock so that consumers can get relevant information all time (Fig. 1).

3 The Construction of the Information Service Model of Modern Production and Circulation in Freshwater Fish

The nucleus of freshwater fish modern production and circulation lies in the rapid transfer from production to consumers, including the production, sale and circulation procedures, alongside with the relevant information of freshwater fish production, quality, sale, transaction, circulation, demand and so on. The Internet plus Era has made the delivery and transportation of freshwater fish more convenient as all kinds of information including production, supply, demand, sale, transaction and circulation can be achieved immediately through the information platform, which means that consumers can decide whether to make the deal rapidly and complete the transaction and payment online. So the transaction process is remarkably smooth and coherent and other intermediate procedures can be cut down. The products can be transported from the production base to the dinning-tables of consumers rapidly through the most efficient circulations to guarantee the rapidity of transportation and the freshness of fish. Therefore, the following information service model can be built (Fig. 2):

3.1 Production Link

Every link of production calls for the establishment of an information monitoring system based on the Internet of Things and the collection and analysis of information via the Internet. In so doing, consumers can acquire all relevant information regarding product production and circulation as well as product quality by web searching, QR code scanning, or APP information inquiry. This is also part of information services that enterprises are supposed to provide in their production process.

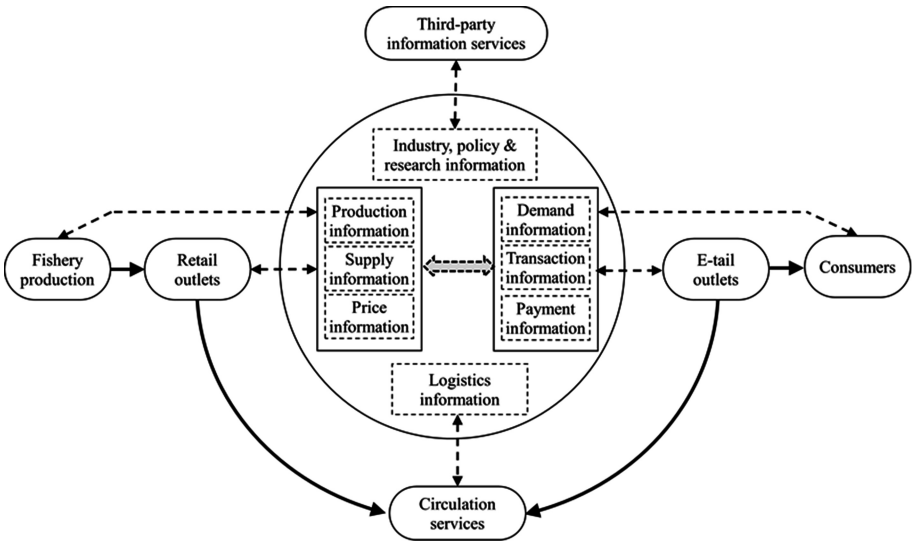

Fig. 2. Information service model of freshwater fish modern production and circulation in the Internet plus era

3.2 Transaction Link

Transaction entails transaction in both retail outlets and e-tail outlets. Enterprises build up sales information networks via Internet information platforms. Enterprises provide information concerning production, supply, and price by means of APP or online shops, and consumers offer such demand information as consumer preferences and purchase habits. Enterprises can recommend right products to consumers based on their demand information while consumers can make purchase decisions on the basis of supply information and product information provided by enterprises. If consumers decide to purchase, they can instantly accomplish online payment and transaction on the Internet. After receiving instant transaction information, enterprises deliver fish products directly through logistics to ensure the efficiency of delivery. The entire process of transaction and marketing is done based on enterprises' information platforms. Both consumers and enterprises can convey information via network platforms, thus getting transaction done at one go and saving the time it takes to go through intermediate steps.

3.3 Circulation Link

Logistics is central to freshwater fish production and circulation. The difficulty of freshwater fish production and circulation lies in the failure to realize long-distance and long-time circulation. In the Internet plus era, all intermediate transaction steps are done on the Internet, except that only logistics cannot be completely replaced by the Internet. While offering cold-chain logistics, third-party logistics enterprises (represented by SF Express) are incapable of transporting freshwater fish. Future enterprises should

establish a logistics system featured by self-owned logistics by learning from the logistics model of Heshishuichan, providing specialized services, and striving to innovatively achieve long-distance and long-time transportation of freshwater fish products. Meantime, during logistics and transportation, an Internet-based monitoring system should be set up to achieve real-time monitoring and guarantee information services during the process of logistics.

4 Suggestions

In the Internet plus era, the production and circulation model of freshwater fish changed completely. It becomes possible to sell freshwater fish quickly and alive, thus creating a direct link from enterprises to consumers. The paper constructed a modern information service model to serve the modern production and circulation in freshwater fish in China and suggested several important ideas related to improve the information service for the production and circulation.

Firstly, efforts should be exerted to accelerate the construction of information service platforms. The information platforms are the key to a modern information service for modern production and circulation of freshwater fish. According to the various scales of fishery enterprises, different types of enterprise platforms could be established:

① Large-enterprise platforms for large-scale fishery enterprises. With adequate human and financial resources and relatively comprehensive systems of production, circulation and marketing, large enterprises could take a lead in constructing the internet-based information service platforms integrated with marketing, production and circulation.

② Enterprise union(or alliances) platform for small or mid-scale fishery enterprises. Due to limited human and financial resources, small fishery enterprises could imitate large enterprises to establish flexible joint fishery information and marketing platforms in joint unions. At the same time, small enterprises could initiate collaboration in other fields including production and circulation to reduce cost and increase profits.

Second, the integration of freshwater fishery between the production and circulation and the information service resources should be promoted. The first aspect of integration is about the production resources. Individual producers could integrate their production resources with other producers or enterprises through cooperatives or enterprise production bases to improve product quality, monitoring product information, and reduce production cost. Small scale enterprises could cooperate as producer teams to form an industry alliance via collaboration to build production bases for scale and standardized production. The second aspect of integration is about the integration of information resources from marketing, production and circulation, resource purchase and product sales as well as post-sale information feedback to coordinate every procedure in a whole enterprise and the whole industry. Small-scale or mid-scale enterprises could coordinate their production and sales based on their established joint information platforms suggested in the last paragraph to compete with large enterprises.

Thirdly, the brand building of enterprises should be enhanced, especially leading enterprises. With the developed production bases and the scale and standardized production, product quality will be guaranteed and brands could be set up, and the strategy of branding could be applied for in the market. Tongwei-labeled fish products of Tongwei fish are from the branded Tongwei Group, which is built in the long-term brand strategy. Therefore, while enterprises emphasize on quality during production, the marketing in product sale should be emphasized to take the brand strategy to build the long-term constant brand in the market.

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