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QUALIFICATION WORK

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**on: Introduction of modern management technologies at the
enterprise - Analysis of JD Group's Application of Digital
Management Technology**

Completed: student of
073 «Management» (EP «Administrative Management»)

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SUMY NATIONAL AGRARIAN UNIVERSITY

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TASK

on qualification work for student

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- to analyze organizational and economic characteristics of Jjingdong group
- to analyze supply chain management
- to analyze decision support requirements;
- to consider and identify ways to improve the efficiency of digital management technology

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3	Preparation and presentation of draft of the first chapter of the thesis	January 2023	
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SUMMARY

Wang Xiao. Introduction of modern management technologies at the enterprise - Analysis of JD Group's Application of Digital Management Technology. Master's thesis in the specialty 073 «Management», EP «Administrative Management» SNAU, Sumy-2024. Manuscript.

Under the background of the current digital wave sweeping the world, how to effectively use modern management technology to achieve transformation and upgrading has become a key issue. As a leading e-commerce platform in China, the main issue facing JD Group is how to maintain its leading position in the fierce market competition while improving internal operational efficiency and customer satisfaction. To this end, this paper makes an in-depth analysis of how JD Group solves these problems by introducing and applying digital management technologies, and explores the specific applications of these technologies and their impact on corporate performance from multiple perspectives.

Specifically, the paper first identifies the major challenges encountered by JD Group in supply chain management, customer service, data analysis and human resource management. Subsequently, the article elaborated on how JD has adopted advanced digital tools and methods, such as artificial intelligence, big data analysis, cloud computing and Internet of Things technologies, to optimize its business processes and enhance service quality. Through a case study of the digital management practices implemented by JD Group, the paper reveals how these technologies have helped JD automate inventory management, improve logistics efficiency, enhance customer interaction experience, and optimize employee performance management.

The research focuses on the evaluation of the application effect of digital management technology in Jingdong Group, including the comparative analysis before and after the implementation of the technology, as well as the specific impact of these changes on the business results of the enterprise. Through quantitative and qualitative research methods, this paper evaluates the effectiveness of digital management technology in terms of cost savings, efficiency improvement and customer satisfaction improvement.

The conclusions based on the above research methods show that Jingdong Group not only successfully solved its problems in market competition and internal management through effective integration and application of modern management technology, but also provided valuable experience and enlightenment for other enterprises. These findings highlight the importance of digital management technology in the current business environment and provide practical guidance and suggestions for enterprises wishing to achieve digital transformation.

Keywords: management, supply chain management, management technologies, digital management technology, e-commerce.

АНОТАЦІЯ

Ван Сяо. Впровадження сучасних технологій управління на підприємстві - Аналіз застосування JD Group цифрових технологій управління. Магістерська робота за спеціальністю 073 «Менеджмент» ОП «Адміністративний менеджмент» СНАУ, Суми-2024. Рукопис.

На тлі сучасної цифрової хвилі, яка охопила світ, ключовим питанням стало те, як ефективно використовувати сучасні технології управління для досягнення трансформації та модернізації. Як провідна платформа електронної комерції в Китаї, головне питання, яке стоїть перед JD Group, полягає в тому, як зберегти свої лідируючі позиції в жорсткій ринковій конкуренції, одночасно покращуючи внутрішню операційну ефективність і задоволеність клієнтів. З цією метою ця стаття робить глибокий аналіз того, як JD Group вирішує ці проблеми шляхом впровадження та застосування цифрових технологій управління, а також досліджує конкретні застосування цих технологій та їхній вплив на ефективність компанії з різних точок зору.

Зокрема, у документі спочатку визначено основні проблеми, з якими стикається JD Group в управлінні ланцюгом постачання, обслуговуванні клієнтів, аналізі даних та управлінні людськими ресурсами. Згодом у статті розповідалося про те, як JD запровадив передові цифрові інструменти та методи, такі як штучний інтелект, аналіз великих даних, хмарні обчислення та технології Інтернету речей, щоб оптимізувати свої бізнес-процеси та підвищити якість послуг. Через тематичне дослідження практик цифрового управління, впроваджених JD Group, у статті показано, як ці технології допомогли JD автоматизувати управління запасами, підвищити ефективність логістики, покращити взаємодію з клієнтами та оптимізувати управління продуктивністю співробітників.

Дослідження зосереджено на оцінці ефекту застосування технології цифрового управління в Jingdong Group, включаючи порівняльний аналіз до та після впровадження технології, а також конкретний вплив цих змін на бізнес-результати підприємства. За допомогою кількісних і якісних методів дослідження ця стаття оцінює ефективність технології цифрового управління з точки зору економії коштів, підвищення ефективності та підвищення рівня задоволеності клієнтів.

Висновки, зроблені на основі наведених вище методів дослідження, показують, що Jingdong Group не тільки успішно вирішила свої проблеми в ринковій конкуренції та внутрішньому управлінні шляхом ефективної інтеграції та застосування сучасних технологій управління, але й надала цінний досвід і знання для інших підприємств. Ці висновки підкреслюють важливість технології цифрового управління в поточному бізнес-середовищі та надають практичні вказівки та пропозиції для підприємств, які бажають досягти цифрової трансформації.

Ключові слова: менеджмент, управління ланцюгами поставок, технології управління, цифрові технології управління, електронна комерція.

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INTRODUCTION

Relevance of the topic. In today's digital age, data has become a key resource for enterprises to gain competitive advantage. With the rapid development of information technology, more and more attention has been paid to the enabling effect of data and digital technology on the business forms and forms of all walks of life. The state has also realized the importance of data and issued a series of documents to plan how to develop the government and enterprises with high quality under the digital economy. However, behind the rapid growth of the digital platform economy are hidden problems such as VUCA's business environment, fierce competitive pressure and its own development bottleneck, which pose a threat to the survival and development of platform enterprises. Therefore, how to continuously create value for platform enterprises to survive and develop under complex conditions has become a problem that cannot be ignored in the management practice and theoretical research of the current digital economy era.

As a leader in the field of e-commerce platforms, Jingdong Group is in a leading position in the use of data to enable value creation. This paper will take Jingdong as the case object to define the concepts of data empowerment, e-commerce platform and value creation. Based on the theory of resource-based theory, value creation theory and value chain theory, the paper makes an in-depth analysis along the path of value proposition as the orientation, value co-creation as the process and value capture as the landing point. The research finds that the way of creating value is achieved through value co-creation, in which platform enterprises play a leading role, promoting other subjects to interact and effectively integrate resources, so as to create value. The value co-creation of platform-type enterprises is promoted according to the connectivity, analysis and intelligence capabilities endowed by data. This paper will study the value co-creation of Jingdong from the two ends of supply and demand, precision marketing and smart logistics. In the value chain, Jingdong uses data to optimize specific links and

further create value. Through the combination of financial and non-financial indicators, JD conducts comparative analysis with the other two e-commerce platform enterprises to reveal the impact path of data empowerment on their value creation. Finally, the research conclusion and enlightenment of this paper are drawn.

Through the in-depth exploration of the case of Jingdong, this paper aims to provide practical guidance and reference for other e-commerce platform enterprises in the construction of value creation path. At the same time, it also has a positive significance for stakeholders to rationally understand the value creation potential of enterprises, and help them make more sensible choices in business decisions and investment behaviors.

Relationship with academic programs, plans, themes. Master's thesis is done according to the plan of research at Sumy National Agrarian University.

The aim of the thesis is: the scientific substantiation of theoretical and methodical and applied principles of developing methods to improve the modern management technologies at the enterprise.

According to the purpose, **the main objectives of the study** were identified:

- to carry out theoretical analysis and the essence of modern management technologies at the enterprise and research and conceptual apparatus;
- to organize the factors and methods influencing the increase of management technologies at the enterprise;
- to determine the main directions of modern management technologies at the enterprise
- to characterize organizational and economic conditions of Jingdong Group
- to analyze the challenges of supply chain management
- to conduct data analysis and decision support requirements
- to assess the importance of artificial intelligence in customer service and role of big data analytics in supply chain optimization
- to develop proposals for the of cloud computing in data storage and processing;

- to formulate proposed ways and measures to improve the inventory management automation

Object is organizational and economic relations aimed at improving of modern management technologies at the enterprise.

The subject is a set of theoretical, methodological, and practical aspects of the process of identifying ways to improve the modern management technologies at the enterprise.

Research methods: logical generalization and comparison; expert assessment, statistical analysis, data grouping and aggregation; factor synthesis analysis .

Information base includes scientific works by domestic and foreign scientists in the problem area, national statistical report data, the publication of official and scientific journals, enterprise manufacturer's reporting information, international and Chinese scientific time conference materials.

The practical significance of the results is: It can be used as the basis for further research on the competitive strategy, methods, and practices of enterprises, and as the basis for the achievements of enterprises in a stable position in the market. The research results are confirmed by its application in the practice activities of enterprises.

Personal Achievements master's degree. Results of the study contained in the Master's diploma are independent developments and suggestions of the author. Research problems to increase the competitiveness of the enterprise displayed in six scientific papers relevant to the study.

The structure and scope of work. Master's thesis consists of an introduction, three chapters, conclusions and proposals list of references. The main text posted on the 50 pages of computer text, the work contains 10 figures.

CHAPTER 1

THEORETICAL AND SCIENTIFIC METHODOLOGICAL FOUNDATIONS OF THE DIGITAL MANAGEMENT TECHNOLOGY

In today's era of surging digital waves, enterprises are faced with unprecedented challenges and opportunities. Especially for the e-commerce platform giant Jingdong Group, how to achieve value creation, optimize business processes and enhance customer experience through digital management technology has become the key to its continued leadership. The purpose of this study is to deeply explore the practice and enlightenment of Jingdong Group in the application of digital management technology, in order to provide valuable case analysis and application reference for modern enterprise management.

Specifically, the purpose of this study focuses on the following aspects: explore how JD Group uses data empowerment to promote the value creation of e-commerce platforms. As one of the most valuable resources in the era of digital economy, data's application effect and value creation mechanism in the e-commerce platform are worthy of in-depth study. By analyzing how JD integrates and utilizes massive data resources to optimize its business model and operation strategy, it can provide reference for other e-commerce enterprises.

Evaluate the application effect of digital management technology in JD.com Group's internal management and external transactions. Digital technologies such as big data, cloud computing and artificial intelligence play an important role in improving enterprise operation efficiency, reducing costs and enhancing customer interaction experience. By analyzing the application examples of Jingdong Group in these fields, the practical application value and potential improvement space of these technologies can be revealed.

The influence of Jingdong Group's digital management technology application on enterprise performance is analyzed. The improvement of enterprise performance is an important criterion to test the success of the application of digital management technology. This study will evaluate the specific impact on

enterprise performance by comparing and analyzing the changes of financial and non-financial indicators of Jingdong Group before and after the application of these technologies.

Identify and discuss the challenges encountered by JD Group in the application of digital management technology and their solutions. Digital transformation is not always smooth sailing, and the company will encounter various unexpected challenges in the process of advancement. A systematic review of Jingdong Group's coping strategies and lessons learned can provide valuable reference information for other enterprises.

Through the realization of the above research objectives, this study hopes to deepen the understanding of the application of digital management technology in modern enterprise management, and provide empirical research results and theoretical insights for scholars and practitioners in related fields. In addition, through the analysis of the typical case of Jingdong Group, this study will also provide strategic guidance and operational suggestions for those enterprises that are implementing or planning to implement digital transformation, so as to help them stand out in the fierce market competition.

The purpose of this study is to deeply explore the application of digital management technology in Jingdong Group and its impact on enterprise value creation. Therefore, a combination of qualitative and quantitative research methods is selected to ensure the comprehensiveness and depth of the analysis. In terms of qualitative research, literature review method and case study method are used to interpret the practice of Jingdong Group in detail and make theoretical connection. In terms of quantitative research, financial analysis and comparative analysis are adopted to support the conclusion of theoretical research through empirical data.

Literature review method enables us to stand on the shoulders of previous research, systematically understand and summarize the theoretical basis of digital management technology and its application status and development trend in the field of e-commerce platform. By combing the relevant academic articles, industry reports and policy documents, the theoretical framework and background of the

research are constructed. In addition, the case study method allows us to dig deeper and analyze the specific practice of Jingdong Group, and understand the strategy and operating mechanism behind its successful application of digital technology. Through detailed analysis of Jingdong Group's official announcements, annual reports, press releases and expert comments and other first-hand information, we strive to abstract lessons of universal significance from practice.

In terms of quantitative research, financial analysis is a key tool to evaluate the value creation effect of JD Group's digital management technology. By analyzing various indicators in financial statements, such as revenue growth rate, cost control efficiency, asset turnover rate, etc., we can objectively evaluate the contribution of digital technology to the economic benefits of enterprises. The rule of comparative analysis is to identify Jingdong's competitive position and advantages in the industry through horizontal comparison of Jingdong's performance with other e-commerce platforms. In this process, a large amount of historical data from financial databases is utilized, including but not limited to stock price movements, market share, user growth rate and other indicators.

To ensure the validity and reliability of the data, the study strictly screened data sources, giving preference to publicly released official data and verified academic resources. At the same time, the collected data were strictly cleaned and processed to ensure the accuracy of the analysis results. Through this research strategy of comprehensive application of multiple methods, this study can not only fully reveal the application status and effectiveness of Jingdong Group's digital management technology, but also provide reference for other enterprises in the process of digital transformation.

In today's digital wave, enterprises are faced with unprecedented challenges and opportunities. Especially for e-commerce giants such as Jingdong Group, digital management technology is not only the catalyst for its continuous growth, but also the key to maintain its leading position in the fierce market competition. This section aims to deeply explore the theoretical basis of digital management technology and its application in modern enterprise management, in order to

provide theoretical support and analysis perspective for the practical cases of Jingdong Group.

Digital management technology, as an emerging management paradigm, relies on advanced information technology, such as big data analysis, cloud computing, artificial intelligence, etc., aiming to optimize management decisions, improve operational efficiency and enhance customer experience through data collection, processing and analysis. From the perspective of resource-based theory, digital management technology is regarded as a unique resource, which can bring continuous competitive advantage to enterprises. The core of this technology is that it can realize the real-time flow of information and deep mining, so that enterprises can quickly respond to market changes, accurately locate customer needs, and make more scientific strategic decisions on this basis.

Furthermore, the theory of value creation provides us with a framework to understand how digital management technology contributes to enterprise value addition. Under the guidance of this theory, digitalization is not only a simple application of technology, but also a brand new business model and value creation mechanism. Through the application of digital management technology, enterprises can achieve optimization in every link of the value chain, from supply chain management to customer relationship management, to new product development and marketing, and the efficiency improvement and cost reduction of every link bring additional value to enterprises.

In addition, value chain theory emphasizes the synergies between the different links in the value chain. By breaking the traditional information silos, digital management technology realizes cross-departmental and cross-functional information sharing and process coordination, which greatly improves the efficiency and response speed of the entire value chain. In this mode, Jingdong Group can accurately predict market trends through the analysis and mining of a large number of user data, adjust commodity strategies in a timely manner, and ensure the rapid delivery of goods through an intelligent logistics system, thus occupying a favorable position in the competition of e-commerce platforms.

However, the successful application of digital management technology does not happen overnight. It requires enterprises not only to have strong technical support and data processing capabilities, but also to have a data-centered corporate culture and organizational structure. This means that everyone, from top managers to grassroots employees, must have a full understanding of the value of data and be able to use it effectively in daily decision-making and operations.

To sum up, as a revolutionary management tool, the importance of digital management technology lies in its ability to bring sustained competitive advantages and great potential for value creation to enterprises. Through a deep understanding and effective application of this technology, enterprises such as Jingdong Group can ride the waves in the era of digital economy and achieve sustainable development and prosperity.

Under the tide of the digital age, the e-commerce industry is undergoing a profound change. With the rapid development of data technology, the traditional e-commerce model has been gradually replaced by a new data-driven business model. In this process, as a leading e-commerce platform in China, Jingdong Group's application of digital management has not only brought revolutionary changes to itself, but also had a profound impact on the entire e-commerce field.

In the e-commerce industry, the application of digital management is mainly reflected in the following aspects: First, optimize supply chain management through big data analysis to achieve accurate control of inventory and efficient operation of logistics distribution; The second is the use of artificial intelligence technology to improve customer service experience, such as the introduction of intelligent customer service system, can effectively reduce labor costs, while improving the response speed and quality of service; The third is to use the cloud computing platform to achieve the elastic expansion of resources and the optimal allocation of costs, to ensure the system stability of the e-commerce platform in the face of high concurrent access.

As for the practice of Jingdong Group, its exploration in the aspect of digital transformation is particularly noteworthy. By building a comprehensive digital

management system, Jingdong has realized the digital operation of the whole chain from the front-end user interface to the back-end logistics, warehousing and so on. For example, Jingdong uses its self-built "Jingdong Logistics" system to optimize delivery routes through algorithms, significantly improving delivery efficiency and accuracy. At the same time, JD.com also relies on strong data analysis capabilities to dig deeply into user behavior, so as to achieve personalized product recommendations and enhance user stickiness.

In addition, another innovative practice of Jingdong in digital management is its open "Jingdong Cloud" platform. The platform not only provides strong technical support for JD's own business, but also provides services including cloud computing and big data processing to outside enterprises, which to a certain extent has promoted the technological progress and model innovation of the entire e-commerce industry.

However, although digital management has brought many benefits to the e-commerce sector, it is also accompanied by a series of challenges, such as data security and privacy protection issues, and high cost investment in technological upgrading. Therefore, for e-commerce enterprises, how to make full use of the advantages brought by digital management on the premise of ensuring data security, and how to balance the relationship between technological innovation and enterprise costs, has become an urgent problem to be solved.

To sum up, the application of digital management in the field of e-commerce has not only greatly promoted the progress of the industry, but also brought unprecedented development opportunities for enterprises. Through the analysis of the practice cases of Jingdong Group in this process, we can see the strong potential of digital management technology and its key role in the future business competition.

CHAPTER 2

THE APPLICATION PRACTICE OF DIGITAL MANAGEMENT TECHNOLOGY OF JINGDONG GROUP

2.1 General organizational and economic characteristics of Jingdong Group

Jingdong Group, as a leading enterprise in China's e-commerce industry, has undergone a transformation from a traditional retailer to an e-commerce giant since its establishment in 1998. The transformation not only marks a fundamental change in its business model, but also reflects the growing importance of digital management technology in modern enterprises. With the rapid development of Internet technology and the advent of the era of digital economy, Jingdong Group has successfully built an efficient and intelligent business ecosystem by continuously optimizing its digital strategy.

In the early stage, JD.com mainly focused on the retail of electronic products, and then gradually expanded to a full-category e-commerce platform. In 2004, JD officially entered the field of online sales, which was not only a quick response to the changing market demand, but also the starting point of the digital transformation of the enterprise. By establishing its own logistics system, adopting advanced data analysis technology and implementing a multi-channel marketing strategy, JD.com quickly distinguished itself in the highly competitive market.

Since entering the 21st century, JD.com has further accelerated its digitalization process with the wide application of digital technologies such as big data, cloud computing and artificial intelligence. In 2017, JD.com put forward its "borderless retail" strategy, which aims to break the boundaries between online and offline shopping through technological innovation and enhance user experience and operational efficiency. The core of this strategy is to use digital means to

achieve innovation and upgrading of retail formats, so as to better meet the diversified and personalized needs of consumers.

At present, JD Group has developed into a comprehensive enterprise covering multiple fields such as e-commerce, logistics, finance and technology. The application of its digital management technology covers many aspects such as supply chain management, customer service and commodity recommendation system, which has greatly improved the operation efficiency and market competitiveness of the company. Especially in terms of data empowerment, JD has continuously optimized its services and products by deeply mining and analyzing user data, realizing the transformation from "commodity-centric" to "customer-centric".

However, JD.com's digital journey is not without its challenges. At the same time of rapid development, how to ensure the security of user data, cope with fierce market competition and continue to promote innovation has become a problem that JD.com must face. In this regard, Jingdong strives to maintain a leading position on the road of digital transformation by increasing investment in technology research and development and strengthening cooperation with domestic and foreign technology enterprises.

To sum up, the development history of Jingdong Group has fully demonstrated the application value and potential of digital management technology in modern enterprise management. Through the analysis of the case of Jingdong, we can not only gain insight into how digital technology helps enterprises achieve rapid development, but also provide valuable experience and inspiration for other enterprises in the process of digital transformation.

2.2 Challenges of supply chain management

In the digital era, Jingdong Group, as a leading enterprise in the domestic e-commerce industry, faces unprecedented challenges and opportunities in its supply chain management. With the diversification of consumer demand and the

intensification of market competition, the traditional supply chain model has been unable to meet the development needs of modern e-commerce enterprises. Therefore, how to optimize supply chain management and improve supply chain efficiency has become an urgent problem for Jingdong Group.

First of all, the complexity of supply chain management is a big challenge for Jingdong Group. With the increasing variety of goods, the supply chain involves more and more links, including procurement, production, inventory, transportation, sales and other links need to be fine management. In this process, any problem in any link may affect the operational efficiency of the entire supply chain. Therefore, how to effectively coordinate the work among various departments to achieve the smooth operation of the supply chain is a difficult problem that Jingdong Group needs to solve.

Secondly, the uncertainty of supply chain management is also one of the challenges facing Jingdong Group. The change of market demand, the production capacity of suppliers, the efficiency of logistics transportation and other factors will have an impact on the stability of the supply chain. In this case, how to accurately predict market demand, rationally arrange production and inventory, and reduce supply chain risks are of great importance to Jingdong Group.

In addition, the cost pressure of supply chain management is also a challenge that Jingdong Group needs to face. As labor costs and logistics costs continue to rise, how to reduce operating costs while ensuring supply chain efficiency has become a problem that Jingdong Group needs to solve. This requires Jingdong Group to introduce advanced technology and equipment in supply chain management, realize automation and intelligent management, and reduce labor costs; At the same time, it will reduce logistics costs by optimizing logistics network layout and improving transportation efficiency.

Although Jingdong Group faces many challenges in supply chain management, there are also great opportunities. With the rapid development of digital technology, JD Group can use big data, artificial intelligence and other technical means to optimize and upgrade the supply chain. Through the analysis

and mining of massive data, JD Group can more accurately predict market demand, make production plans, arrange inventory, etc.; At the same time, the use of artificial intelligence technology can achieve automated management of the supply chain and improve the efficiency of the supply chain.

To sum up, Jingdong Group faces both complex challenges and huge opportunities in supply chain management. By introducing advanced technology and equipment, optimizing supply chain processes and reducing costs, Jingdong Group is expected to overcome these challenges and seize opportunities to upgrade and transform supply chain management. This will not only help to improve the market competitiveness of Jingdong Group, but also provide beneficial reference and inspiration for the development of the entire e-commerce industry.

In today's business environment, Jingdong Group, as a leader in the e-commerce industry, faces both challenges and opportunities. Especially in the field of customer service, with the increasingly diversified and personalized needs of consumers, optimizing customer service has become the key to JD.com Group's continuous competitive advantage.

In the face of customer service optimization needs, Jingdong Group must recognize the central role of data empowerment. By accurately analyzing customer data, JD.com is not only able to predict consumption trends, but also respond to consumers' individual needs in advance. This data-based insight enables JD.com to provide customized services and products to target customer groups at the right time, thereby boosting customer satisfaction and promoting loyalty.

However, the optimization of customer service does not just stop at data collection and analysis. Jd.com needs to further leverage these data insights to improve service processes through intelligent means. For example, by introducing an intelligent customer service system, it can not only achieve 24-hour customer service, but also continuously optimize the quality of answers through machine learning, reduce labor costs and improve problem solving efficiency. In addition, the use of predictive logistics management, which pre-arranges inventory

according to consumers' purchasing habits and preferences, can significantly reduce delivery time and further enhance customer experience.

Although data and technology offer JD Group the possibility to optimize customer service, it also faces a series of challenges in practice. Data security and privacy protection are an important part of this. While mining and utilizing customer data, how to ensure data security and user privacy protection to avoid the risk of data leakage is a problem that JD.com must take seriously. In addition, the rapid development of technology also requires JD.com to continuously invest in research and development to maintain its technological leadership. This involves not only a large investment of funds, but also the ability to quickly adapt to and apply new technologies.

In the process of optimizing customer service, JD.com Group also needs to pay attention to the constantly changing consumer behavior. With the development of society, consumers' expectations of service are also increasing. They are not only satisfied with fast logistics and convenient shopping experience, but also pay more attention to personalized service and after-sales support in the shopping process. Therefore, JD.com needs to build on its traditional service advantages by constantly innovating its service model, such as providing a virtual try-on experience through augmented reality (AR) technology, or providing more personalized shopping recommendations through big data analysis, to meet consumers' new expectations.

To sum up, although JD.com Group has great potential and opportunities in optimizing customer service, it also faces quite a few challenges. By digging deep and making intelligent use of data, constantly innovating service methods, and ensuring data security and user privacy protection, JD can effectively address these challenges, thereby improving the quality of customer service and maintaining its leading position in a highly competitive market.

2.3 Data analysis and decision support requirements

When discussing the challenges and opportunities facing JD Group, especially in terms of the needs for data analysis and decision support, we must first recognize the core position of data as a strategic resource of the enterprise. With the booming development of the digital economy, data has become a key driver to drive corporate innovation, optimize operations and enhance customer experience. However, faced with the business environment of VUCA, which stands for volatility, uncertainty, complexity and ambiguity, as well as fierce market competition, how JD Group can effectively use data analytics to support its decision-making process has become an urgent problem to be solved.

On the one hand, JD Group needs to deal with the challenges brought by the rapid changes in the market. Changing consumer demands and evolving competition require companies to respond quickly and adjust their business strategies and operating models. In this case, the traditional decision-making model can no longer meet the rapidly developing needs, and the data-based decision support system is particularly important. Through real-time analysis of massive data, JD.com can more accurately predict market trends and work out more accurate business strategies.

On the other hand, while digital transformation has brought unprecedented opportunities for JD.com Group, it has also brought a series of challenges. The effective integration of data and the improvement of analytical capabilities have become key. Jd Group not only has user behavior data from e-commerce platforms, but also data from multiple links such as logistics and warehousing. How to efficiently integrate these data, extract valuable information and turn it into viable business insights is an important issue for JD.com to solve. In addition, data security and privacy protection are also issues that JD.com must pay attention to when conducting big data analysis, and the risk of any data breach could have a serious impact on the company's reputation.

Further, with the continuous progress of artificial intelligence and machine learning technology, JD Group's application in data analysis is also facing the need to upgrade. Utilizing advanced data analysis technologies, such as predictive analytics and pattern recognition, can help JD better understand customer needs, optimize inventory management, improve logistics efficiency and even increase user stickiness through personalized recommendations. However, it also means that JD.com needs to invest more resources to train data analysis talents and update technical facilities to maintain its competitive edge in the market.

Finally, it is worth noting that JD.com Group also needs to take into account the objectivity and accuracy of data interpretation when using data analysis to support its decision-making process. The results of data analysis often depend on the setting of the algorithm and the quality of the data. Therefore, establishing a sound data governance system to ensure the accuracy and integrity of data is crucial to improve the quality and efficiency of decision-making.

To sum up, despite all the challenges, by strengthening its data analysis capabilities and effectively applying these analysis results in the decision-making process, JD Group is undoubtedly able to better grasp market opportunities and achieve sustainable development. This is not only a technical challenge, but also a comprehensive test of the company's strategic thinking and organizational capabilities.

Driven by the wave of digitalization, Jingdong Group, as a leader in the e-commerce industry, is facing unprecedented modernization demands for its human resource management. With the continuous progress of data technology, the traditional human resource management model has been unable to meet the rapidly developing business environment and complex employee needs. Therefore, Jingdong must take innovative measures to combine human resource management with advanced digital technology to enhance overall management efficiency and employee job satisfaction.

For JD.com, digital transformation is not only a technological upgrade, but also a major change in corporate culture and organizational structure. In terms of

human resource management, this means the need to shift from simple personnel management to a comprehensive strategic partner role that drives the implementation of talent strategies through precise data insights. For example, by using big data analysis technology, JD.com can more accurately predict talent needs and achieve optimal allocation of human resources. In addition, the application of artificial intelligence technology, such as intelligent recruitment systems and employee service robots, can not only improve the efficiency and quality of recruitment, but also improve the working environment and experience of employees.

However, the introduction of technology has also brought new challenges. How to ensure that employees' skills match and continue to grow in a digital environment is an important issue that JD.com needs to face. In this context, lifelong learning and career development programs are particularly important. By establishing online learning platforms and virtual training centers, JD.com can provide employees with readily accessible learning resources and personalized career development paths, thus promoting employees' personal growth and the company's strategic goals to advance in tandem.

In addition, working patterns in the digital age are more flexible and diverse, with remote working and flexible working hours becoming the norm. This has put forward higher requirements for JD's human resource management, and how to maintain employees' mental health and work-life balance while ensuring work efficiency has become an urgent problem to be solved. Implementing effective remote monitoring and employee support strategies, such as regular health checks, psychological counseling and team-building activities, will be key for JD.com to maintain high employee satisfaction and low turnover rate.

By adopting forward-looking technology solutions and humanized management strategies, Jingdong can not only optimize the current human resource allocation, but also maintain a competitive advantage in the future development, and realize the common growth and development of enterprises and employees.

CHAPTER 3

STRATEGIC OPTIONS FOR IMPROVING THE EFFICIENCY OF DIGITAL MANAGEMENT TECHNOLOGY

3.1 Application of artificial intelligence in customer service

In today's digital age, artificial intelligence (AI) has become a key tool for businesses to improve service quality and efficiency. Jd.com Group, as a leading e-commerce platform in China, has seen its deep application of AI technology not only optimize customer experience, but also greatly improve operational efficiency. This article will explore how JD Group is revolutionizing its customer service sector through AI technology, thereby setting a new benchmark for the e-commerce industry.

JD.com has used AI technology to build an intelligent customer service system that can handle a large number of customer inquiries and provide 24-hour service. Through natural language processing (NLP) technology, JD.com's intelligent customer service is able to understand customers' inquiry intentions and provide accurate responses. The application of this technology not only reduces the work burden of manual customer service, but also significantly improves the response speed and service quality.

In addition to basic question-and-answer services, JD.com's AI system is also able to make personalized recommendations based on customers' shopping history and behavior patterns. This function is implemented through deep learning algorithms, which can analyze huge amounts of data and identify the potential needs of users, so as to push more accurate product information. AI customer service is responsible for more than 90 percent of Jingdong's customer service, only in 2023 during the Jingdong "Double 11" cumulative consultation service of more than 1.4 billion times, it can shorten the waiting time of customers by more than 50 percent. "618" in 2023 is the 20th anniversary of Jingdong. Jingdong has

made remarkable achievements all the way through its growth. Jingdong's overall revenue in 2023 exceeded one trillion yuan, and Jingdong's intelligent customer service played a pivotal role here. During this period, the number of consulting services exceeded 490 million times, 160,000 third-party merchants were served, and logistics intelligent outbound booking exceeded 2.67 million. At the same time, a total of 250 million conversations have been completed intelligent quality inspection and risk control.

In addition, the online procurement process of some enterprise customers often requires the procurement personnel to confirm the receipt of the purchased materials on the internal management platform after receiving them. In order to remind customers to timely confirm the receipt of goods, in the past often need manual customer service to remind customers, not only low efficiency, high labor costs, the actual effect is often unsatisfactory. With the wide application of Jingdong Yinxi big model in more industries and industrial scenarios, Jingdong Cloud's Yinxi AI outbound call solution has carried out AI outbound call cooperation with 400+ brand customers.

Previous relevant statistics show that Jingdong intelligent customer service can improve the monitoring efficiency of risk public opinion by 65%, and the accuracy rate is 95%; It can also provide service robots for a series of merchants, which can reduce the service cost of merchants by 65% and improve the reception efficiency by 45%.

Based on the accumulation of massive enterprise service experience and the deep understanding of customer needs, Jingdong Enterprise business began to use Jingdong Yunyan AI external response in the process of after-sales performance service, which significantly improved the overall efficiency of performance, acceptance, reconciliation and settlement, greatly shortened the capital use cycle of enterprise customers, and effectively improved the efficiency of capital flow.

According to statistics, Jingdong's enterprise business prompts customers to confirm receipt of goods through AI outbound call + SMS touch notification, and the overall reach rate reaches 99%. Within 48 hours after the information reaches,

more than 52% of customers confirm receipt of goods. In addition, compared with traditional manual outbound call, the customer service cost of AI outbound call is reduced by 95%, while the timeliness of reaching customers is increased by 80%.

This not only enhances the user's shopping experience, but also improves the conversion rate and user loyalty of the platform.

JD.com's AI system has also shown strong capabilities in handling customer complaints and feedback. Through sentiment analysis technology, the system can identify customer emotions, and for feedback with negative emotions, the intelligent system will prioritize and quickly feedback to relevant departments. This kind of timely feedback mechanism greatly enhances customer satisfaction, and also helps enterprises to find and solve potential problems in a timely manner.

Going one step further, JD Group has also developed an AI-based predictive maintenance system. Through in-depth analysis of past data, the system can predict potential logistics problems and intervene in advance. For example, if the system predicts delivery delays in a certain area, it will inform the logistics team in advance to make adjustments, thereby avoiding any impact on customer service.

Through these highly integrated AI applications, JD Group has not only achieved remarkable results in the field of customer service, but also provided valuable references for the entire e-commerce industry. The successful application of AI technology demonstrates the great potential of digital management technology in modern business management, especially in improving the quality and efficiency of customer service. With the continuous progress of AI technology, JD Group is expected to achieve more innovations in the field of customer service in the future and continue to lead the industry standard.

3.2 The role of big data analytics in supply chain optimization

Driven by the wave of digitalization, Jingdong Group, with its forward-looking perspective and innovative spirit, has achieved the optimization of business processes and significant improvement of efficiency through the in-depth

application of big data analysis technology in the field of supply chain management. This practice not only highlights the value of data empowerment, but also provides a valuable reference for the digital transformation of the e-commerce industry. Smart supply chain stems from the integration of digitalization, technological innovation and best practices

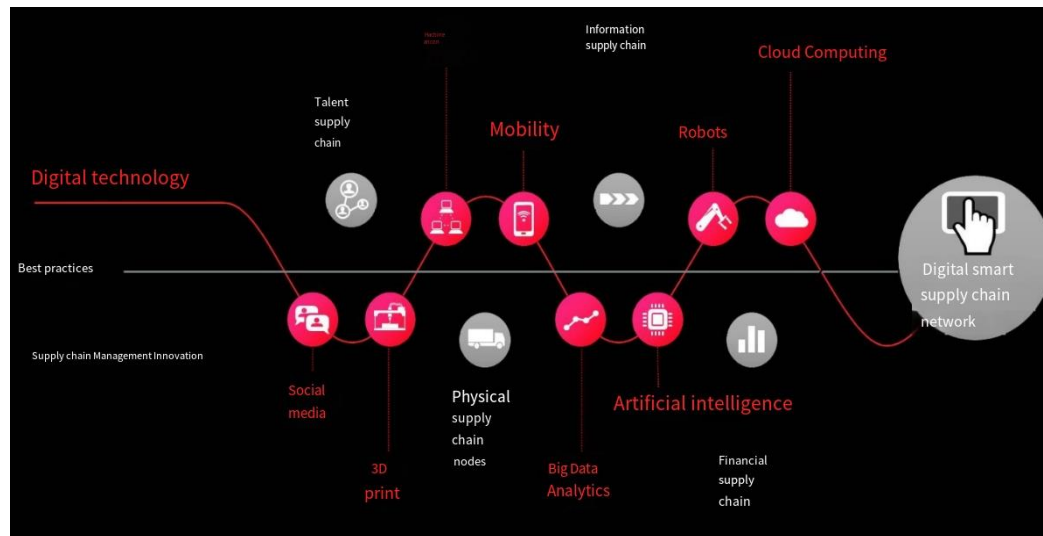


Figure 3.1. Supply chain network diagram

Data source:

https://wenku.baidu.com/view/a003e7285aeef8c75fbfc77da26925c52cc591c4.html?fr=hp_Database&_wkts_=1725772894338

By integrating massive transaction data, user behavior data and market dynamic information, Jingdong has built a comprehensive and in-depth data analysis system. The system, with its accurate forecasting model and real-time data processing capabilities, provides scientific decision support for key links such as inventory management and logistics distribution. This data-driven decision-making model effectively reduces the risk of overstocking, while ensuring a high degree of matching between commodity supply and market demand.

Further, JD.com uses big data technology to conduct a comprehensive analysis of multiple nodes in the supply chain, identify potential bottleneck problems, and make targeted optimization adjustments. For example, by digging deeply into consumers' purchasing behaviors, JD can accurately predict commodity demand trends in various regions, thus adjusting inventory layout and logistics

arrangements in advance, greatly shortening the delivery time of goods from warehouses to consumers.

In addition, big data also plays an important role in enhancing supply chain transparency and synergistic efficiency. Jd has ensured the efficient operation of the entire supply chain by establishing a data-sharing platform to realize real-time information exchange with partners such as suppliers and logistics companies. This data-based collaboration model not only speeds up the response speed, but also enhances the adaptability of all parties to market changes.

It is worth mentioning that JD's big data analysis ability is also reflected in its deep insight into consumer needs. By analyzing data such as user evaluations and search habits, JD.com is able to capture market trends in a timely manner and quickly adjust product strategies to meet consumers' individual needs. This not only improves users' shopping experience, but also provides brand owners with more accurate market positioning suggestions.

Tsingtao Beer, for example, is the world's fifth largest brewer, with more than 60 factories, more than 300 sales regions, 1,500 + SKUs, and a highly complex supply chain. Based on years of deep insight in the consumer goods industry and the accumulation of intelligent supply chain, JD Logistics has built an intelligent supply plan decision-making platform for Tsingtao Beer, transforming the traditional step-by-step plan formulation and single point optimization into an overall plan, which not only realizes end-to-end cost optimization and efficiency improvement of the supply chain, but also further improves the agility of Tsingtao Beer's supply chain plan. It can quickly respond to supply chain emergencies. Through the output of the end-to-end annual budget and monthly supply plan, the intelligent supply plan decision platform has saved Tsingtao Beer tens of millions of yuan so far.

The cooperation between JD Logistics and Nestle can be traced back to several years ago, as early as 2016, when the two sides first launched B2C delivery; In recent years, the two parties have continued to expand the scope of cooperation in basic warehouse distribution. At present, the two parties are jointly

building Tianjin/Dongguan regional warehouse and improving the efficiency of Nestle's B-end supply chain management. In the field of transportation, Jingdong Logistics provides multiple types of transportation services such as normal temperature, temperature control trunk, city distribution, express delivery, etc., to meet the needs of Nestle in all scenarios. The following is a case of JD helping Nestle brand empowerment in 2017, and the effect is obvious:

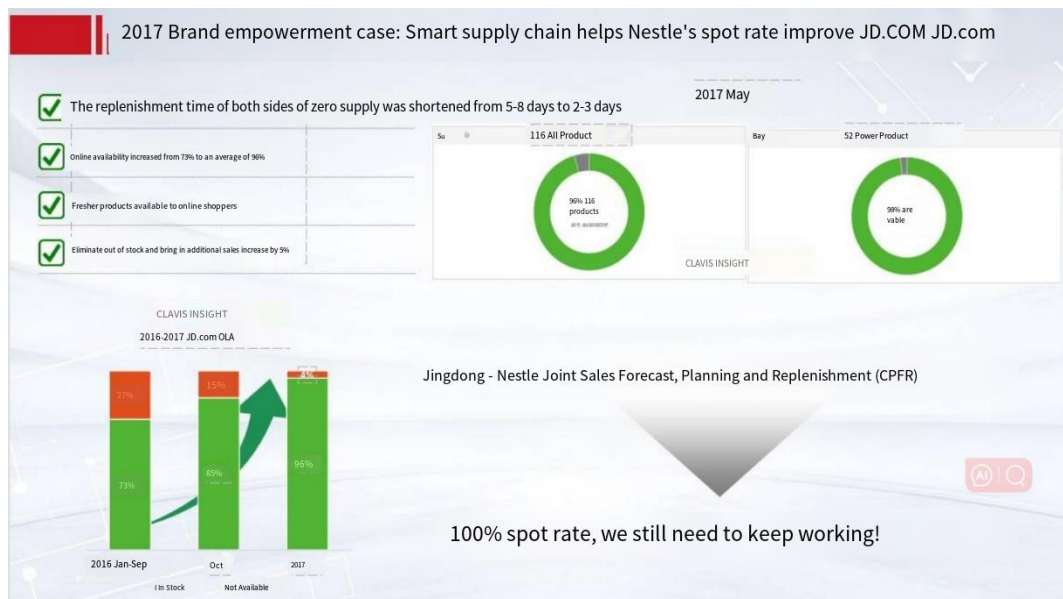


Figure 3.2. Smart supply chain helps increase Nestle's spot rate

Data source:

https://wenku.baidu.com/view/a003e7285aeef8c75fbfc77da26925c52cc591c4.html?fr=hp_Database&_wkts_=1725772894338

It can be seen that Jinghui Smart supply chain solution is a supply chain innovation model launched by Jingdong Logistics Value supply Chain based on years of supply chain optimization and customer service experience. By providing one-stop supply chain services of "consulting planning + Jinghui system + planned operation", value supply chain can help customers quickly identify problems in supply chain planning, planning and performance, and achieve rapid diagnosis, accurate optimization and efficient implementation. Up to now, Jingdong Logistics value supply chain has served more than a thousand enterprise customers, and the landing success rate has reached more than 95%.

A typical representative of modern circulation -- Jingdong's data scale



Figure 3.3. Smart supply chain helps JD improve efficiency

Data

source: https://wenku.baidu.com/view/a003e7285aeef8c75fbfc77da26925c52cc591c4.html?fr=hp_Database&_wktks_=1725772894338

To sum up, Jingdong Group has demonstrated the strong potential of digital management technology through the application of big data analysis in supply chain optimization. This not only improves the company's operational efficiency and market competitiveness, but also provides a successful example of digital transformation for the e-commerce industry and even the broader business sector. With the continuous progress of technology and the deepening of application, it is expected that Jingdong can continue to explore on the road of digital management in the future, leading the industry to a more intelligent and efficient future.

3.3 Application of cloud computing in data storage and processing

In discussing the wide application of Jingdong Group's digital management technology, the role of cloud computing technology in data storage and processing is particularly critical. As one of the leading e-commerce platforms in China, JD.com has effectively solved the challenges of large-scale data processing and storage by leveraging the powerful functions of cloud computing, thereby optimizing its business processes and customer service experience.

In response to the business needs in the storage field, the new generation of distributed storage platform launched by Jingdong Cloud -- Yunhai, as a self-developed, high-performance, unified engine storage product, after more than 10 years of Jingdong's own complex scene experience, not only can meet the business demands of various industries for cloud disk high performance and low delay, but also through the creation of storage and computing separation technology architecture, It can save more than 30% of the overall infrastructure cost for customers. It has been widely used in emerging scenarios such as storage and computing separation, high-performance computing, AI training, big data storage, as well as traditional scenarios such as audio and video storage, picture storage, data reports, disaster recovery storage, and traditional storage replacement.

The cloud sea block storage performance indicator The average latency of a million IOPS is less than $200\mu\text{s}$, the output IOPS of a single cluster is 1000 IOPS, and the performance is close to that of local NVMe disks. The new architecture mode of full append ensures the strong consistency of multiple copies, 100% write high availability, and maintains system availability even when multiple copies fail. Block storage 1.375 copy production level EC, object storage as low as 1.1x copies of low redundancy, and the industry's largest QLC-SSD landing, cost technical indicators leading the industry.

Cloud Sea compared with traditional distributed storage		
	Cloud storage	Traditional distributed storage
Performance index	10 Delay 100 μs Output of a single cluster is 10 million IOPS	10 Latency of about 1000 μs single cluster output 2 to 4 million IOPS
Availability/reliability	100% write high availability The system is still available when multiple replicas fail	At least two normal copies are required to guarantee availability; Unavailable when multiple replicas fail
Failure recovery time	There is no election mechanism. If a fault occurs, service 10 is running Recover within 1 second, perfectly supporting sensitive services	The fault election mechanism causes the fault recovery time to be 10 to 30 seconds, which greatly affects sensitive services
cost	Production environments can use EC storage and have good support for QLC The largest scale practice in China	Production environments using three-copy storage are not friendly to QLC support

Figure 3.4. Storage and computing separation technology of Jingdong Yunyunhai
Data

source:https://news.mydrivers.com/1/910/910212.htm?ref=https%3A//www.baidu.com/link%3Furl%3DQrFyKbzWDOYcTdQqWolJFEuRZqna_pHS1UqVYzKnfiAYuUM7AfyuXPueMh-Nlg0UfjzIVSUOljYU5KYJtgknE4_%26wd%3D%26eqid%3Db16d9c2e02bf34020000000566dd4dea

Cloud computing provides JD with a highly flexible and scalable data storage solution. With the surge in e-commerce transactions, traditional data storage methods have struggled to cope with the increasing data volume and processing demands. By adopting cloud services, JD.com has been able to dynamically adjust resource allocation according to business needs, not only improving the efficiency of data processing, but also reducing operating costs. In addition, the high availability and redundant backup capabilities of cloud services ensure data security and business continuity, even in the face of hardware failure or cyber attacks, data is guaranteed without loss and services are not interrupted.

In terms of data processing, the application of cloud computing enables JD.com to implement complex data analysis and real-time processing. Using high-performance computing resources on the cloud platform, JD.com can run various data mining and machine learning algorithms to better understand consumer behavior, optimize inventory management and improve supply chain efficiency. For example, through data analysis of users' purchase history and browsing behavior, JD.com is able to implement personalized product recommendations, which not only enhances the user experience, but also significantly improves sales efficiency.

Further, cloud computing has also facilitated JD's innovation in emerging markets and services. Through the cloud API and service platform, JD is able to quickly deploy new applications and services, such as smart logistics, fintech solutions, etc., which not only expand JD's business scope, but also create new revenue streams for it. At the same time, the cloud-based cooperation platform enables JD.com to seamlessly connect with third-party partners to jointly provide a richer variety of services, thus building a more open and collaborative business ecosystem.

Through its ultra-low latency RDMA, innovative and highly fault-tolerant distributed consistency protocol, and user-mode NVMe, Yunhai applies the storage and computing separation to the production environment on a large scale, achieving a single instance read and write delay of less than 100 μ s, the ultimate

performance of a single disk to provide 1 million IOPS, and complete decoupling of computing and storage.

Yunhai's self-developed storage and computing separation architecture brings higher storage reliability, availability and resource expansion flexibility to enterprises, and successfully increases disk utilization to 90%. Build the PaaS service supported by the storage separation architecture, so as to achieve: first, the decoupling of computing and storage, independent scheduling of storage and computing resources, no longer have a fixed ratio, and the resource utilization rate is increased to more than 85%; Second, multi-copy highly reliable storage products, always show "zero fault" storage for the business, the availability of the business layer has been greatly improved; Third, resources are completely scheduled in the cloud, and capacity expansion operations are completed in seconds, greatly releasing the pressure of operation and maintenance personnel.

At present, the technical architecture of storage and computing separation based on cloud sea has been fully implemented in Jingdong. Compared with the form of storage and computing, the utilization rate of storage resources has been increased to more than 85%, and the comprehensive cost of PaaS has been reduced by 50%.

Based on the rich storage application scenarios within Jingdong Group and the ultimate pursuit of cost reduction and efficiency improvement, Yunhai is promoted to achieve high-speed iteration driven by actual business. In terms of performance, Yunhai has been tested by Jingdong 618, Jingdong 11.11 and other high-traffic and high-concurrency scenarios for many years. At the industry level, it has covered different business application scenarios in retail, logistics, finance, health, industrial and other industries.

In the past Jingdong 618, the storage and computing separation system architecture based on the cloud Sea has made the storage and computing separation, which was difficult to be fully implemented due to performance problems, can still provide a silky smooth storage experience in the face of the pressure of throughput TB/s and hundreds of millions of IOPS.

First INFORMS Prize winner Asian companies have invested nearly \$130 billion in R&D since technology transformation

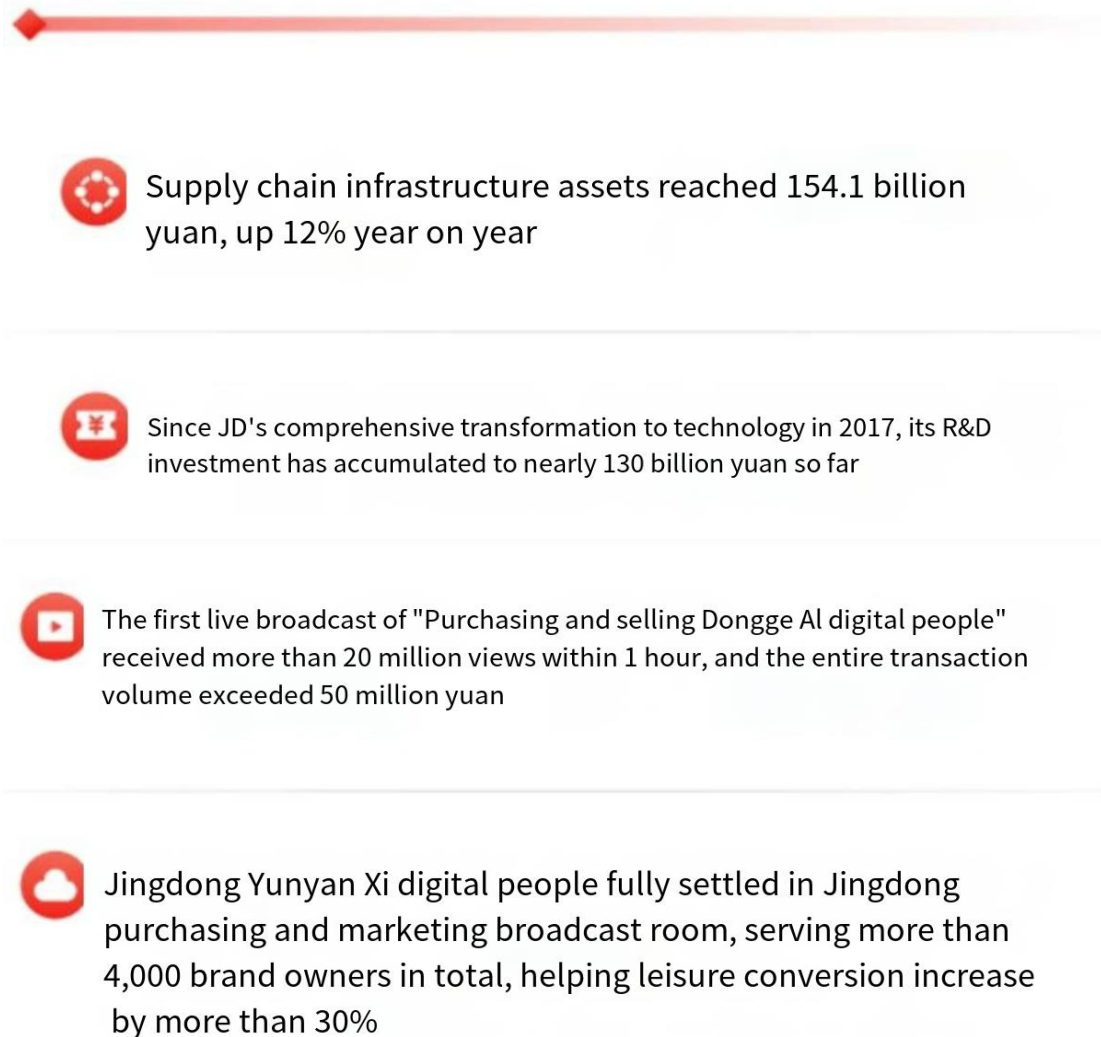


Figure 3.5. Jingdong Cloud Practice Application

Data source: http://tech.cnr.cn/techph/20240517/t20240517_526708065.shtml

As the first entrepreneur digital person live broadcast form in the industry, "Caijie Dongge AI Digital Person" landed in Jingdong Caijie live broadcast room in April, with more than 20 million views within 1 hour, which also became a milestone for digital people to create value in live broadcast applications. As a self-developed technology product of Jingdong Cloud full stack, Jingdong Cloud Yan Xi digital people move from technology exploration to large-scale landing, from internal scenes to external industries, focusing on e-commerce with goods scenes, fully settled in Jingdong Mining and marketing broadcast room, has served more

than 4,000 brand owners, helping leisure transformation increase by more than 30%.

In order to reduce the application threshold for small and medium-sized businesses to try out digital human live broadcast, Jingdong Cloud will make the large model small, and businesses can start broadcasting through the cloud with one click, further reducing the cost of broadcasting by 30%, truly realizing the seamless switch between human anchors and digital human anchors, and meeting the diversified marketing, service and operation needs of brands.

To sum up, cloud computing plays a crucial role in JD Group's digital management practice. Through efficient data storage, flexible resource management, powerful data processing capabilities and an open service platform, cloud computing has not only greatly improved JD's operational efficiency and customer service quality, but also provided solid technical support for it to maintain its leading position in the fierce e-commerce competition. Therefore, for other enterprises, a deep understanding and effective use of cloud computing technology will be one of the key strategies to promote digital transformation and enhance competitiveness.

In discussing the application practice of Jingdong Group's digital management technology, the application of Internet of Things technology in logistics management is particularly important. The Internet of Things technology, through its unique ability to connect objects in the physical world to the Internet, provides JD with an innovative way to optimize its logistics system, which not only improves efficiency, but also greatly improves the customer experience.

The application of the Internet of Things technology in logistics management by JD Group is mainly reflected in two aspects: intelligent warehouse management and distribution optimization. In terms of smart warehouse management, JD.com has realized real-time monitoring and management of inventory by deploying a large number of sensors and radio frequency identification (RFID) tags. The devices are able to automatically collect data, such as the location, quantity and status of goods, etc., which are then transmitted to a central processing system.

This automated data collection and analysis process not only significantly improves the efficiency of warehouse operations, but also reduces human error and ensures the accuracy of inventory data.

In addition, the Internet of Things technology also enables JD to achieve more refined inventory management. By accurately tracking each item, JD.com can adjust inventory levels in real time and respond to changes in market demand, thereby reducing overstock or stock shortages. This not only optimizes inventory costs, but also improves customer satisfaction, as customers can get the products they want more quickly.

When it comes to distribution optimization, the application of IoT technology similarly plays a key role. JD.com's delivery vehicles are equipped with various sensors capable of transmitting location information, vehicle status and road condition information in real time. The data is used to dynamically adjust delivery routes and plans to avoid traffic-congested areas and ensure timeliness and reliability of delivery services. Meanwhile, real-time monitoring during the delivery process can also ensure the safety of goods and reduce loss and theft incidents during the delivery process.

Technology has also facilitated the implementation of JD.com's "unmanned delivery" project. Through autonomous delivery vehicles and drones, JD.com is able to implement fully automated delivery services in some specific areas. These unmanned delivery tools are seamlessly connected with other systems through the Internet of Things technology to achieve full automated delivery from the warehouse to the hands of customers, greatly improving delivery efficiency and reducing labor costs.

According to the 2024 Interim Results Report published in August 2024. The earnings report showed that JD Logistics' revenue in the first half of 2024 was 86.345 billion yuan, up 11 percent from 77.761 billion yuan in the same period last year. JD Logistics' gross profit in the first half of 2024 was 8.484 billion yuan, up 68.7 percent from 5.03 billion yuan in the same period last year.

	unaudited Six months ended June 30		
	2024	2023	Year-on-year change
	(RMB thousand, percentage excluded)		
income	86344759	77761309	11.0%
Gross profit	8484133	5029922	68.7%
Pre-tax profit/(loss)	2889199	(382212).	inapplicability
Period profit/(loss)	2567348	(528874).	inapplicability
Non-ifrs profit for the period 1)	3118186	114171	2631.2%
Period non-IFRS margin 1	3.6%	0.1%	3.5 percentage points
Non-international financial reporting standard EBITDA1 for the period	9283156	5,800.558	60.0%

Figure 3.6. Screenshot of part of JD Logistics' 2024 interim results report

Data source: <https://baijiahao.baidu.com/s?id=1807451596004872707&wfr=spider&for=pc>

JD Logistics' revenue for the second quarter of 2024 was 44.2 billion yuan, up 7.7% from 41 billion yuan a year earlier; Gross profit was 5.25 billion yuan, up 54.8 percent from 3.394 billion yuan a year earlier. Jd Logistics' profit in the first half of 2024 was 2.245 billion yuan, up 342% from 508 million yuan in the same period last year; Adjusted net profit was 2.456 billion yuan, up 197.4% from 826 million yuan in the same period last year; And an adjusted net interest rate of 5.6 per cent.

In the first half of 2024, JD Logistics deepened cooperation with multiple head customers in industries such as home appliances, clothing and drinks, and created standardized service products for waist customers, promoting the steady growth of revenue of external integrated supply chain.

In the first half of the year, the revenue of JD Logistics integrated supply chain customers reached 41.8 billion yuan, and the revenue from external integrated supply chain customers reached 15.4 billion yuan. The number of JD Logistics' external integrated supply chain customers grew to more than 64,000, with the average revenue per customer reaching 239,000 yuan.

In response to the pain points and needs of various industry segments, JD Logistics has enhanced its integrated supply chain solutions and product service capabilities. For example, in view of the high return rate of clothing goods and the trend of integration of goods in online and offline channels, it has launched solutions and service products for the apparel industry, creating a more flexible and agile supply chain system. In this quarter, Jingdong Logistics cooperated with a

certain clothing group with multiple international brands in multiple scenarios such as forward and reverse, B2C and B2B pallet, store allocation, etc. The accumulated operational and system experience will support Jingdong Logistics to expand more international customers.

To sum up, the application of Internet of Things technology in Jingdong Group's logistics management not only improves the efficiency and accuracy of logistics operations, but also greatly improves customers' shopping experience. This innovative practice not only showcases JD.com's forward-looking and innovative ability in digital transformation, but also provides valuable experience and inspiration for other enterprises in digital upgrading in the field of logistics management. By continuing to explore and utilize the potential of the Internet of Things and other digital technologies, JD Group is constantly driving innovation in the logistics industry, leading new trends in e-commerce and smart logistics.

3.4 Realization and effect of inventory management automation

Jingdong is the most powerful self-operated e-commerce shopping enterprise in China, and warehousing is an important part of its supply chain. It has a warehousing business system consisting of supply chain management, logistics planning, warehousing operation and trunk transportation. Among them, the warehouse operation is fully responsible for the management of warehousing goods and order processing, and the warehouse includes 3c, maternal and child food, large warehouse, books, and general merchandise clothing.

Jingdong has carried out an accurate analysis of the warehouse delivery process on the design of the original delivery management process. Outbound quality and customer complaint rate reflect whether the management of enterprises is in place, especially for large self-operated enterprises such as Jingdong, no matter which type of enterprises will refine the outbound process, improve the outbound quality, reduce the customer complaint rate, and improve customer

satisfaction, which are the necessary ways to enhance the value and competitiveness of enterprises.

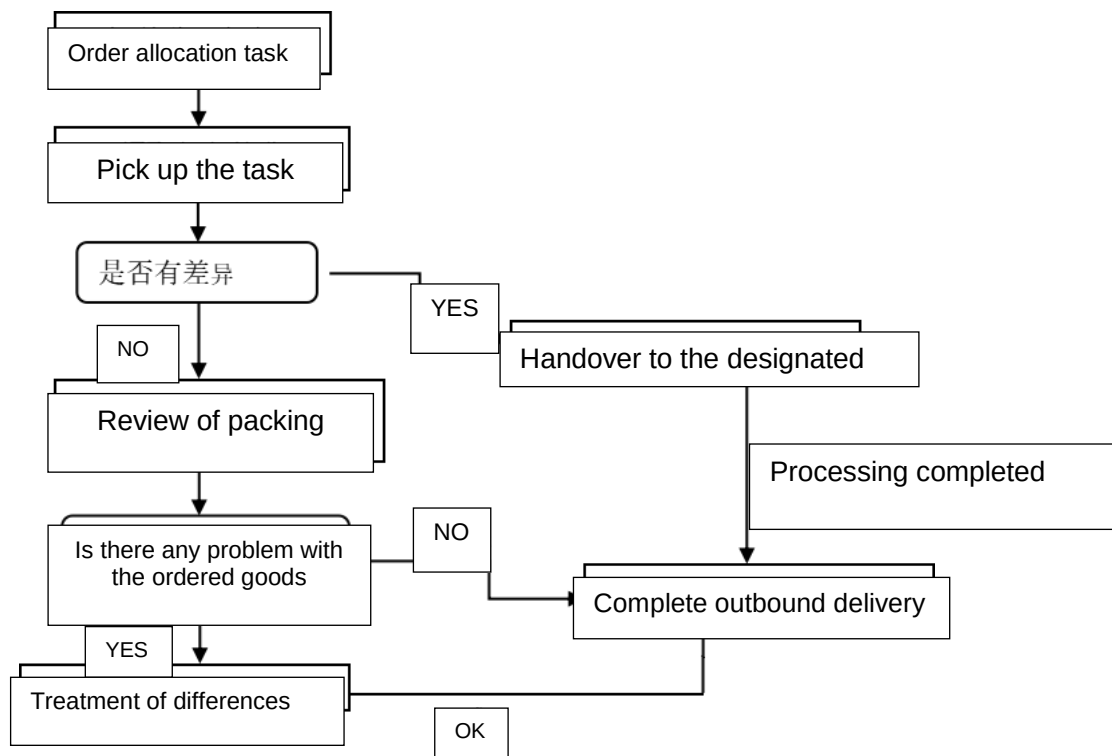


Figure 3.7. Flow chart of A1 warehouse outbound management

Data source: https://wenku.baidu.com/view/eff9272601020740be1e650e52ea551811a6c952.html?fr=income2-doc-search&_wkt_s_1725794664906&wkQuery=%E4%BA%AC%E4%B8%9C%E5%BA%93%E5%AD%98%E7%AE%A1%E7%90%86%E8%87%AA%E5%8A%A8%E5%8C%96

For example, the FDC warehouse in Changsha Park of Central China Branch mainly focuses on 3c, food and maternal products, and general merchandise and clothing, which is less complex than that in Wuhan Park. Changsha Park has been moved from Changsha Xingsha to Wanwei Logistics Park in Wangcheng District, Changsha. Through digital empowerment, A1 library has achieved remarkable results after optimization:

(1) Picking efficiency is improved. The improvement of picking efficiency reflects the improvement of the quality of the order. The improvement of picking efficiency fully improves the utilization rate of the warehouse and reduces the inventory overhang.

Picking quality is improved. The reduction in picking error rate makes the workload of the staff dealing with picking anomalies less and reduces the cost of the business.

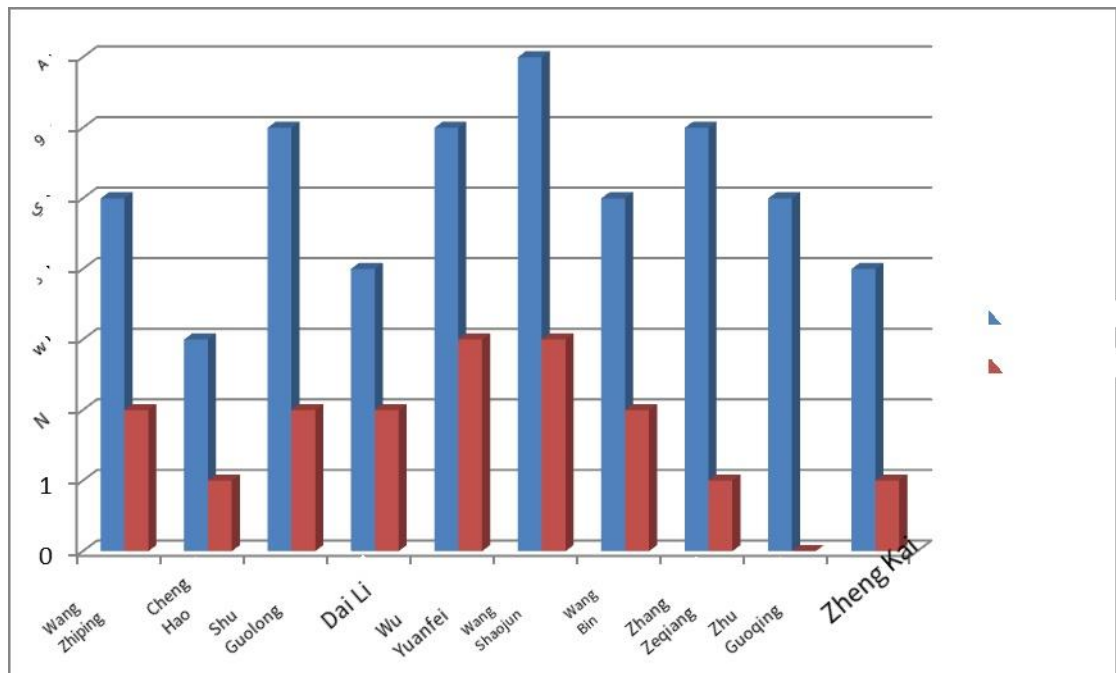


Figure 3.8 Comparison diagram of the number of problems in the picking group before and after optimization

Data source: https://wenku.baidu.com/view/eff9272601020740be1e650e52ea551811a6c952.html?fr=income2-doc-search&_wks_=1725794664906&wkQuery=%E4%BA%AC%E4%B8%9C%E5%BA%93%E5%AD%98%E7%AE%A1%E7%90%86%E8%87%AA%E5%8A%A8%E5%8C%96

As can be seen from the figure above, after optimization, the data of the picking group decreased significantly before and after optimization, and the picking quality of Shu Guolong, Wang Shaojun, Zhang Zeqiang and Zhu Guoqing improved after optimization. Cheng Hao and Dai Li had a slower reduction, but they also achieved a more obvious change.

In addition, the quality of packaging operation is better, one is to deal with the problems of the day in a timely manner. After adding packaging multi-cargo storage area, it can timely deal with multi-cargo on the same day. The staff who had problems before the packaging group was not optimized had a higher number of problems in a single day, and the number of errors in a single day was significantly reduced after optimization; Second, the work quality improvement promotes the efficiency improvement. The improvement of work efficiency speeds up the delivery speed and reduces the risk of KPI indicators.

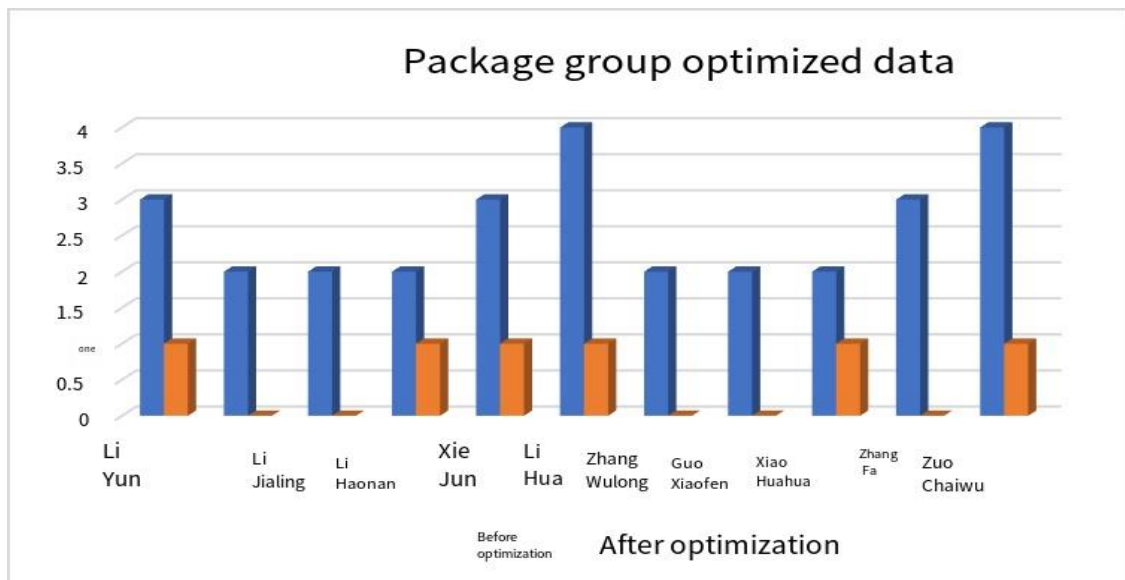


Figure 3.9. Comparison diagram of the number of problems in the packaging group after optimization

Data source: https://wenku.baidu.com/view/eff9272601020740be1e650e52ea551811a6c952.html?fr=income2-doc-search&_wks_=1725794664906&wkQuery=%E4%BA%AC%E4%B8%9C%E5%BA%93%E5%AD%98%E7%AE%A1%E7%90%86%E8%87%AA%E5%8A%A8%E5%8C%96

From the comparison chart of the number of problems in the packaging group after optimization in the above figure, it can be seen that the number of problems in the packaging group decreased significantly in the second week. Among them, Mao Lewei, Li Jialing, Zhang Wulong, Guo Xiaofen, and Zhang Fa did not have any abnormal problems, and the problems of others were gradually decreasing.

Modern logistics, is no longer a simple traditional acceptance, delivery of goods, need to rely on scientific and technological innovation to play a leading role in releasing new productivity.

Jingdong Logistics said that the company always puts technological innovation in the first place, is committed to the organic combination of innovative technical services and multiple scenarios, explore cutting-edge technology, through digital, intelligent, hardware and software integration of logistics technology products and solutions, effectively promote cost reduction and efficiency and industrial upgrading, promote the high-quality development of the industry. For example, JD.com uses machine learning algorithms to analyze historical sales data, predict consumer demand in different regions and time periods, and adjust the

delivery plan accordingly to ensure that goods can be delivered from the warehouse to consumers in the shortest possible time.

At present, the company's technology-driven products and solutions cover the main processes and key links of the supply chain, including park, warehousing, sorting, transportation and distribution, and create a logistics technology hardware and software product matrix covering the whole link of the supply chain, breaking through key scenarios such as intelligent warehousing and intelligent logistics park. Has formed the technical service capability of the whole scene of the supply chain.

By the end of 2023, Jingdong Logistics has 4,600 R&D personnel and more than 4,000 authorized patents and software, including more than 2,000 patents related to automation technology and unmanned technology.

In 2023, JD Logistics invested 3.571 billion yuan in R & D, with a cumulative investment of 9.507 billion yuan in the past three years.

Relying on technology, JD Logistics has built a huge global logistics service network, which is a core component of JD Logistics' integrated supply chain solutions and logistics service capabilities.

The year 2023 will mark the tenth year of JD Logistics' operation. Yayi has become an integration of advanced logistics technology and technological innovation, representing the industry-leading standard for warehousing technology, the company said. In 2023, the company opened and upgraded Yayi in Qingdao, Kunshan, Lanshou and other cities. Among them, Kunshan Asia No. 1 Intelligent Industrial Park has more than 80 automatic sorting lines, which can sort more than 4.5 million parcels per day, representing the world's leading level.

Overseas, JD Logistics already has nearly 90 overseas warehouses, bonded warehouses and direct mail warehouses, providing integrated supply chain logistics services to customers around the world. With overseas warehouses as the core, the company promotes express logistics in the United States, Europe, Oceania, Malaysia and other regions to greatly speed up, in many countries around the world, local express delivery can be achieved as soon as "1 day". The company

claims that it provides high-quality, efficient and comprehensive integrated supply chain services for more and more Chinese overseas brands and overseas local customers.

Along with the continuous improvement of integrated supply chain service capabilities, Jingdong Logistics' ultimate service has also been upgraded. In 2023, on the basis of "same-day delivery" and "next-day delivery", Jingdong Logistics started the personal delivery timeliness plan, "next morning delivery". Now, this service has covered 9 cities such as Beijing and Shanghai, and customers can receive packages at 8 am the next day at the soonest. In Hong Kong, China, Jingdong Logistics city express can achieve the fastest delivery of 4 hours, the latest night delivery time extended to 10 p.m.

Therefore, the core reason why JD's logistics system can achieve high efficiency is its deep application of big data analysis and cloud computing technology. By collecting and analyzing massive amounts of data in real time, JD.com is able to accurately predict consumer demand and dynamically adjust inventory allocation, thereby reducing the risk of oversupply or shortage.

In the process of in-depth discussion on how JD Group optimizes employee performance management through digital management technology, we can observe the application of a series of innovative practices, which not only improve the work efficiency of employees, but also greatly enhance the overall operating efficiency of the enterprise. Through the deep mining and intelligent analysis of data, Jingdong has successfully elevated human resource management to a new level, achieving accurate monitoring and real-time feedback on employee performance.

The application of the data empowerment strategy adopted by Jingdong in employee performance management is manifested in the use of big data analysis technology to track employee performance. The application of this technology allows management to obtain real-time data on employee performance, so that management strategies and work assignments can be adjusted in a timely manner. More importantly, it provides employees with immediate feedback on how they are

doing at work and where they need to improve, thereby inspiring self-improvement and career growth.

Furthermore, JD has built a cloud-based employee self-service platform that enables employees to manage their own work goals and schedules, while giving managers more flexibility to adjust team goals and work plans. This kind of platform not only improves the transparency of work, but also facilitates communication and collaboration among employees and between employees and management.

For example, Jingdong has launched RPA (Intelligent Work Robot) with full ownership. This robot is not an entity, but a tool to help employees carry out their work through the technology platform. Any online work can be completed by giving instructions to the robot, such as: open the website, download files, do complex calculations, and send emails to the corresponding objects. When inquiring and solving problems, the biggest demand of employees is "fast". Traditional manual telephone inquiry is often the fastest way for employees, but there are still problems such as long waiting time, which reduces the service experience.

In response to these demands and problems of employees, Jingdong has developed intelligent question-answering robots, so that employees' problems can be solved quickly and well. At the same time, Jingdong launched voice question and answer on the mobile terminal. Employees can leave messages for consultation through the mobile phone, and the system can provide answers after matching the voice recognition and knowledge base. All these measures have greatly improved the employee experience. Because the humanized communication is reduced, the intelligent may lead to a decline in the user experience in the short term, but when the intelligent level is raised to a certain standard, the experience can be improved again.

For another example, the automatic assessment process of intelligent service performance makes the data run, from collection to analysis, in one go. Combined with the data visualization Kanban, each performance indicator is clear at a glance,

and the management can understand where to do well and where to strengthen, decision-making efficiency is improved.

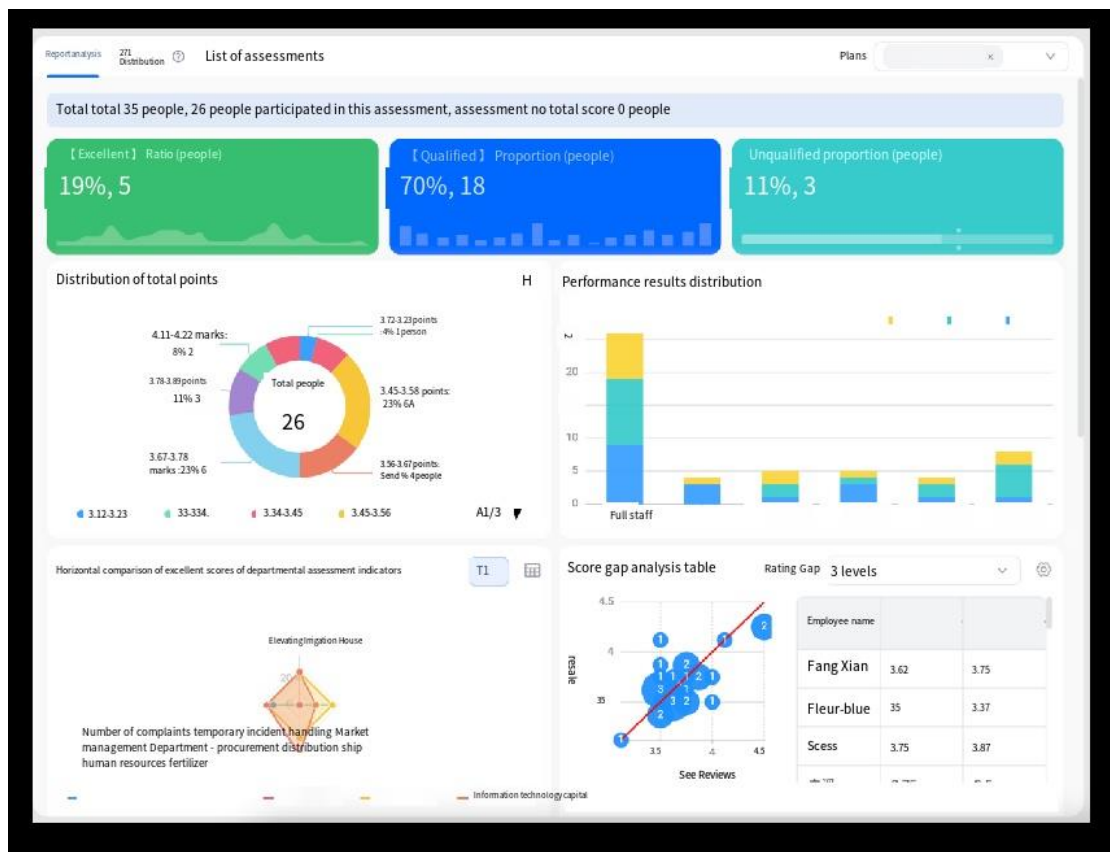


Figure 3.10. Screenshot of automated assessment process

Data source: <https://zhuanlan.zhihu.com/p/696218988>

In addition to the application of technology, JD.com also values the cultural change brought about by digital management. The company encourages a culture based on data-driven decision making, in which each employee is encouraged to evaluate his or her job performance and find opportunities for improvement based on data. The establishment of this culture helps foster a work environment of continuous improvement and innovation that drives the entire organization forward.

However, it is worth noting that despite the many benefits that digital management technology has brought to JD.com, it also faces challenges in its implementation. For example, data privacy and security are always issues that need to be taken seriously in business management. In addition, for some employees, over-reliance on data and algorithms can be confrontational, so the right balance between technology and human care needs to be found.

In short, by implementing advanced digital management technologies, JD Group has not only optimized the employee performance management process, but also improved employees' job satisfaction and the overall competitiveness of the enterprise. This case provides a valuable reference for other enterprises, especially in how to effectively use digital tools to manage and motivate employees. In the future, with the further development and application of technology, expect to see more companies able to maximize the use of human resources through digital management.

Under the tide of digital management technology, Jingdong Group, as a leader in the e-commerce industry, has made remarkable achievements in the practice and effect of automated inventory management. Through in-depth analysis of the case of Jingdong, this section aims to explore the realization of inventory management automation and its significant effects, so as to provide reference and inspiration for modern enterprises in the process of digital transformation.

Jingdong Group has realized the automation and intelligence of inventory management by introducing advanced data analysis technology and artificial intelligence algorithm. The change not only optimizes inventory levels and reduces the risk of overstocking or stock shortages, but also significantly improves the response speed and flexibility of the supply chain. On this basis, JD.com is able to quickly adjust its inventory strategy according to changes in consumer demand, ensuring the timeliness and accuracy of commodity supply.

Specifically, JD.com uses machine learning models to conduct in-depth analysis of historical sales data to predict future demand trends. Compared with traditional inventory management methods, this data-based forecasting method can more accurately reflect the real situation of market demand, so as to guide inventory decision-making. In addition, Jingdong also adopts a dynamic inventory management system, which can monitor inventory status in real time and automatically trigger replenishment requests to ensure inventory levels keep pace with market demand.

From the effect point of view, JD's inventory management automation practice has achieved remarkable results. On the one hand, the inventory turnover rate has been greatly improved, which not only reduces the inventory backlog, but also reduces the storage cost. On the other hand, through accurate inventory management, Jingdong can effectively avoid the loss of orders caused by insufficient inventory, and enhance customer satisfaction and loyalty. More importantly, this efficient inventory management mechanism has won JD.com a valuable competitive advantage in the fierce market competition.

However, the automation of inventory management is not an overnight process. For other companies, JD's experience shows that successful automation of inventory management requires companies to have strong data processing capabilities and flexible technology application mechanisms. At the same time, companies also need to continuously optimize their algorithmic models to adapt to market changes and evolving consumer behavior.

To sum up, JD Group's practice in inventory management automation not only demonstrates the strong potential of digital management technology, but also provides valuable experience and inspiration for other enterprises on the road of digital transformation. By learning from JD.com's successful case, other enterprises can plan and implement their own digital strategies more effectively to achieve the optimization of inventory management and the enhancement of business efficiency.

CONCLUSIONS AND PROPOSALS

In this study, through the in-depth analysis of Jingdong Group's application of digital management technology, the core role of data empowerment in modern e-commerce platform enterprises and its impact on the process of enterprise value creation are revealed. The practice of Jingdong shows that data is not only a collection of information, but also a key resource for enterprises to obtain competitive advantages, promote business innovation and improve operational efficiency.

By integrating and analyzing big data, JD.com not only optimizes customer experience and improves market response speed, but also effectively reduces costs and improves service quality through means such as precision marketing and smart logistics. This process highlights the dual value of data empowerment: on the one hand, it promotes the value co-creation of platform-type enterprises by enhancing their connectivity, analysis and intelligence capabilities; On the other hand, it creates further value by optimizing specific links along the value chain.

In addition, the study also found that JD, through its advanced application of data assets, has not only achieved effective docking at both ends of supply and demand, but also achieved remarkable results in precision marketing and smart logistics. These results are not only reflected in the improvement of financial indicators, but also in the progress of non-financial indicators, such as the enhancement of brand value and the improvement of customer satisfaction.

However, despite JD's remarkable achievements in data empowerment, other e-commerce platform companies still face many challenges in building their own value creation paths. For example, the effective management and utilization of data assets requires companies to have strong technical support and data analysis capabilities, which is still a big problem for many e-commerce companies.

Based on the above research, this paper puts forward the following suggestions: First, e-commerce platform enterprises should strengthen the management and application of data assets, and improve the efficiency and effect

of data empowerment by establishing a more complete data collection, processing and analysis system. Secondly, enterprises should actively explore the application of data empowerment in various business areas, such as optimizing product design and service processes through data-driven innovation. Finally, given the growing importance of data security and privacy protection, companies should also strengthen data security measures to ensure the security of customer information and the sustainable development of the business.

To sum up, the case of JD.com Group provides valuable experience and inspiration for other e-commerce platform enterprises. In the era of digital economy, only those enterprises that can effectively use data empowerment to continuously innovate and optimize their business models can maintain their leading position in the fierce market competition and achieve sustained value creation and growth. Therefore, for e-commerce platform enterprises, deepening the understanding and application of data empowerment will be the key to their future development.

After an in-depth analysis of the practice of JD Group's digital management technology, we can extract a series of experiences and lessons that can be enlightening and guiding to other enterprises. Through its advanced data empowerment strategy, JD.com has not only optimized its internal operational processes, but also greatly improved customer satisfaction and market response speed. This success story provides a feasible path and method for many enterprises seeking digital transformation.

For businesses in e-commerce platforms and beyond, JD.com's experience underscores the strategic value of data assets. In the digital economy, data is not only the basis for decision-making, but also the source of innovation. Therefore, companies should pay attention to the collection, processing and analysis of data, and use this information to gain insight into market trends, consumer behavior and optimize supply chain management. In addition, by building a data-centric value creation system, JD.com has achieved a closed loop from data collection to intelligent decision-making, which is particularly critical for other companies. It

means that companies must not only invest in data technology, but also build a complete set of mechanisms to ensure the effective flow and application of data.

Furthermore, JD's application of digital technology demonstrates how business models can be revolutionized through technological innovation. Especially in the areas of smart logistics and precision marketing, JD.com uses technologies such as big data and artificial intelligence to not only improve operational efficiency, but also enhance the personalization and precision of customer service. This shows that actively embracing emerging technologies is an effective path for those seeking to break through the limitations of traditional business.

However, digital transformation is not all smooth sailing. Companies may encounter technical, talent and cultural challenges along the way. Jd.com's experience shows that the key to success lies in continued investment in technology and innovation, as well as building a data-centric culture. In addition, companies need to develop a workforce that can navigate digital technologies and understand and use data.

Finally, for companies that are embarking on or are about to embark on a journey of digital transformation, it is recommended to start with top-level design and clear transformation goals and paths. At the same time, enterprises should focus on building an open innovation ecology and jointly explore new business models and technology applications with external partners. In the process, maintaining sensitivity to market dynamics and a deep understanding of consumer needs will be key for companies to remain competitive in the changing business environment.

To sum up, the practice of JD Group's digital management technology provides valuable experience and inspiration not only for the e-commerce industry, but also for all enterprises pursuing digital transformation. By learning and drawing on these experiences, other enterprises can plan and implement their own digital strategies more effectively, so as to stand out in the fierce market competition.

In this paper, through in-depth analysis of the practice of digital management technology of Jingdong Group, we can gain insight into the multi-dimensional value of modern management technology in enterprise application. However, the scope and depth of the research are still limited to some extent. Future research can be expanded in the following directions:

First, this study mainly focuses on the case study of Jingdong Group, which, while providing us with profound insights, also limits the general applicability of the results. Future studies can consider cross-case comparisons and introduce multiple companies of different sizes and industries to enhance the representativeness and generalization of the findings.

Second, although this study attempts to explore the application of digital management technology from multiple perspectives, due to the limitation of space and resources, it fails to cover all relevant management techniques and tools. With the continuous emergence of emerging technologies, such as artificial intelligence, Internet of Things, etc., their application in enterprise management is also increasing. Therefore, future research can further explore the specific application and effect of these emerging technologies in enterprise management.

Third, in terms of data collection, this study mainly relies on public materials and literature review, and lacks the support of first-hand data. Future studies can collect first-hand data through questionnaires, interviews and other means, which will help to evaluate the actual effect and impact of digital management technology more accurately.

Fourthly, the long-term impact and sustainability of digital management technologies have not been fully discussed in this study. With the iterative update of technology and the change of market environment, enterprises' digital management practices also need to be constantly adjusted and optimized. Therefore, future research can focus on the continuous improvement and optimization strategies after the implementation of digital management technologies, as well as the impact of these strategies on the long-term development of enterprises.

Fifth, cultural factors play an important role in the implementation of digital management technology, but this study fails to explore them in depth. Different corporate cultures may have a significant impact on technology acceptance and implementation results. Future research may explore how to better integrate digital management technology and corporate culture from the perspective of organizational culture to promote the smooth implementation of technology and maximize its benefits.

Through the above suggested future research directions, we can expect to have a more comprehensive and in-depth understanding of the application of digital management technology in modern enterprises. This will not only help the academic circle to deepen the theoretical knowledge, but also provide more effective management strategies and solutions for the practical community.

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