Analysis of AI contribution to improving BPM of E-Commerce in China: examining the case of Taobao

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Keywords: Artificial Intelligence, Business Performance Management, E-Commerce, Taobao Company

Abstract. The present article is focused on the contribution of Artificial Intelligence (AI) to improve the Business Performance Management (BPM) of China's E-Commerce. Taking the example of Taobao, one of the growing Chinese companies, some users are facing on unsafe E-purchase and poor quality of some products. This work is a theoretical approach and targeted at an interdisciplinary analysis of AI positive effects on improving the BPM of Taobao to reduce these problems. Despite some critical incidents, the expectation of fully online safety buying and selling products is still pursuing by Taobao Company.

1. Introduction

The rapid growth of the networking systems such as electronic data interchange systems, and the penetration of ISDN (Integrated Services Digital Network) based applications are stimulating an ever-increasing number of businesses to participate in E-commerce worldwide. The E-commerce is one of the E-business models which mostly do business over the internet and one of the fastest growing business models in this era of big data [1]. One of the key characteristics of the E-business is that companies will inevitably move more and more into a customer-centric paradigm in order to increase competitiveness. Customer behavior cannot be accurately predicted using traditional analytic methods like forecasting or budgeting [2].

In agreement with the viewpoint of O ke A.S [3], malicious sellers may utilize the weakness of current feedback systems to artificially build up a good reputation history regardless of their actual behaviors. Fraudsters can easily trick these systems to manipulating their own reputation and selling poor quality of products [4]. To reduce security problems and increase good quality of products with organizational performance of Taobao's E-commerce, our paper is focused on the contribution of AI systems to improve the BPM of Taobao. Taking into consideration the possibility to increase the E-purchase of Taobao, this paper gives a contribution to reach a high level online shopping throughout the answering of two main questions. Firstly, how the AI can contribute to improve the BPM of Taobao by helping the users to make better decisions for buying or selling E-commerce products [5]? Secondly, how to reduce the Taobao security problems by using AI system for a safety E-purchase? First, for a better understanding of this topic, we distinguish the relationship between AI and BPM in E-commerce.

2. Integrating AI and BPM in E-commerce environment

In E-commerce environment, AI approaches are useful in the development of B2C and B2B E-commerce systems. In the case of B2C E-commerce, AI is used primarily for product selection and recommendation, negotiation, auctions, solving real-world scheduling problems and enhancing

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servers' scalability, generating automated responses, and decisions on bundling and pricing of goods, etc. In B2B E-commerce, AI is used mainly for supply chain management. Concerning the Taobao case, our paper is focusing on B2C E-business to improve the company performance. In this case, AI techniques are very useful in development of buyer agents and potential users. Most of the E-commerce services are viewed as "sellers" agents because their goal is to push services and/or merchandise on to the users. Buyer agents work for the buyers rather than the sellers. The aim of the agents is to educate the user to become a more informed Customer [6].

Combining the AI and BPM could be beneficial for Taobao as a B2C company. Considering the new concept of B4C (Business-for-Consumer), the combination of AI and BPM increases the marketing management with a good rate of "consumer satisfaction" by detecting the counterfeits from online company's users [7]. With AI implementation, the BPM of Taoabao will be improved by the selection of products for buyers and sellers. Some commentators see BPM as the next generation of business intelligence [7, 8]. BPM is connected to AI by software application with business intelligence. Then, business intelligence has developed tools that ease the work of business performance management, especially when the business-intelligence task involves gathering and analyzing large amounts of unstructured data. By using BPM, the leaders of Taobao can evaluate their goals and the using of AI can detect problems for solving. Taking into account these advantages, the combination of AI and BPM could be beneficial for E-commerce companies. We illustrate this approach by examining the specific case of Taobao.

3. Analysis of AI contribution to improving BPM of Taobao

According to China Internet Watch the growth of Taobao is evidence today. There are 400 million active online shopping users and around 320 million of mobile application and will grow to over 60% in 2019 from 55.3% in 2016 [9]. By combining AI and BPM, Taobao users can make a better decision by operating on the data to investigate organization's situation and conduct development trend analysis and forecasting. For a better business performance or continuous process improvement of an enterprise, a real-time measurement and analysis of the performance of managerial activities is important [10]. To fulfill these requirements of a good purchase, we suggest the use of Business Intelligence (BI) as a part of the AI and BPM combination to provide real-time access to key performance indicators. The goals of BI are to provide real-time information about the status and results of various E-business operations, processes and transactions on real time. To aim this objective, Taobao Company needs to fulfill the requirements of Business Activities Management (BAM). According to some authors, the key steps of BAM implementation are as follows: define a vision, establish the data model, build real-time data streams and roll out operational dashboards [10].

Monitoring business information represents an important factor in improving the quality of the services. It allows scaling resource utilization in an adaptive manner. It is also widely used for detecting critical events and abnormalities of distributed systems and helpful for identifying the faults within the system, discovering application patterns for the users [11]. According to R. I. Ashwin et al [12], recommender systems are software solutions used in E-commerce websites to improve service for online customers by helping them find the products that may interest them and meet their needs. These systems are described by H. Wrethner et al. [13], as intelligent applications designed to assist users in choosing and making decisions, when they want to choose an object among several products or services So, Taobao could benefits the above advantages by implementing BI and BAM systems for better delivering and offering online services to a community of end-users to overcome information overload [14].

4. Results of AI improving Taobao's BPM

By implementing the recommendation systems, Taobao quickly builds trust increasing overall sales or purchases success rate. In figure 1, we propose a view of the description of the cloud system to be implemented as a structure for the combination of AI and BPM to improve the

competitively of Taobao online shopping. Among several monitoring systems, this paper is focused on recommendation systems using for E-purchase throughout transaction processing. These systems aim to increase Taobao's rate of online security E-purchase and satisfaction for customers. For this reason, recommender systems are becoming more and more important for improving BPM in E-commerce companies. Because they offer personalized suggestions to customers over objects or services (products, books, movies, music, etc.) they are interested in.

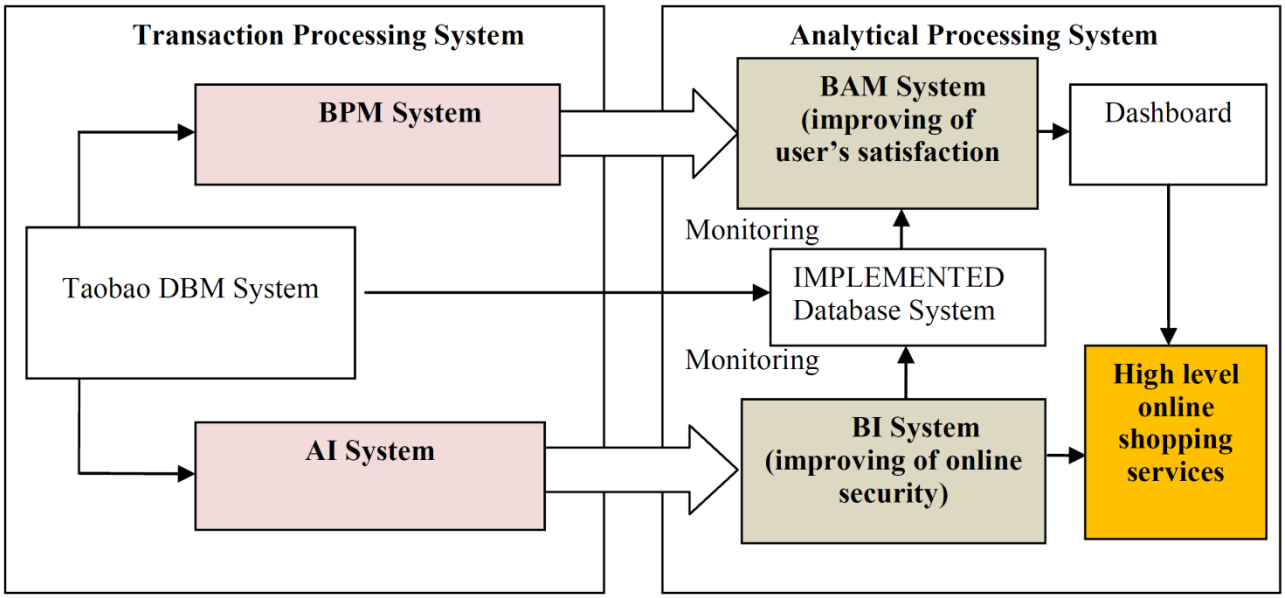

Fig. 1 Structure of combined systems of AI and BPM to improve Taobao online services (based on adapted design of transaction processing system of Ref. [10])

The above transaction processing system combines BPM and AI systems of Taobao's Database management system to improve its performance. The analytical processing system includes Business Activities Monitoring (BAM) system that contains a separated database and dashboard, in association with Business Intelligence (BI) system. This designed structure aims to show the possibility of AI and BPM systems to improve the quality of online shopping service in Taobao. In addition, the security measures are also high throughout the AI technologies. Firstly, XML-based languages are mainly used for developing ontologies. These languages are used as a first step of a long process of detection any threats coming from users and are defined on top of XML [15].

Secondly, concerning the detection of the quality of products, the Content Based Image Retrieval (CBIR) is useful because it describes the process of retrieving desired images from a large image collection on the basis of automatically derived image features. These sets not only define the texture, but also where in the image the texture is located [16]. During the procedure, database agent is also used to manage and manipulate varieties of data such as products database, sales database and customer profile data [17]. It can help users to detect counterfeit products in the context of online shopping and provide safety using for customers. At the end, the combination of the above methods can contribute to reduce security problems in Taobao.

5. Discussion and conclusion

As a discussion, the notion of the performance is an object of subjectivity depending on the implemented database system and its use to control and to update the needed information for the E-business. In addition, the success of AI combination of BPM to improve Taobao performance should depend on the operational management products. So, the high performance of Taobao needs the use of its IT to keep infrastructure, applications and databases up and running. Therefore, we are sharing the point of view of IBM researcher who said that organizations typically have strong tools in some areas, and at the same time weaknesses and gaps in other areas' [18].

The present article gives a theoretical view of AI and BPM combination to improve Taobao's performance. However, it aims to give two main contributions (scientific and technological). As a technological contribution, the successful combination of AI technologies and BPM of Taobao Company will depend on the dynamism of its users to create an 'ambitious growth plan' can seek to meet by 2020' [19] and the adequate BI and BAM systems implementation. As a scientific contribution, we agree with some authors [20] to note that many of the developments are and will continue to be technology-pushed, and that these technologies emerge from information systems and computer science disciplines. In future work, we will deepen this topic to be focused on an empirical view of AI and BPM combination to improve the performance of Taobao. So, we will collect and analyze as an interdisciplinary work, the performance data to be implemented in Taobao (Tmall Company).

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