A Study on Growth Process Model of Enterprise Information System in the Era of Big Data——Statistical Information System of Freight Train Formation

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ABSTRACT: This paper focused on the railway transportation industry in the era of big data, and researched on the Statistical Information System of Freight Train Formation, collected its business data in 311train operation depots of 18 railway bureau as total sample and 35 statistical targets as dependent variables, computed the precision of the system based on the business rule and took it as the independent variable. With SPSS, this paper analyzed the collected business data by stepwise regression analysis and mined the value of big business data in the growth process of enterprise information system, and then explored the rule of the information system in railway enterprises whose informatization could be effectively improved and optimized.

I. Introduction

As information technology continues to infiltrate and innovation in all areas of social, economic, life, comprehensive and innovative modes of production based on information and networks, making the global amount of data showing an unprecedented explosive growth. In 2008 and 2011, "Nature" and "Science" magazine were published monograph "Big Data: Science in the PetabyteEra" and "Dealing with Data", from Internet technology, the Internet economics, supercomputing, many aspects of environmental science, biomedicine and other large data processing and applications discussed topics, officially kicked off "big data" era, attracted the close attention of academia, industry and government agencies.

In academia, the big data more representative is 3V defined, namely that the large data must meet three characteristics: scale (volume), diversity (Variety) and high speed (Volume). In addition, Barwick H that data should also have a large resistance value (Value). Our information specialists Xu Zipei in the writings of "big data" proposed greatly not only refers to data of a large capacity, the greater significance is that through the exchange of massive data integration and analysis, the discovery of new knowledge, create new value, bringing the "big knowledge", "Science and Technology", "big profits" and "big development." Xiaofeng Meng vividly compared to traditional database "fishing pond" while big data is the "sea fishing" sharp distinction between the two is that the data size, data types, models and data relationships, processed, processing tools and other four aspect. Domestic computer core journal "Computer Research and Development" positioning in the

domestic big data research in its "Big Data Management Symposium 2015" to "big data management theories and methods", "big data management systems and technology" and "for the new storage During big data management "and other aspects, causing domestic scholars on the theory of Big Data widespread concern and research boom.

In the business world, according to International Data Corporation (IDC) predicted, by 2015, global data and analysis technology market will reach $ 125 billion in total revenue in the hardware, software and services. Due to the increasing complexity of system configuration and comprehensive enterprise-class solutions, big data technologies and services market compound annual growth rate will reach 26.24%, of its total 2018 revenue will reach $ 41.52 billion. As the profound impact of the Internet on business operations to bring 85% of business leaders believe big data business operations will bring enormous changes. 83% of business leaders ha started pursuing big data project to seize new competitive advantage. Currently the enterprise big data affected by the top three areas are: the impact of customer relationship (37%); redefine product development (26 percent); changing the way business operations (15%).

II. Data Collection and Analysis

(A) Information System Overview

In order to better meet the needs of the financial liquidation revised data, the former Ministry of Statistics Center developed railway marshalling freight trains Statistical Information System (hereinafter referred to as HCQS system) the whole way to promote running in January 2012, is still in the implementation of maintenance. HCQS system through the association of freight train marshalling sequence table and cargo ticket information, accurate statistical vehicle in running kilometers various transportation companies, transit each grouping section stations to handle the car, Boundary entire column empty wagons running kilometers and a series of liquidation indicators, to achieve the liquidation transportation system 1 reporting and audit of automated data management. The Railway Administration the average daily level information roughly 369M, the Ministry of Railways level is 3870M, to save computing period of five years, the need to store data 7062.8G processing information, and therefore the business data that the system is complicated and large quantities distribution Characteristics and diversity.

(B) Data Analysis

(1) V1 phase. The operational phase of the pilot phase of the system, has not yet commenced training personnel to operate, most of the operators just adapt HCQS system, in operation, ignoring reporting time, not timely end to the situation confirmed that often occur, resulting in delaying the station reported warehousing more packets thereby affecting the accuracy of business data. Therefore, the number of columns delay transport system 1 (x1) having a significant negative impact on the independent variable. Service Depot at arrival confirmation circumstances have not confirmed arrival data, otherwise empty, and therefore not confirm the final number to the vehicle (x3) directly affects the timely confirmation of the train marshalling information, the accuracy of business data has a positive correlation. In addition, within the time limit to complete the station has not reported completely covered, so the number of station stops this application range of factors at this stage have a significant positive impact on the integrity of the business data, and finally to the car than the unacknowledged number of more significant impact.

(2) V2 stage. With the dramatic increase in the number of stations of the station delaying the overall number is also increasing, therefore delaying transport system 1 is the number of columns (x1) still have a significant negative impact to the vehicle is not confirmed the final number (x3) holding more than V1 stage strong positive impact. But not yet realized the full scope of the FBI

road test, by the other station data reporting delays relations, transport system 1 does not reach the number of columns (ie, starting this station, yet to have any train station to reach its operating) surge in the number, in the present Phase Forward influence is greater than the number of unconfirmed end to the car. It found that the efficiency of data transfer has a significant positive impact on the accuracy of the system.

(3) V3 stage. This stage due to the full application of the whole road improvement and training station, delay the column number of the negative impact of significantly less than the previous two stages. Also new transmission program check and full auditing capabilities, greatly reduce the manual workload corrected to ensure the business integrity and timeliness of data, and improve the transmission efficiency, transport system 1 influence does not reach the number of columns (x4) of nature is also weakened, it can be said to improve training and reduce both manual intervention makes the system accurate to stabilize.

(4) V4 stage. Because the system already has the ability to receive and automatically transmit traffic data for all stations, transport system 1 real newspaper columns (x5) substantive safeguards, which has a significant positive impact on the accuracy of the traffic data. In addition, as new vehicles use the properties and auditing logic cargo ticket numbers, leading to increased transport system 1 wrong number of columns, but also to deal with many complex operations, directly affects the other indicators of the system (such as transport system 1 is delaying the number of columns, heavy reported that the number of columns, transport system has not reached the number of columns for 1) so that its greatest influence. Compared with the V3 stage, in the original hair stand omission logic added to the station + ticket number, license plate number + determine the conditions of goods, resulting in significantly increased hair underreporting the number of stations, the accuracy of the system by again negative impact.

(5) V5 stage. Similar to the previous stages, the number of columns delaying transport system 1 (x1) negative correlation influence to weaken, transport system 1 real newspaper columns (x5) growing impact on the integrity of business data, and transportation negative influence system 1 Error number of columns waning. The difference is that the restatement of the number of columns appeared a significant negative impact, because the scope of the audit of the vehicle from the United Transportation extended to all vehicles Bureaux, packet name of each station reported different but train information (such as the current station, current trips, The total number of cars, trucks, etc.) is fully consistent with the packets start together in Luju layer, it is management aware of and propose solutions. With the application-level rise can be seen, the accuracy of the information system will also be apparent to contain.

(6) V6 stage. With the growth of HYQS information system, the company-owned and corporate-owned trucks to fully grasp the situation and distribution, to achieve fine management trucks, the project team proposed by HCQS systems and truck technology management system (HMIS), railway wagons physical assets library lorry information sharing, establishment of a "truck dynamic information database", the largest grass-roots level to reduce the intensity of the work station segment inventory and achieve real-time dynamic inventory information after truck maintenance and updates. So at this stage to join originating delaying transport system 1 (x9) and delaying the transit transport system 1 (x10) two indicators, fine distinction Boundary delaying and delaying transit information for all vehicles. This information will undoubtedly increase the accuracy of the traffic data produce significant negative impact, in descending order of influence: delaying transit transport system 1, restated the number of columns, originating delaying transport system 1 (x10, x8, , x9), transport system 1 real newspaper columns (x5) still have a significant positive impact on the accuracy of the traffic data.

III. Conclusions and Implications

In summary, the big data era caused a change in the way of enterprise operations management, identify critical enterprise value of big data is not enough data information is massive, but that once the extraction of the raw data, the second sublimation, three mining. By data for different stages HYQS the enterprise information system analysis, we can see who has an important impact on training in most stages, other factors and forces are very different. Rail transport in the whole railway industry-wide information system in the implementation process will go through the pilot run, the FBI test, improve stability, automatic audit, data expansion, system-derived phase, then the system should pay full attention to the information in its construction process Applications, affect data transfer efficiency, automatic auditing logic, system hierarchy, derived business data. In the subsequent development of a similar system, it should be combined with business data indicator accurately locate the growth stage information system and take effective management tools for the appropriate factors depending on the stage, leading to faster and improved information technology to promote the process of building.

This model is mainly based on HYQS big data system intended to highlight the large-scale data mining process and use value, focusing on the discovery stage of development of the existing system characteristics and influencing factors, and growth stage for future information systems possible automation, diversification, and intelligent impact factor, the paper has not been discussed in depth. This will need to be more follow-up research scholars.

Acknowledgements

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