The Mobile Application Social Mode of Manufacturing Enterprise under the Environment of Mobile Internet

Cen Zuo¹, Xumei Zhang¹ and Xingshan Wang²

¹School of Economics and Business Administration, Chongqing University, Chongqing, 400044, China

²Inspur Group Limited Liability Company, Jinan, 25101, China

Abstract. The rapid development of the mobile internet, mobile communication technology and mobile terminal stimulate demand of mobile application in manufacturing enterprises, which makes the enterprise implement the mobile ERP. The implementation of mobile ERP changes the internal application management of manufacturing enterprises to social applications. We analyse the driving factors of implementing the mobile application social mode considering the complexity of organization relations and business processes of manufacturing enterprise. And then the mobile application social mode of the manufacturing enterprise is built based on mobile internet. Finally, we present the management strategies of the mobile application social network to provide references for the manufacturing enterprise.

Keywords. Mobile application social mode, enterprise social network (esn), mobile erp, manufacturing enterprise.

1 Introduction

With the development of mobile communication and internet technology, the mobile internet develops rapidly in recent years. Simultaneously, the 4G network technology and mobile terminals such as smartphones and tablets become more and more popular. These enable internet users to connect to the internet without space and time limit, and using mobile internet technology and terminal equipment is convenient for enterprises to operate more efficient. With the development of mobile internet, 4G network technology and mobile terminals, internet users can connect to the internet without space and time limit, which makes enterprises operate more efficient. At the same time, many international IT companies such as Microsoft, Oracle and SAP acquire enterprise social network (ESN) companies by merger & acquisition. Since then, ESN becomes an important trend and leads to enterprise to implement mobile social network. Therefore, it is significant to research the enterprise mobile application social mode in the new environment.

ESN refers to apply mature social network to enterprise organization to realize the enterprise internal efficient communication and cooperation, and it is a subset of enterprise 2.0 [1]. At present scholars mainly focus on the benefit of ESN such as promoting the performance of enterprise employees, improving the work process, enhancing enterprise knowledge management, reducing the cost and saving time. Kuegler [2] thinks social network can influence staffs' performance by improving the work process and employee motivation and it also have a positive effect on team cooperation. Matii [3] defines five functions of ESN from the perspective of knowledge management and studies the mechanism of how the five functions drive the value of ESN. Von Krogh [4] points out questions need to pay attention in the social network such as knowledge protection, the definition of enterprise boundary. Majchrzak [5] shows that social network has a positive effect on optimizing the enterprise process and teamwork by a case researching. By analysing the case of implementing technologies such as social network and web-based communities in a large multinational telecommunications company, Denyer [6] shows that though these technologies have the potential to bring significant business benefit, the experience of organizational actors suggest that their expectations are not met. Richter [7] thinks that different enterprise will get different benefits after deploying ESN. To solve the problem that the ERP system fails to meet user needs in informal organization processes, Greasley [8] puts forward a hybrid ERP system that combines the function of a traditional ERP with the capabilities of enterprise social software.

Current researches are mainly focus on traditional ESN, but there are few literatures that aim at the mode of mobile enterprise social network. Therefore, this paper intends to analyse the driving factors of the appearance of the mobile application social network, and then this paper puts forward the mobile application social mode in enterprise and its management strategies.

2 Driving factors of implementing mobile social network in manufacturing enterprise

2.1 The development of new technologies makes ERP mobile applications become reality

With the rapid development of network technology and the continuously upgrades of mobile terminal ,bandwidth and terminal equipment technology are no longer barriers to enter internet and the mobile terminal becomes an important way to surf the internet. The infrastructure of Mobile communications is improved gradually and WLAN's coverage area is continually expanding. According to the data released by China's Ministry of Industry and Information Technology [9], the amount of mobile phone users is 1.28 billion in January 2016. Because it is more convenient for netizens to use the mobile internet, the scale of mobile internet users keep growing and internet users' online equipment switch to the mobile terminal gradually. As of December 2015, the number of China's netizens reached 688 million, which included 620 million mobile internet users [10]. With the bigger screen of the mobile terminal and better experience on mobile applications, mobile terminal s become a main way to surf the internet, which lay the foundation for the development of enterprise mobile applications, and the trend of mobile office is further clear. ERP mobile applications do become reality and can be used in the enterprise's office, marketing, logistics and other fields.

2.2 The new technologies stimulate the demand of enterprise mobile application social network

In recent years, the mobile terminals such as smartphones and tablets are continued upgrading in hardware and software aspects. The mobile terminal is gradually switching the previous "equipment centered" into "people-centered" mode with humanized design and more powerful functions. Meanwhile, the mobile social network becomes a hot area in the mobile internet .According to the data released by Nielsen as of April 2014 [11], social media users took up 46% of total domestic users and more than 60% of mobile users used social applications via the mobile terminal. Moreover, after Oracle's acquisition of Virtue social marketing company in 2012, international IT companies such as Microsoft, IBM, and SAP have acquired enterprise social media companies. Since then, enterprise social network has become an important trend. Because of the large scale and complex business relationships of enterprises, staffs need process business information more immediate and high efficient to get rid of the complex organization structures, and the demand of mobile office increases sharply .So the enterprise mobile social network becomes necessary for enterprises to adapt to new environment.

2.3 Mobile ERP makes the enterprise mobile application social network develop fast

Since experienced more than 30 years from initial MRP to MRPII to ERP, ERP system upgrades and evolves in all aspects of the enterprise management. Nowadays, many enterprises pay attention to the research and development of ERP system and ERP is developing towards the mobile ERP. With the advent of mobile internet, tradition ERP cannot meet the need of staffs dealing with business affairs wherever and whenever in the fierce completion environment since the capability of quick response is important to enterprise to capture the market share. Meanwhile, enterprise staffs can deliver various views to communicate with others via various mobile terminal devices, which can break through traditional communication hierarchy and improve the efficiency greatly. So enterprise mobile social network can meet the demand of real-time information interaction in dealing with business affairs, and promote enterprise internal and external service value and competitiveness in the mobile internet time.

2.4 The mobile social network promotes the business mode's innovation in enterprises

The traditional communication way in strict hierarchy leads to more time cost for enterprises in the new internet age. However, the implementation of ESN can make the enterprise internal and external communication get rid of traditional hierarchical structure. With the concept of enterprise 2.0, IT companies introduce enterprise mobile social software to guarantee smooth communication. SAP stream work mobile version developed by SAP can realize efficient collaborative decision-making; Oracle Fusion Middleware can establish the link among personnel, processes and applications based on enterprise2.0; IU social platform developed by UFIDA provides collaborative decision-making; Kingdee's K/3 WISE V13 can meet the demand of enterprise management for small and medium-sized enterprises in cloud era. Enterprise mobile social network can not only meet the needs of internal business social activities and integrate with scattered information including meetings, emails and so on, but also can overcome the disadvantages such as the complexity of enterprise hierarchy and the relatively closure in departments. Besides in each department levels, Enterprise mobile social network can speed up the information delivery based on swarm intelligence and public knowledge, then the enterprise can maximize knowledge sharing.

3 The mobile application social mode of manufacturing enterprise

The mobile application social network of manufacturing enterprise is based on mobile ERP, mobile internet and other basic technical supports. It realizes enterprise socializing by visiting ERP with the mobile terminal in mobile application social network. And the smooth and

Fig. 1. The enterprise mobile application social mode.

friendly communication among departments stimulates employees’ potential and increases work efficiency. The enterprise mobile application social mode includes internal social network, external social network, the basic social platform and basic technical supports, as shown in Figure 1.

The following analysis focus on the enterprise mobile application social mode in internal socializing and external socializing

3.1 The intra-enterprise mobile application social network

The intra-enterprise mobile application social network mainly can be divided into two levels ranging from staffs to departments, including the communication among staffs in the same department and the communication among different departments. There are many ways of collaboration and communication within enterprise. For examples, staffs create and manage the documents and track business workflow by building a team work space on the basic social platform; staffs can check the plan of project they participate in and contact with team members for online real-time collaboration according to the current project schedule; staffs can post documents and information allowing others’ comments feedback, and realize enterprise content management and team knowledge sharing, which can remove information island. The intra-enterprise mobile application social network can achieve the collaboration in the work group while traditional ERP cannot. For example, it is difficult to define some virtual organizations crossing departments such as the strategic committee and the expert committee in traditional ERP, but the enterprise mobile application social network can define these by social groups.

Departments can benefit a lot from the enterprise mobile application social network. Staffs can do basic collaborative work such as sharing experience, transferring files and accessing to information through the social platform. Human resource department staffs use enterprise mobile social platform to simplify the application process; sales teams develop contacts and supervise sales channels via the mobile terminal; operation teams can track the supply chain information in details. In addition, chairman and general manager can query all real-time information in enterprise and communicate with all department managers and staffs to assist decision-making.

For group companies, besides the social network mentioned above, the intra-enterprise social network also includes the communication among different subsidiary corporations, the communication between Subsidiary Corporation and the general corporation. All levels of social communication need the support of the basic social platform and the basic technical supports.

3.2 The inter-enterprise mobile application social network

The enterprise mobile social network can also satisfy real-time social needs for the external suppliers, cooperative enterprises and customers. The enterprise staffs can communicate with customers instantly by literal statement and picture presentation on the mobile social platform when costumers have some doubts about products. Both can also join a video session to communicate directly, and enterprise staffs invite relevant product manager and staffs to help costumers if necessary. The customers can feed back and evaluate the products in enterprise mobile social network so that enterprises can provide better after-sales service.

When enterprise staffs have a project and need to sign a contract with suppliers, they can negotiate contracts through the enterprise social platform. Purchasing department staffs can set up a working group and invite product managers join in to assist purchasing raw materials. Besides, the purchasing staffs can track procurement logistics information at all times via the mobile terminal.

Enterprises can establish communication mechanisms with distributors through the inter-enterprise mobile social network. Due to the uncertainty of market demand, distributors can apply replenishment through the enterprise social platform when distributors are in short supply caused by emergency, and distributors need track the logistics information at any time via the mobile terminal to reduce losses. Through the enterprise mobile social platform enterprises can communicate with their partners smoothly.

4 The management strategies of mobile application social network in manufacturing enterprise

4.1. To establish personalized enterprise mobile application social platform for users

The final users of the enterprise mobile application social network are internal staffs and external users such as suppliers, customers and cooperative enterprises. The main target of implementing the enterprise mobile social network is to meet the needs of all users to improve efficiency. So it is particularly important to distinguish the different demands and meet the demands of the two kinds of users. Generally, internal staffs' demands focus on the business, for instance, purchasing staffs need check the raw materials' logistics information and always keep in touch with suppliers, while the sales personnel need contact with customers and know the regional sales through the mobile social network at any time. Besides, external users' needs mainly focus on smooth communication to ensure the convenience, accuracy and timeliness of information interaction. For example, the suppliers can negotiate business and make sure the procurement details through the mobile application social network, and if they have any problems, they can consult the relevant staffs immediately.

4.2 To strength authority management and its alteration management

The clear role definition and content distribution are the key to ensure enterprise operate orderly within the enterprise mobile application social network, it is the vital problems of authority management and authority alteration that enterprises face during the implementation of the enterprise mobile application social network. Facing internal users and external users, the enterprise needs to define the enterprise's boundary by authority management and makes sure different kinds of users have different authority in the mobile social network. According to the different responsibilities of enterprise staffs, different staffs' authority makes the staff can only read and write information related to their business to prevent data leakage and illegal access. The external users' authority is mainly about the external exchange information with relevant department, for example, suppliers cannot access enterprise internal information but theirs related purchasing information such as the quantity and amount of material procurement, logistics, and history records, etc.

4.3 To pay attention to the security of the enterprise mobile application social network

While implementing the enterprise mobile application social network, the problems the enterprise faced are more complex than traditional ones in the mobile internet environment. So the enterprise needs to establish an effective information security system with some monitoring methods and safety precautions. To ensure the safety of core technologies and important customer information, the safety problems should be focused on all aspects including mobile terminal devices, information transmitting channel, system background, etc. Besides, the social network must be in charged with the firewall, antivirus program and other monitoring equipment. The staff enter into the enterprise mobile social network and do the daily business by the mobile terminal device, so when staffs access the enterprise internal system outside office area, it is necessary to ensure the mobile terminal devices are safe and the visitor is legal to prevent network wiretapping. In addition, staffs should separate the office application and their own applications to guarantee the office data security.

4.4 To promote staffs' corporate identity to adapt to the mobile social network

It is necessary for staffs to cultivate professional quality and improve the proficiency in the enterprise mobile application social network, which not only make staffs adapt to the mobile social environment and optimize business processes to create more value, but also strengthen corporate identity to ensure the information safety from inner enterprise. The staff who has professional ethics accomplishment and corporate identify is the first defence for enterprise information security, while the staff who has not is a threat to the enterprise mobile application social network and ERP system. Therefore, it is an essential task for the enterprise to improve staffs' professional quality and sense of security, and it is extremely important to guarantee the data security and the legal access to information in the security task when the enterprise deploy the mobile social network.

5 Conclusions

The rapid development of mobile internet requires enterprise to change internal management mode in response to new environment. The implementation of the mobile application social network can form a communication community for enterprises to communicate smoothly and improve the enterprise working environment. As the development of mobile terminal technology and enterprise social network and the ERP software's upgrade, the enterprise mobile application social mode becomes the new mobile office mode. The effective management strategies are the important guarantee for manufacturing enterprise to implement mobile application social networking.

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