

# Business Model of Mobile Informatization in China

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**Abstract** Along with fast development of mobile commerce in china, china mobile is actively carrying out mobile informatization for enterprise. But, a little paper is focus about it. In this paper, we give the definition of mobile informatization, then summarize different business model classification of mobile informatization, finally propose the evaluation and innovation of the mobile informatization model. The main business models of mobile informatization contain B-C model, B-E model, B-M model and B-P model. This paper could give deep understanding of mobile informatization and help enterprise to choose the special mobile informatization suited for their demand.

**Key words** mobile informatization, business model, mobile commerce

## 1 Introduction

According to China ministry of information industry's analysis report[1], the total numbers of mobile phone user surpass 555,000,000, which is almost 2.5 times as same as total number of internet user. Along with the third generation technology (3G)'s coming, as well as handheld terminal's miniaturization, has further promoted development of the mobile communication, and impelled integration of mobile network, fixed telecommunication network and Internet. Japan and Sweden government both proposed the future network is anytime and anywhere, and created wireless information society's concept. South Korea government believed that m-government is the E-government's second stage. To combine informatization with mobile communication becomes informatization's inevitable trend and higher stage of informatization. Presently, Fast development of mobile network and mobile device has initiated deep enterprise reformation in the production, management and sale field, which has brought the new opportunity and challenge to the enterprise.

From review of the research paper, a lot of mobile commerce papers stress individual application and the papers about mobile informatization[2-3,6] is very few, which mainly stresses enterprise resource management system's mobile informatization, customer relations management's mobile informatization, mobile office and so on. The present papers about mobile informatization mainly includes two categories. One is concerned about mobile informatization in special field, for instance the electric power enterprise mobile informatization analysis [2,6], and the other is about general discussion about mobile informatization, in which the necessity, question and solution is included [3]. The existing paper's main deficiency is roughly analysis of mobile informatization and little analysis about business model of mobile informatization. So, the paper summarizes the business model, and innovates to propose new business model of mobile informatization.

This remainder of the paper is organized as follows. In section 2, we give definition, Feasibility and necessity of mobile Informatization. Section3 propose classification of mobile Informatization model. In section 4, we give the analysis and innovation of mobile Informatization model. Section 5 gives the conclusion of the paper.

## 2 Definition of Mobile Informatization

### 2.1 Definition and Characteristics of Mobile Informatization

The enterprise mobile informatization is defined as that the whole product and service solution for enterprise by voice, data and value-added service, such as group service, mobile office, industry application. Its advantage is to combine Internet with mobile communication and integrate multimedia and voice service into enterprise information system, will thus build intelligent management, remote management and distributed management management framework.

The mobile informatization is different from present enterprise informatization, china's enterprise informatization had already several years development, for example, enterprise OA system, the ERP system, and the CRM system construction brings the entire enterprise process reengineering of production, management and sales. Enterprise informatization constitution is basically model of the system integration of hardware and enterprise, meanwhile, mobile operator play the very important role in the mobile informatization. From this angle, the mobile informatization is the mobile

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communication technology to be applied to informatization domain, or transfer enterprise's informatization to the mobile, wireless network, to realize mobile informatization of enterprise process.

The mobile informatization has several characteristics. First, mobile informatization provides paperless and location-independent service. If the electronic informatization has realized paperless work, then mobile informatization realize paperless and location-independent service. The mobile office involves the marketing, the sale, the logistics, the product, the channel, the customer, the staff, as well as government. The staffs may receive and dispatching email, process document and exchange data by mobile device with quick transmission speed and high efficiency, which enable mobile informatization to penetrate into every corner of enterprise. Second, work always online. Through mobile informatization, staffs can keep contact anytime and anywhere by using mobile device. In addition, so long as operator's network cover the area, lasting connection and online is feasible. Third, good profit with little cost is achieved. Because present enterprise informatization involves massive staffs and enterprise need to increase investment for the mobile equipment, hardware, and software, the investment cost is very huge. Especially for some traditional enterprise, the staff is strange of IT technology, then training and acceptance for information system is more difficult and the cost is greater. But, for mobile informatization, the cost is low for many circumstances, because simply mobile device and simple software could realize mobile informatization, which doesn't request high informatization ability of staff. So, mobile informatization could realize to be online anytime and anywhere, and break space and time barrier of traditional informatization.

## **2.2 Feasibility and Necessity of Mobile Informatization**

Enterprise manager's outer time is much more than office time for almost most company, the portable device may help them to manage enterprise's operation uninterruptedly, even under the environment of leaving office. Regarding some small and medium-sized enterprises in China, the average computer per person has the rate less than 5%, actually above 90% staffs have the mobile phone in China, and almost all enterprises are covered by mobile network. Depends on the mobile informatization, manager and staffs could make response immediately to the event. Presently, intelligent handsets are popularizes day after day, and wireless broadband of mobile network is coming soon, so the handset will have the same function with PC, which also could process the complex data document and examine the comprehensive analysis report. Therefore, with the popularity of mobile device and broad mobile network coverage, as well as the wireless service's development, it is feasible for the mobile informatization to promote enterprise's quick respond and competitive ability.

The fast development of mobile communication technology hasten enterprise product and solution of mobile informatization, which has quick response speed, flexibility as well as inexpensive equipment characteristic. It is necessary for enterprise to realize mobile informatization and the reason is as follows.

(1) Mobile informatization could provide decision support for the manager, and improve respond speed for the whole enterprise. The manager can't lack the information when making decision, and information quantity and the quality directly influence decision level, which request the manager collect information as far as possible before decision-making as well as in the decision-making process. According to quick responses characteristic of mobile information technology, the mobile informatization system can fast, timely, and accurately provide the information which improve decision-making quality. Moreover, combined with enterprise's existing information system, mobile informatization enhances decision-making ability of manager, especially for small and medium-sized enterprise which could reduce maximum uncertainty, casualness and subjectivity in the decision-making process.

At present, modern information system can transmit massive information instantaneously, moreover mobile networking could implement synchronizing information exchange cross region, which has realized information sharing between branch office or department inside enterprise. Through mobile device, manager's decision-making can convey rapidly to each related department, and interior department could also make rapidly response according to the decision-making. Then the system collects the relevant feedback information and returns the information to the manager, which improves the respond speed of whole enterprise.

(2) Mobile informatization reduces enterprise marketing cost. For the enterprise without enough fund and channel, it is difficult for them to realize effective marketing operation. The mobile informatization may provide a good method for marketing. Using the mobile information technology,

the informatization may create the different marketing way for the enterprise, for example, short message service could be used for transmit the newest promotion information, as well as the enterprise could use WAP platform to display more detail information for the product, which enable the enterprise is able to communicate directly to consumer and give target-oriented information issues. These mobile marketing methods can let consumer know about enterprise's newest situation through mobile device, which could cover the area around nation and even the world, and these method could enhance enterprise capability of exploiting the new market, simultaneously and save marketing cost.

(3) Mobile informatization is advantageous in strengthening communication with the customer, and promoting enterprise's brand. If the enterprise need to win in the market competition, it is necessary for them to take the customer demand as the guidance of development and production. The enterprise could connect with important customer through the mobile network, and communicate one-to-one with the customer, which could understand the customer demand immediately, improve communication effect between enterprise and customer, and create more opportunity for enterprise. Moreover, the mobile informatization's construction could help to improve enterprise image. For example, the enterprise could unify Coloring Ring Back Tone (CRBT) for the staffs to propagandize enterprise brand indirectly.

### 3 Case Studies

The case study is often used when the investigator has little control over events, and when the focus is on a contemporary phenomenon within a real-life context. The time duration of the case studies was between February 2006 and February 2008. The data collection includes the websites and documents of the main company in china which provide the solution of mobile informatization, and the document includes the technical reports, white papers and news. The documents are complemented with information found on websites. The main company investigated is as Table 1.

**Table 1 The Main Provider and Website of Enterprise Mobility Products**

Company Name	Website of Enterprise Mobility Products.
China mobile	<a href="http://www.chinamobile.com/group/">http://www.chinamobile.com/group/</a>
China union	<a href="http://www.chinaunion.com.cn/firm/product/jichu/index.html">http://www.chinaunion.com.cn/firm/product/jichu/index.html</a>
Motorola	<a href="http://www.symbol.com.cn">http://www.symbol.com.cn</a>
Nokia	<a href="http://nokiaforbusiness.com">http://nokiaforbusiness.com</a>
Dopod	<a href="http://www.dopod.com/pc/isv/index.php">http://www.dopod.com/pc/isv/index.php</a>
Emay softcom	<a href="http://www.b2m.cn/case/case.jsp">http://www.b2m.cn/case/case.jsp</a>

## 4 Business Model of Mobile Informatization

### 4.1 Business Model of Mobile Informatization

Mobile informatization model is referred to, in operation of enterprise management, essential factors for constitution and different combination form of and management and operation method of mobile informatization. According to the involved enterprise entity type of mobile informatization, essential factor of mobile informatization include enterprise, staff, customer, partner, equipment and so on. Therefore, mobile informatization model could be divided into B-C model, the B-E model, the B-M model, the B-P model.

The enterprise is referred to generalized enterprise with carrying on mobile informatization, which include financial enterprises, government departments, retailing, tourism, manufacture, transportation enterprise. Through mobile informatization, The enterprise can not only implement informatization of internal operation, but also implement effective cover of exterior of enterprise. Not only simple communication between person and person is needed to be realized, but also communication between person, enterprise and machine is needed to realized, which could realize comprehensive informatization cover of staff and staff, staff and enterprise, staff and equipment, enterprise and customer, equipment and equipment.

(1) The B-C model. B-C model is mainly to connect enterprise to customer, to satisfy enterprise's goal customer demand and create value for enterprise. This kind of model mainly manifests in the customer information platform application, and the customer information platform is a mobile informatization platform, which could combine enterprise's internal office system, customer relationship management system, the operation support system with mobile network to acquire customer feedback information and provide standardized service anytime and anywhere for the customer, even custom according to the customer the demand. Through the customer information platform, the enterprise may implement issue and update of information, inquiry and consultation of product and service, as well as

respond customer information feedback and provide post-sale service anytime and anywhere, which could improve service efficiency and increase customer satisfaction degree at the same time. E-may softcom's customer service platform through short message service(SMS) is one example of this model.

(2) The B-E model. B-E model mainly extends enterprise to the internal staff, such as Dopod's mobile office, and provide the informatization service for staff, and promote enterprise internal management efficiency through mobile informatization method. This kind of model mainly manifests in enterprise's remote office. Along with enterprise operation development, mobile office is becoming one important demand of enterprise. Regardless of being enterprise's manager, technical staff, even ordinary staff, they hope to visit enterprise interior information resource through mobile office. mobile office is one kind of (virtual private network)VPN service, which could expand internal system to the mobile domain and let the staff visit interior network. Thus, so long as enterprise staffs stay at the cover area of mobile network, they could receive and dispatch the internal mail, process archives, as well as the information inquiry and so on anytime and anywhere.

(3) The B-M model. The B-M model is mainly extend enterprise to automation production management, namely to realize automatic control between machine as well as entire production management process automatic control using mobile communication platform. This kind of model mainly manifests to remote control and automatic control of machinery equipment. Along with development and improvement of system, enterprise's equipments are watched by few people and even nobody to raise production profit. The remote monitor can realize exchange of enterprise's data and remote control of equipment to effectively safeguard enterprise equipment operation security. At the same time, related data is real-time transmitted to data center to realize high quality data sharing and management. In addition, the enterprise may also realize automatic control between equipments through the mobile communication platform. The example is China Mobile's mobile informatization solution in electronic power field.

(4) The B-P model. B-P model is mainly extend enterprise to partner, and to provide informatization service for supply chain management. This kind of model is, under the mobile communication platform, accelerate data transmission speed and whole operation ability for strategy partner such as manufacturer, supplier, distributor. For example, using mobile communication technologies such as GPS and RFID technology, could promptly process information, track execute of customer order. The example is China Mobile's mobile informatization solution in logistic field.

#### **4.2 Other Classification for Mobile Informatization**

From angle of participated enterprise entity type, mobile informatization could be divided into B-C model, B-E model, B-M model, B-P model. Mobile informatization model could analyze form product aspect, enterprise scale or platform.

From the angle of product, mobile informatization is referred as transverse standard product plus vertical personalization product. The transverse standard product is referred as standardization product. meanwhile, vertical personalization product is referred to provide profession product and solution for special industry. Transverse standard product plus vertical personalization product not only suit for enterprise to realize mobile informatization, but also satisfy each enterprise's personalized request, which could achieve scale benefit. Looking from enterprise investigation statistical result, Transverse standard product include VPMN, remote access, mobile office assistant, blackberry, short message service, video conference, immediate message and so on. Moreover, mobile sale management, mobile commerce, mobile customer relations management, mobile supply chain management, remote monitoring and so on to are considered as vertical personalization product<sup>[4]</sup>.

From angel of enterprise size, the enterprise may be divided into large enterprise, medium enterprise and small enterprise, and the corresponding mobile informatization model may be divided into primary model, intermediate model and high-level model<sup>[4]</sup>. Small enterprise, because of insufficient fund and equipment, provides little product and service, and has quite low operation of mobile informatization's level. Meanwhile, large-scale enterprise could provide widespread product and service, its overall operation involves a lot of entity such as numerous customer, upstream manufacturer, producer and downstream distributor, retail merchant, so, the corresponding mobile informatization request is very high. Generally speaking, primary model include mobile email, group color bell, immediate message and so on, intermediate model scope is quite broad, besides primary model service, could realize remote access, mobile office assistant, mobile sales management, mobile commerce,

mobile customer relation management and so on. The high-level model have the broadest scope and highest level of mobile informatization which include group short number, VPMN, mobile supply chain management, enterprise informational machine, remote control for machine and so on.

From the angle of platform, mobile informatization could be divided into small and medium-sized enterprise platform model, industry platform model and government platform model. The small and medium-sized enterprise has limited capital and low informatization level, so it have not complex demand but quick respond and personalized demand characteristic. Therefore the small and medium-sized enterprise need to integrate mobile informatization platforms such as mobile office, remote access, enterprise color bell, short message service according to its characteristic development. The industry platform custom industry platform by overall evaluating of industry informatization demand. For example, the air-transport industry could uses the passive RFID tag to implement tracking passenger baggage through whole trip, and let passenger surf on the internet during waiting for the arrival of airplane using wireless local area network (WLAN). The government platform could be used for enhance informatization level of ministry such as customs, public security, transport, tax affairs, industry and commerce ministry. For example, remote accessing solution could provide support for police service. With the aid of remote access, policeman could visit national, province and city important database, even inquire former crime record of suspect, at the spot<sup>[5]</sup>.

## **5 Evaluation and Innovation of Mobile Informatization Model**

### **5.1 Evaluation of Mobile Informatization Model**

Comparing with different mobile informatization model, the evaluation and analysis of different model is as follows.

(1) Different classification are from different angle. Through the above analysis of model, the mobile informatization model is analysed from different angle. Based on the entity type division, mobile informatization model is divided into B-C model, B-E model, B-M model, and B-P model. Based on the product mobile informatization is referred as transverse standard product plus vertical personalization product. Based on the enterprise size division, mobile informatization model includes the primary model, the intermediate model and the high-level model. Based platform discrimination, mobile informatization include the small and medium-sized enterprise platform model, the industry platform model and government platform model. The mobile informatization is the innovation and development, and could be divided from other innovation angle, but different classification's intension and extension are different.

(2) Overlapping between classifications. Mobile informatization model about the enterprise is divided from different level and different plane, and the classification is overlapping. For example, primary model and the intermediate model based on the enterprise size is similar to small and medium-sized enterprise platform model based on platform.

(3) Advantage and disadvantage of different classification. Based on the entity type division, the enterprise may choose strategy emphasis of mobile informatization from the customer, partner or machinery equipment, but possibly cause model integrity not strongly, and couldn't unit the different entity effectively. Based on product division, mobile informatization contain standard product and personalized product. If paying great attention the standardized product, mobile informatization will not waste enterprise resource, but it is difficult to carry on enterprise size division. Based on industry platform, it is easy to exchange data between enterprise and the enterprise, but difficult to carry on platform extension.

### **5.2 Innovation of Mobile Informatization Model**

The effective mobile informatization model can realize add-value and win-win of the enterprise and custom, which is intrinsic power of mobile informatization. Based on entity division, innovative mobile informatization model is proposed as follows, which could go thorough enterprise operation, specially in important area such as government, enterprise resources planning, to carry on cooperates and establish compound and mixed model such as B-C-C model and so on. Along with cooperation between enterprise and enterprise, government and government, government and enterprise deepening, this kind of model will play more and more important role in future mobile informatization field.

For example, B-B-C model is mixed model of enterprise, enterprise, customer. Looking from supplies chain's angle, mobile informatization is provided to connect enterprise with upstream supplier, the downstream distributor through mobile network, which could inquiry material, purchase, inventory and production anytime and anywhere to enhance information transmission and processing speed,

reduce the inventory to lowest level and provide the higher added-value for customers. The B-B-C model causes the enterprise to develop from lonely island to unity style. Mobile informatization construction that the enterprise carries on, face not only the customer, but also the entire supply chain. This model involving logistic and distribution, warehousing management, is three-dimensional operation model include online and offline unity, so besides Internet, wireless network,RFID, GIS andGPS are playing very important role<sup>[6]</sup>.

For example, RFID technology and mobile terminal in retail industry, combined with deployed wireless network, carries on the data collection and exchange. Pasting the electronic tag on cargo container and installing reader at station is used for grasping immediately retail merchant's sales situation. RFID solution could be applied to automatic diagnosis and the confirmation shipping cargo in whole supply chain, which even cover each part and ship it to correct destination to let the enterprise obtain higher efficiency. In addition, RFID technology may also be applied in customer relations management of retail industry. When the customer put the member card before the card reader, the data is transmitted through the wireless network to acquire customer information and access record, thus infer customer hobby and other useful data. It enables enterprise instantaneously to grasp this information and provide the most suitable service for customer to realize customer satisfaction.

## 6 Conclusion

First, we give the definition and characteristic of mobile informatization in this paper, then summarize different business model classification of mobile informatization from different angle, such as entity, enterprise size,platform. Finally give evaluation of the mobile informatization model, which are different,overlapping, and innovation of mobile informatization model such as B-B-C model. This paper could give deep understanding of mobile informatization and help enterprise to choose the special mobile informatization suited for their demand. There also exist some limitation for the paper, and further research is focus on the value network analysis of mobile informatization model and investigation of enterprise acceptance for mobile informatization model.

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