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# Information Exchange Models of Internet Commerce-Platform Business for the contribution to the Industrial Development

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Abstract

This paper argues IC-PFB(Internet Commerce -PlatForm Business). IC-PFB has the functions that exchange the information between industrial players and customers, and generates the knowledge by editing information. Providing the fields and opportunities for players and customers to refer and interpret, IC-PFB is able to contribute to the industrial development. IC-PFB which supports forming the knowledge chain, can contribute to a industrial development realized by the improvement and rationalization of value chains. And, IC-PFB which supports forming the knowledge community, can contribute to another industrial development that is industrial diversification. The authors confirm its contribution for the industrial development by case studies.

## 1. Introduction

This paper discusses the Business Model for IC-PFB(Internet Commerce-PlatForm Business) which is the intermediary to Internet Commerce(IC) ,in the view of the contribution to the industrial development. Authors define the IC as the commerce that is completed by all or part of communication in internet.

Internet provides data processing and media function. Data processing enables to process sales order and purchase order without any restriction on space and time. So, the virtual store without physical space can treat the commerce globally and all day. As the media, internet enables to perform information exchange and knowledge stock. The internet business oriented companies are more and less willing to make the difference utilizing this media function of internet. This paper describes the research focused on this media function of internet. It is the theme of this paper that IC-PFB has what kinds of media functions and how we evaluate them in the view of the industrial development.

Authors define the relationship between value chain and supply chain as follows. Value chain is the fundamental of supply chain, in turn, supply chain is the instance of value chain. For example, value chain is the base, or the necessity of Business to Business (B to B) commerce, and then, supply chain is B to B commerce in itself. Value means the value in customer view of material, product, service.

The PFB described on this paper is the private business actor as an intermediary to activate the communication among sellers and buyers in internet. So, IC-PFB is the business oriented intermediary among actors on supply chain (we call them supply actors which include the final customer on supply chain). For example, IC-PFB provides the market for sellers and buyers (matching business), the field to meet among information senders and its receivers (community business), and the infrastructure of supply chain by integrating commerce (linkage business). For users, IC-PFB provides the functions such as information collecting, information navigating, neutral evaluation, crediting and information editing.

As IC-PFB provides the services as the intermediary in internet,, its users can get some benefits. For example, we describe them as follows.

(1) Utilizing information collecting and exploring function of IC-PFB, buyers get much information of products and services by more sellers
(2) Utilizing the virtual field generated by IC-PFB, buyers and sellers meet more opportunities to compete the commerce
(3) Performing the neutral evaluation for products and services, IC-PFB can accelerate the market competition among sellers
(4) Accessing the information provided by IC-PFB, which buyers hardly collect directly from customers, buyers can indirectly know the needs and the preference of their customers
(5) Coordinating the rational administration of supply chain among buyers and sellers, IC-PFB can cooperate the industrial supply chain management

Because of above benefits, it seems that IC-PFB realize rapid growth in the current market.

## 2. Information Exchange and Making Knowledge

Described above, this paper researches to focus on the media function of internet. IC-PFB has the functions as the intermediary such as collecting information, exploring information, editing information, crediting and neutral evaluation. Such intermediaries exist on physical market such as a real estate (the intermediary in internet differs from the one in physical market by the scale of distance and speed for collecting and exploring information). Moreover, IC-PFB enables to have the media function which realize information exchange between buyer and seller, which generates the field for information exchange among buyers and sellers, potential buyers and potential sellers. This paper only argues the relationship between the media function of IC-PFB and the industrial development.

In this paper, "information" means the information with the name of sender (anonymous name is also valid), which is reflected in the sender's characteristics. The reason why we care about the name of sender (including anonymous name) is that such information as connecting senders, makes the function of IC-PFB more valuable. The information of actor is an object for the one to refer and interpret. In addition, it is also transmitted to the actor as the request. The information is able to be stocked in the field of the internet and be edited.

We propose two(2) kinds of information exchange in internet as follows.

(1) information exchange among buyers and sellers on upstream and downstream of a supply chain in internet
(2) information exchange among actors who are interested in a certain value on a number of supply chains

Information exchange is performed as the flow of information. In this paper, the stock of information generalized from the content of information exchange means the making knowledge. Above two kinds of information exchange are stocked and generalized, to form the knowledge stocks. The One is named Knowledge Chain. The other is named knowledge Community (see **Table 1**).

**Table 1 Information exchange and making knowledge**

| | Flow of information | Making knowledge |
|---|---|---|
| Information exchange among buyers and sellers on upstream and downstream of a supply chain in internet | Information Transaction | Knowledge Chain |
| Information exchange among actors who are interested in a certain value on a number of supply chains | Information Interaction | Knowledge Community |

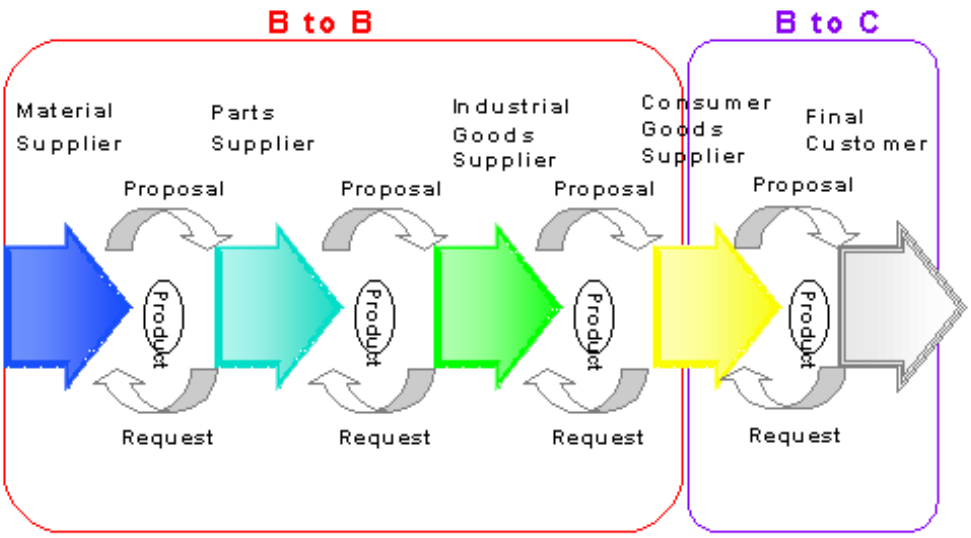


**Fig.1 Information Transaction Model**

Authors propose Information Transaction (IT) as the information flow between seller and buyer in internet. IT is the activity of information exchange among supply actors (sellers and buyers) on upstream and downstream of a supply chain in internet. IT means direct communication. This direct communication is to perform the request for other actor, and/or the proposal for other actors (see **Fig.1**). So, Knowledge Chain is formed by the generalization among supply actors, through the exchange and stock of IT. Knowledge Chain is the mutual understanding among actors on a supply chain, generated by IT. To activate IT grows to strengthen Knowledge Chain (see **Fig.2**).

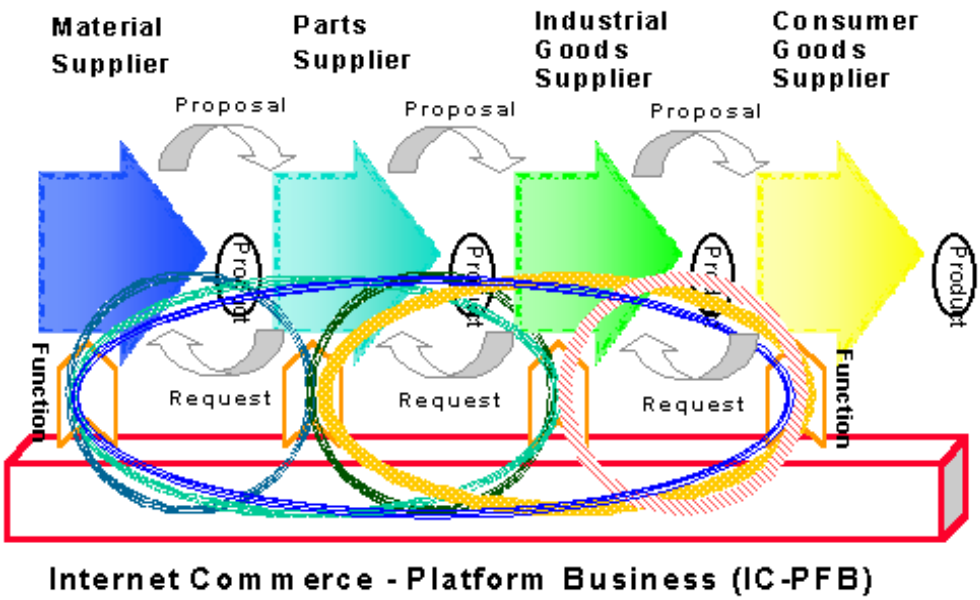


**Fig.2 Knowledge Chain formed by IC-PFB**

Authors also propose Information Interaction (II) as the information flow among actors in internet. II is the activity of information exchange among actors in the field. In this case, the field is the place in which persons interested in certain values come together.

In this field, Request For Contribution to community (RFC) is emerged by II. RFC is summarized II as major opinion of community, and/or the request for contribution as the result generated in the filed. RFC is explicitly sent to supply actor and/or interpreted by actor on supply chain. For example, RFC is referred and interpreted by the following activities: the interactive generation of dissatisfaction with existing product and/or desire for it, the presentation of enhancement for existing product, the proposal for new design and interface (see **Fig.3**).

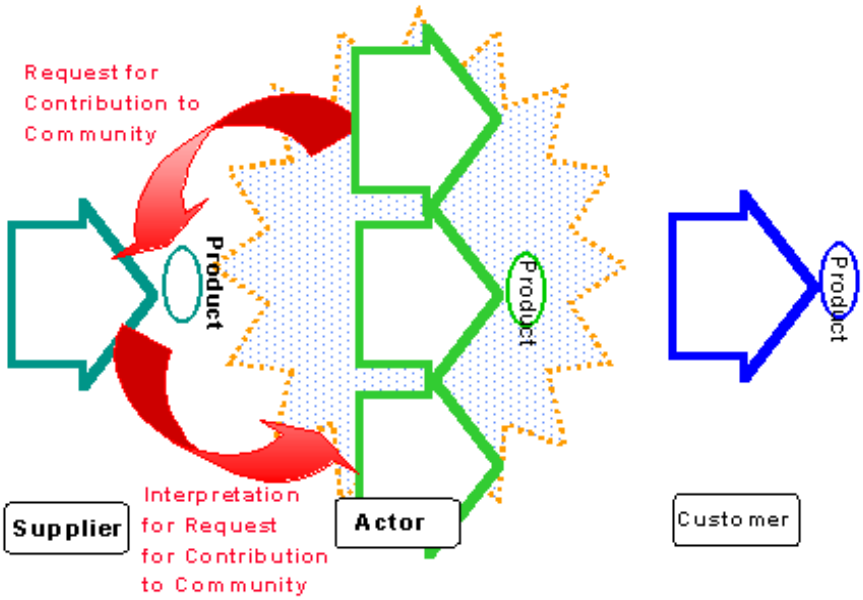


**Fig.3 Information Intraction Model**

Knowledge Community is the stock of knowledge concerning a certain value in the field, which is formed by the generalization among actors, through the exchange and stock of II. To activate II grows to develop Knowledge Community (see **Fig.4**).

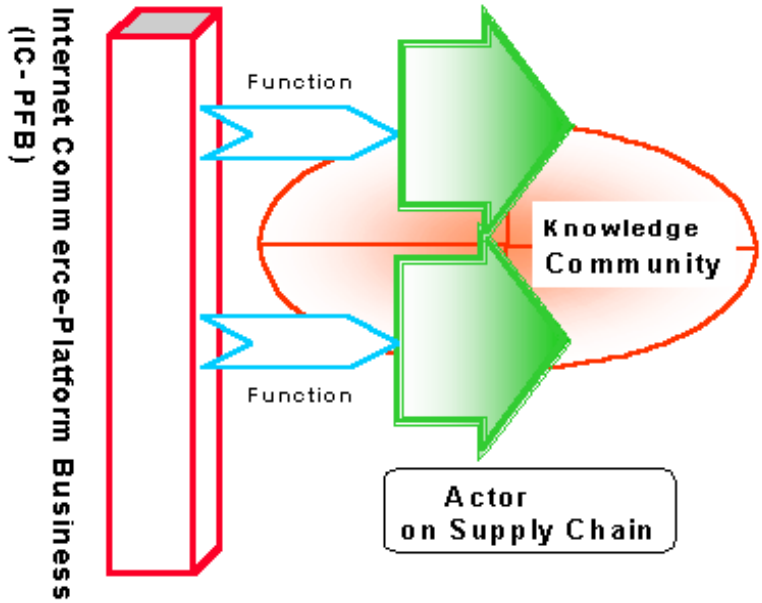


**Fig.4 Knowledge Community formed by IC-PFB**

By above concept of Knowledge Chain and Knowledge Community, authors try to classify 4(four) types of IC-PFB. Table 2 indicates the classification of IC-PFB by the combination of property of contribution to form Knowledge Chain and property of contribution to form Knowledge Community. The name of company in each cell of **Table 2** is a concrete example of IC-PFB, appropriate for each type of classification.

**Table 2 4 types of classification of IC-PFB**

| | Not to form Knowledge Community | To form Knowledge Community |
|---|---|---|
| Not to form Knowledge Chain | FastParts | VerticalNet |
| To form Knowledge Chain | TechData | InPart |

## 3. The Relationship between IC-PFB and Industrial development

This paper adopts the following definition of industrial development, in the view of value chain(supply chain) orientation.

(1) To provide products and services to meet new needs (Emergence of value chain)
(2) To diversify the selection for qualitative different products, services and purchase routes (Diversification of value chain)
(3) To improve the quality of inconvenient products, services and purchase routes for customers (Improvement of value chain)
(4) To be performed the selection for products, services and purchase routes for customers by the comparison and competition in the industries (Selection of supply chain)
(5) To coordinate the rationally jointed administration to adjust the industrial infrastructure (Cooperation of supply chain)

We adopt the two(2) kinds of views such as Knowledge Chain and Knowledge Community, to describe how IC-PFB should contribute to the industrial development. IC-PFB can contribute to form Knowledge Chain generalized by the information exchange among buyers and sellers on upstream and downstream of a supply chain, and Knowledge Community generalized by the information exchange among actors who are interested in a certain value on a number of supply chains, in internet.

First, we describe the relationship between the industrial development and to strengthen Knowledge Chain by IC-PFB as follows.

(1) By IC-PFB, not only Knowledge Chain between direct seller and direct buyer, but also pseudo-Knowledge Chain skipping direct seller and/or direct buyer on a supply chain, are formed, which makes supplier recognize the request from customer, to perform the improvement activities as the concrete proposal to the customer.
(2) By IC-PFB, not only Knowledge Chain involving final consumer, but also diversified Knowledge Chain including companies that consume the work-in-process on a supply chain, are formed, which makes the commerce activate, to perform the comparison and competition among the products, the services and purchase routes.
(3) By IC-PFB, consolidated Knowledge Chains tend to move sellers and buyers from the spot commerce to the continuous commerce, which makes IC-PFB the infrastructure to streamline their supply chains.

Second, we describe the relationship between the industrial development and to develop Knowledge Community by IC-PFB as follows.

(1) By IC-PFB, Knowledge Community are formed and various Request For Community (RFC) are generated, which makes suppliers recognize diversified values, to reflect on their business activities.
(2) By IC-PFB, RFC reflects on large numbers of information exchange among actors on supply chains, which makes suppliers refer and interpret, to know how to add and/or modify values.
(3) By IC-PFB, Knowledge Community is formed, which makes a lot of assessors share the knowledge regarding the industries, to know various selection of a certain value.

**Table 3** gives the summary of above description

**Table 3 The Contribution of IC-PFB to the industrial Development**

| | Emergence of value chain (To provide products and services to meet new needs) | Diversification of value chain (To diversify the selection for qualitative different products, services and purchase routes) | Improvement of value chain (To improve the qualities of inconvenient products, services and purchase routes for customers) | Selection of supply chain (To be performed the selection for products, services and purchase routes for customers by the comparison and competition in the industries) | Cooperation of supply chain (To coordinate the rationally jointed administration to adjust the industrial infrastructure) |
|---|---|---|---|---|---|
| To strengthen Knowledge Chain | (○) Indirect Contribution | (○) Indirect Contribution | (◎) Direct Contribution | (○) Indirect Contribution | (◎) Direct Contribution |
| To develop Knowledge Community | (○) Indirect Contribution | (◎) Direct Contribution | (○) Indirect Contribution | (○) Indirect Contribution | (○) Indirect Contribution |

So, based on Knowledge Chain and Knowledge Community orientation, we describe the hypothesis of the relationship between IC-PFB and the industrious development as follows.

(1) Knowledge Chain by IC-PFB is more effective to the improvement of value chain and the cooperation of supply chain, which can contribute to the industrial development.
(2) Knowledge Community by IC-PFB is more effective to the diversification of value chain, which can contribute to the industrial development.

## 4. Case Studies of IC-PFB

We confirm the relationship shown in **Table 3**, by the case studies of IC-PFB. In this paper, we investigate the following IC-PFB as case studies.

(1) FastParts (www.fastparts.com)
Not to form Knowledge Chain, Not to form Knowledge Community Type:
FastParts provides the field to networked auction of electronic parts (surplus) by anonymous sellers and buyers, as a neutral matchmaker. FastParts does never stock and merchandise any products of any companies.

(2) VerticalNet (www.verticalnet.com)
Not to form Knowledge Chain, To form Knowledge Community Type:
Vertical Net calls itself the online-business communities and establishes specific web sites for more than 30 kinds of industries. Such industry specific web sites provide services of online exhibition and auction of used products.

(3) TechData (www.techdata.com)
To form Knowledge Chain, Not to form Knowledge Community Type:
TechData provides the Factory Direct Plus and Private Label Delivery services for member companies, which make reseller realize the channel assembly, Build To Order(BTO), packaging and labeling for private brand electronic products.

(3) InPart (www.InPart.com)
To form Knowledge Chain, To form Knowledge Community Type:
InPart provides the hierarchical item structures of 3(three) dimensional CAD model data received by the contracted partners (machine products suppliers). So, users can explore, verify the property of product by the VRML animation, download and edit such 3 dimensional CAD data stocked in InPart, operating CAD products developed by PTC (InPart was acquired by Parametric Technology Corp (PTC)).

We show the result of case studies of 4(four) types of IC-PFB in **Table 4**.

## 5. Conclusion

IC-PFB functions that editing information exchange and making the knowledge, which provides the opportunities and fields to refer and interpret supply actors for the one. Such IC-PFB enables to contribute to the industrial development.

Introducing the Knowledge Chain and Knowledge Community orientation, we present the relationship between IC-PFB and the industrial development.

(1) Knowledge Chain by IC-PFB is more effective to the improvement of value chain and the cooperation of supply chain, which can contribute to the industrial development.
(2) Knowledge Community by IC-PFB is more effective to the diversification of value chian, which can contribute to the industrial development.

As the result of case studies, we confirm the contribution of IC-PFB to the industrial development.

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**Table 4 Case Studies of IC-PFB concerning the industrial development**

| | Emergence of value chain | Diversification of value chain | Improvement of value chain | Selection of supply chain | Cooperation of supply chain |
|---|---|---|---|---|---|
| FastParts<br><br>(Not to form Knowledge Chain, Not to form Knowledge Community Type) | | | Seller ships auction lots(surplus parts) to FastParts by the air after a fee per transaction is transferred to FastParts<br>-> To improve the precondition to buy/sell transaction | | Compared with the broker, FastParts provides that seller gain more for what they sell, buyer pay less for what they purchase<br>-> To function as the industrial infrastructure to deal with surplus parts |
| VerticalNet<br><br>(Not to form Knowledge Chain, To form Knowledge Community Type) | | By referring and interpreting the contents of discussion on online forum of Vertical Net, suppliers can reflect them on their own business activities<br>**->** To recognize and grasp the diversification of value<br>*(Contribution by Knowledge Community)* | By adopting the service as the online exhibition of Vertical Net, suppliers advertise the industrial products and contact potential customers globally<br>**->** To improve marketing and presales activities | By utilizing the industrial columns by special editors and product reviews on Vertical Net, customers compare similar products by different companies on the online catalog<br>-> To activate the competition in the industries | Vertical Net also provides the auction services to buy/sell industrial machines<br>**->** To function as the industrial infrastructure to deal with surplus machines |
| TechData<br><br>(To form Knowledge Chain, Not to form Knowledge Community Type) | Vendors and resellers(member companies) accept TechData's outsourcing services of channel assembly, to perform the Assemble to Order(ATO) for private brand - electronic products<br>**->** To create the manufacturing line | | By adoting the TechData's Private Label Delivery service, dealers can deliver the private brand products to customers<br>**->** To make dealers become fabless companies | By adopting the TechData's Factory Direct Plus service of channel assembly, assembly suppliers select products suppliers according to the circumstances<br>-> To activate the competition in the industries | By adopting the TechData's services of channel assembly, dealers can perform the Assemble to Order(ATO) for the products by original configuration<br>**->** To function as the industrial infrastructure to perform the Assemble to Order(ATO) |
| InPart<br><br>(To form Knowledge Chain, To form Knowledge Community Type) | Mechanical engineers accept InPart's services of exploring 3 dimensional CAD model data and displaying the property of parts by VRML animation<br>-> To create the method to design<br>*(Contribution by pseudo-Knowledge Chain)* | Facilitator on InPart (PTC) supports PTC's CAD User Group, accepts positively the Enhancement Request by the Technical Committee of it<br>-> To recognize and grasp the diversification of value<br>*(Contribution by Knowledge Community)* | Using 3 D CAD data stocked in InPart, mechanical engineers can explore the similar parts and verify the property of parts by joint analysis at design<br>-> To make mechanical design more efficient<br>*(Contribution by pseudo-Knowledge Chain)* | Using 3D CAD data, mechanical engineers can explore, compare and evaluate correctly among the similar parts by different suppliers<br>-> To activate the competition in the industries | As the service of InPart, 3 D CAD data selected in the past are automatically downloaded and updated<br>-> To function as the information infrastructure to perform the mechanical design using 3(three) Dimensional CAD<br>*(Contribution by Knowledge Chain)* |