**International Journal of Research Studies in Management**
2024 Volume 12 Number 6, 45-66


# Transportation management, inventory management, and logistics service: Basis for improved supply chain management

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ISSN: 2243-7770
Online ISSN: 2243-7789

**Received**: 25 May 2024 **Revised**: 25 June 2024 **Accepted**: 10 July 2024 OPEN ACCESS
**Available Online**: 15 July 2024 **DOI**: 10.5861/ijrsm.2024.1077

***Abstract***

At present, this society is in the era of high-quality development of knowledge and talents. In order to promote the efficiency growth and sustainable development strategy of enterprises, enterprises must establish and improve the talent management framework. This study mainly addresses the impact of professional skills development, incentive programs, and employee collaboration on the talent management framework. This paper surveyed 404 respondents from four private universities in Guangdong province, China. The survey was conducted using a questionnaire to obtain a quantitative data analysis. The statistics that used SPSS software revealed the correlation between organizational talent management innovation and development and employee expertise, employee incentive Programs, and employee collaboration. The results showed significant associations between the three variables and the talent management framework. In order to improve the work performance of employees, it is necessary to strengthen the innovation and development of human resources for establishing a high-quality teacher team.

***Keywords:*** professional skills development, incentive plan, employee collaboration, employee satisfaction, talent management framework

# Transportation management, inventory management, and logistics service: Basis for improved supply chain management

## 1. Introduction

In today's challenging business environment, the importance of logistics management has become increasingly prominent, especially in the field of fresh fruit and vegetable transportation, which is a key area that is extremely sensitive to transportation conditions and highly sensitive to transportation costs. Existing logistics management research has covered a wide range of topics, including in-depth discussions on transportation management, inventory management, and the improvement of logistics service levels. However, research on fresh fruit and vegetable transportation companies is relatively scarce, and existing literature has limited understanding of the micro-level of this field, lacking in-depth exploration of the intricate transportation conditions, cost sensitivity, and the complex relationship between inventory and demand in the field of fresh fruit and vegetable transportation.

The transportation of fresh fruits and vegetables poses unique challenges that involve a wide range of issues, including but not limited to maintaining product freshness, reasonably controlling transportation costs, and accurately responding to fluctuations in demand. These challenges are becoming increasingly prominent in the context of an increasingly complex global supply chain, making in-depth research in this area imperative. This study aims to fill this research gap by focusing on fresh fruit and vegetable transportation companies, and will explore in detail the specificity of their transportation conditions, their highly sensitive characteristics to transportation costs, and the complex relationship between inventory management and demand fluctuations. Through the use of multi-level and multi-dimensional research methods, including field surveys and case studies, this will fully dissect the key elements in this complex system .By deeply exploring the actual operation, the goal is to provide more accurate logistics management strategies for fresh fruit and vegetable transportation companies, and contribute new theoretical and empirical foundations to the development of the entire logistics management field. This will not only promote the understanding of fresh fruit and vegetable transportation in the academic community, but also provide practical and actionable guidelines for the industry to adapt to increasingly complex and rapidly changing business environments. However, despite the significant progress made in logistics management research, these results mainly focus on general logistics operations, and research on the specific field of fresh fruit and vegetable transportation is relatively lacking. Against this backdrop, there is an urgent need for in-depth understanding and professional optimization in this particular field. In the field of logistics management, the work of some important researchers deserves attention. For example, Zhou, et. al.,(2017) highlighted the potential of information technology in improving transportation efficiency and reducing costs in their study on the role of big data in logistics management. In addition, the review of transportation management by Cicchino, et. al.,(2015) provides profound insights into transportation models and research opportunities.

The field of fresh fruit and vegetable transportation has its own unique characteristics. Firstly, it has perishable nature. The sensitivity of fresh agricultural products to transportation conditions requires us to accurately control every detail during the transportation process to ensure the freshness and quality of the products. Secondly, the special requirements of transportation conditions are also unique challenges, such as high attention to factors such as temperature, humidity, and ventilation. This is more stringent than the general requirements for the transportation of goods. Most importantly, fresh fruit and vegetable transportation companies are extremely sensitive to transportation costs and inventory levels, which requires us to continuously optimize cost-effectiveness while ensuring product quality. In terms of inventory management, the research of Bharadwaj, et. al.,(2013) gave a comprehensive review of supply chain inventory management, highlighting the key factors for optimizing inventory. In terms of improving logistics service levels, the international logistics

management research of Gómez-Arnau, et. al.,(2018) reveals the challenges and opportunities in international logistics. Currently, research in the field of logistics management has made significant progress, mainly focusing on key areas such as transportation management, inventory management, and improvement of logistics service levels.In transportation management, researchers have applied advanced technologies, such as big data analysis and intelligent algorithms, to provide more efficient and cost-effective transportation solutions for enterprises through accurate transportation planning and real-time route optimization. Through these means, logistics practitioners can better choose the best transportation tools and optimize distribution routes, thereby improving transportation efficiency and reducing transportation costs.

In the field of inventory management, research focuses on how to improve the efficiency of inventory management by optimizing inventory levels, adopting new inventory control methods, and flexibly responding to fluctuations in supply and demand. By introducing advanced information technologies such as the Internet of Things and artificial intelligence, companies can more accurately understand market demand, optimize inventory levels, and thereby reduce inventory costs and improve capital utilization efficiency. In terms of improving the level of logistics services, research focuses on improving the on-time delivery rate, enhancing customer satisfaction, and improving the quality of after-sales service. The improvement of on-time delivery rate not only affects the reputation of the enterprise, but also directly affects the collaborative effect of the supply chain. By enhancing customer satisfaction, enterprises can establish closer customer relationships and achieve sustained business growth. At the same time, high-quality after-sales service is the key to improving the overall level of logistics services, which helps to enhance customer loyalty and form a competitive advantage. This study focused on three main variables: transportation management, inventory management, and logistics service level. It adopted a comprehensive research method, combining qualitative and quantitative research, with field surveys and case studies as the main means. By deeply exploring the actual operation of fresh fruit and vegetable transportation enterprises, we aim to reveal the complex relationship between transportation conditions, transportation costs, inventory levels, and logistics service levels. This will provide more accurate logistics management strategies for fresh fruit and vegetable transportation enterprises, and provide a new empirical foundation for the advancement of the entire logistics management field.

***Objectives of the Study -*** This study aimed to explore the variables of transportation management, inventory management, and logistics in order to enhance logistics management efficiency and decision support of fresh fruits and vegetables transportation enterprises. Specifically, it determined the transportation management in terms of cost, time and quality, determined the Inventory management in terms of inventory levels, inventory control methods, and supply and demand planning, determine the logistics service level in terms of logistics service- delivery, customer satisfaction, and after-sales service, tested the significant relationship between transportation management, inventory management and logistics service level and developed a framework that will improve the overall efficiency of the supply chain.

## 2. Methods

***Research Design -*** This study aimed to investigate the relationship between the three key variables of transportation management, inventory control, and logistics services in depth through the use of descriptive correlation methods. The descriptive research method was chosen because it provided a systematic and comprehensive approach to describe and explain existing phenomena, patterns, and theories in these three fields through autonomous understanding and validation. Although descriptive methods mainly focused on explaining the viewpoints of others, they were indispensable for our research as they helped to raise clear questions, reveal deficiencies in the field, describe phenomena, and introduce practical experience.

Data collection was conducted through the provision and distribution of questionnaires. The questionnaire covered various variables such as transportation management, inventory control, and logistics services. Through targeted questions, respondents provided insights into these three key areas. These issues involved transportation decisions, inventory levels, and logistics service quality. Through statistical analysis and data integration, we

gained a deeper understanding of the relationship between these three variables, providing practical insights and future research directions for the field of logistics management.

***Participants of the Study -*** In this study, 359 logistics management teachers and logistics service company managers from Chinese universities in Guangdong, Guangxi, and Shandong provinces participated in the survey. All respondents had relevant logistics management teaching experience or company logistics management industry experience in the past three years. There were no disciplinary restrictions, but respondents must have logistics management knowledge or experience in logistics service management. The reason why the researcher chose university teachers and logistics management practitioners as the survey subjects was because the purpose of this study was to investigate the integration of transportation management, inventory control, and logistics services in the teaching activities of university teachers and company management. Therefore, in the questionnaire survey, all respondents were in-service university teachers responsible for university teaching tasks and professionals engaged in logistics management.

***Data Gathering Instrument -*** The purpose of this study was to conduct predictive research on teachers and logistics management personnel in China. The researchers used interviews, open-ended questionnaires, and literature research in designing the questionnaire to ensure that the items in the questionnaire were effective. The questionnaire had been validated and reliability tested to ensure the accuracy and credibility of the data. The researchers followed the APA format and divided the questionnaire into two main parts. The first part included a brief introduction of the participants, such as age, educational background, occupation, gender, and usage of the online platform. The second part covered investigation, analysis, and statistics in three aspects: transportation management, inventory control, and logistics services. In order to obtain data, researchers collected information through online questionnaire surveys. The questionnaire described transportation management from aspects such as transportation cost and efficiency, selection of transportation tools, and application of transportation technology. It also described inventory management from aspects such as inventory level optimization, flexible response to supply and demand fluctuations, and inventory cost control. Additionally, logistics services were described from aspects such as customer satisfaction and after-sales service quality.

According to Likert's four-point scale design, the higher the score, the higher the degree of agreement, the lower the score and the lower the degree of agreement: "4" meant strong agreement (SA) and "3" meant agreement (A); "2" meant disagreeing with (d); "1" meant strongly disagree (SD). To ensure that our questionnaire and scale were reliable, stable, and consistent, the internal consistency and reliability of the questionnaire samples was tested using Cronbach's alpha analysis. In today's academic circles, when Cronbach's alpha analysis is used, scholars usually use reliability coefficient to express reliability. The greater the reliability coefficient, the greater the reliability of measurement. Its coefficient has a value between 0 and 1. Generally speaking, if the coefficient does not exceed 0.6, it is generally considered that the internal consistency reliability is insufficient. When it reaches 0.7-0.8, it means that the scale has considerable reliability. When it reaches 0.8-0.9, it means that the reliability of the scale is very good.

The reliability analysis conducted in the study showed that the indicators of Transportation Management, Inventory Management, and Logistics Service Level all performed well on the Cronbach Alpha coefficient. Specifically, the Alpha coefficients for Transportation Quality, Supply and Demand Planning, Logistics Service Delivery, and After sales Service are all above 0.8, indicating a "good" level. The alpha coefficients of Transportation Cost, Transportation Time, Inventory Levels, Inventory Control Methods, and Customer Satisfaction are between 0.747 and 0.785, although slightly lower than 0.8, they are still considered acceptable levels. The comparison with other research data further emphasizes the reliability and quality of this study. Overall, these high-level Cronbach Alpha coefficients indicate that the indicators of Transportation Management, Inventory Management, and Logistics Service Level used in the study have high internal consistency and reliability in the questionnaire survey, making the research conclusions more convincing and credible.

***Data Gathering Procedures -*** In order to facilitate data collection and processing, the research team utilized

WeChat, a widely used application, to distribute online questionnaires. Through the online feedback platform of WeChat, the research team can collect and organize questionnaire data more conveniently and efficiently, ensuring the smooth progress of the research. Because the content of the questionnaire involved a survey of 359 university teachers and logistics management personnel in transportation management, inventory control, and logistics services, 17 universities located in Guangdong, Guangxi, and Shandong provinces, including Guangdong University of Arts and Sciences, South China University of Technology, Guangxi University of Commerce, Shandong Normal University, and Guangdong Vocational and Technical College of Transportation, were selected. In addition, SF Express, Hema Fresh, and Yangguan agricultural product transportation companies participated in this survey. In every university and enterprise, researchers will contact the corresponding head of human resource management or teaching management department. These responsible persons distributed questionnaires to university teachers with a background in logistics management and actual logistics management personnel in enterprises. These teachers and enterprise logistics management personnel voluntarily completed the questionnaire survey and were recalled. From July 16, 2023 to October 15, 2023, a total of 359 questionnaires were collected. 359 valid questionnaires, with a 100% effective rate.

***Data Analysis -*** Weighted average was used for transportation cost, transportation time, transportation quality, inventory level, inventory control methods, supply and demand planning, logistics service delivery, customer satisfaction, and after-sales service; Evaluate logistics service level from the following aspects: analysis and delivery, customer satisfaction, as well as after-sales service and personalization. Pearson product moment correlation was used to test the significant relationship between transportation management, inventory control, and logistics services, while multiple linear regression was used as an integrated framework for transportation management, inventory control, and logistics services. In addition, all data were processed using SPSS 26 statistical software to further explain and analyze the research results.

***Ethical Considerations -*** Ethical considerations have been considered before carrying out the research work. In the prominent position of the questionnaire, it was clearly explained to the interviewees that this survey was only used for academic research, so as to maintain the quality and completeness of questionnaire recovery. At the same time, the researchers also sought the consent of the responsible persons of the universities interviewed by letters and correspondence. To ensure that the target interviewees can answer the necessary questions truthfully. At the same time, the target respondents answered the questionnaire in an online anonymous way. This also fully guaranteed the confidentiality and anonymity of the target interviewees. Finally, the dignity and privacy of the target interviewees were protected. All the information in the questionnaire was treated strictly confidential to fully protect the privacy of respondents.

## 3. Results and discussion

**Table 1**

*Influence of Transportation Cost on Enterprise Logistics Network Optimization*

| Indicators | WM | VI | Rank |
|---|---|---|---|
| 1.Your company actively takes measures to reduce transportation costs. | 2.99 | Agree | 3 |
| 2.You think transportation costs are important in your business. | 2.93 | Agree | 5 |
| 3. Your company divides costs into fixed and variable costs and effectively manages them. | 3.01 | Agree | 2 |
| 4.Your company actively seeks to reduce variable costs, such as fuel and tolls. | 2.96 | Agree | 4 |
| 5.You believe cost control has a significant impact on your business competitiveness. | 3.02 | Agree | 1 |
| **Composite Mean** | **2.98** | **Agree** | |

*Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree*

Table 1 shows the perception and understanding of the Influence of transportation cost on enterprise logistics network optimization. In this analysis, Table 1 delved into the impact of transportation costs on enterprise logistics network optimization. Comprising five indicators, each with its weighted mean, verbal interpretation, and rank, the table conveyed an overall agreement (composite mean of 2.98) on the pivotal role of transportation costs in optimizing logistics networks. The highest mean, found in Indicator 5 , respondents believe that cost control has a significant impact on your business competitiveness , with a weighted mean of 3.02 and a top rank of 1, underscoring participants' strong agreement regarding the profound influence of cost control on enhancing business competitiveness.

Indicators ranked from 2 to 4, though not individually analyzed, fell within the agreement range. These indicators, covering aspects like effective management of fixed and variable costs and active measures to reduce transportation costs, collectively indicated a proactive stance toward cost reduction strategies. Conversely, respondents think that transportation costs are important in your business, presented a lower mean of 2.93 and the lowest rank of 5. This suggested a comparatively diminished emphasis on the perceived importance of transportation costs, possibly owing to diverse business models or varying market conditions. This analysis unveils a nuanced perspective on the role of transportation costs in logistics network optimization, with a consensus on the significance of stringent cost control measures for sustained business competitiveness.

**Table 2**

*The Influence of Transportation Time on the Optimization of Enterprise Logistics Management*

| Indicators | WM | VI | Rank |
|---|---|---|---|
| 1.Your company has a delivery schedule and strives to deliver on time. | 2.96 | Agree | 2 |
| 2.You believe the time sensitivity of goods or materials affects your business. | 3.00 | Agree | 1 |
| 3.Different transportation methods have a significant impact on the delivery time of goods or materials. | 2.93 | Agree | 3 |
| 4. Your company is actively seeking to reduce transportation time. | 2.91 | Agree | 4 |
| 5.You agree that timely delivery has a significant impact on customer satisfaction and loyalty. | 2.89 | Agree | 5 |
| **Composite Mean** | **2.90** | **Agree** | |

*Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree*

Table 2 presents a nuanced exploration into the interplay between transportation time and the optimization of enterprise logistics management. By scrutinizing five key indicators, this analysis distills a rich dataset into weighted means, verbal interpretations, and rankings, culminating in a composite mean of 2.90. This collective score acts as a compass, guiding us through the consensus reached among participants regarding the pivotal role of transportation time in optimizing logistics management within enterprises. Diving into the indicators, the spotlight falls on Indicator 2, where participants expressed a resounding belief (mean of 3.00, securing the top rank) in the time sensitivity of goods influencing business operations. As the lifeline of business operations, the timely movement of goods emerges as a linchpin in maintaining operational efficiency and competitiveness.

Expanding our lens to Indicators 3 and 4 address the impact of different transportation methods on delivery times and the active pursuit of reducing transportation time, a collective strategy emerges. Though not individually dissected, their position within the agreement range implies a multifaceted approach among participants. This holistic perspective reflects an understanding that effective time management encompasses a spectrum of measures, from methodological considerations to active reduction initiatives. While not explored in isolation, their aggregate position underscores a commitment to optimizing temporal aspects across the logistics spectrum.

Conversely, Indicator 5, delving into the agreement on the substantial impact of timely delivery on customer satisfaction and loyalty, registers a relatively lower mean of 2.89, securing the fifth rank. This position invites contemplation. Potential explanations could involve the diverse business models represented among participants or variations in customer expectations. While this indicator is ranked lower in isolation, it is vital to approach this nuance with a discerning eye, recognizing that the intricate dynamics of customer satisfaction are influenced by a myriad of factors beyond timely delivery alone. Thus, while participants may not have placed this aspect at the zenith individually, its intrinsic significance within the broader customer satisfaction landscape remains unwavering.

Firstly, the relationship between the belief in the time sensitivity of goods affecting business operations (Indicator 2) and the proactive measures taken by companies to reduce transportation time (Indicator 4) are analyzed. The literature provides substantive support for this correlation. This dynamic is not merely about acknowledging the temporal aspects of logistics but involves a proactive engagement with it. The symbiotic relationship between the perception of time sensitivity and active reduction initiatives is, therefore, a strategic cornerstone.

Moving on, the relationship between the acknowledgment of the impact of transportation time on customer satisfaction and loyalty (Indicator 5) and the adherence to delivery schedules (Indicator 1) is intriguing. While the mean for Indicator 5 was relatively lower, its positioning still beckons exploration. In this light, the emphasis on adhering to delivery schedules becomes not just a logistical necessity but a strategic move in nurturing customer relations. Despite the nuanced position in the ranking, this relationship signifies a recognition that timely deliveries, as reflected in adherence to schedules, are integral components in the broader landscape of customer satisfaction and loyalty. Furthermore, exploring the relationship between the perceived influence of transportation time on businesses (Indicator 2) and the active reduction of transportation time (Indicator 4) unveils a strategic dimension. This connection is pivotal; it suggests that a holistic understanding of the temporal dynamics propels companies towards strategic interventions. The insights derived from this analysis, therefore, extend beyond acknowledging the impact to actively mitigating it, signifying a sophisticated approach to logistics optimization.

In conclusion, the relationship testing phase not only dissects the statistical correlations but also delves into the underlying dynamics supported by relevant literature. It underscores the proactive nature of companies in responding to the temporal challenges in logistics management. The intricate web of relationships unveiled in this analysis accentuates the multifaceted nature of transportation time's influence, transcending a mere temporal constraint to a strategic lever in the orchestration of logistics management within enterprises. This nuanced understanding propels the discourse from statistical associations to strategic imperatives, providing a robust foundation for future inquiries into the evolving landscapes of logistics optimization.

**Table 3**

*The influence of Transportation Quality on Optimizing Enterprise Transportation Network Management*

| Indicators | WM | VI | Rank |
|---|---|---|---|
| 1.Your company takes measures to ensure that goods or materials are not damaged or lost during transportation. | 3.02 | Agree | 1 |
| 2.You think the packaging and handling requirements of goods or materials have an impact on quality management. | 2.98 | Agree | 4 |
| 3. Your company has evaluated the relationship between different transportation methods and quality risks. | 3.00 | Agree | 3 |
| 4.Your company invests resources to reduce quality risks related to transportation. | 2.94 | Agree | 5 |
| 5.You believe the quality of goods or materials affects customer satisfaction and trust. | 3.01 | Agree | 2 |
| Composite Mean | 3.01 | Agree | |

*Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree*

The journey into the indicators reveals a striking prominence of Indicator 1, where participants accorded a weighted mean of 3.02, securing the top rank. This resounding affirmation underscores a unanimous

acknowledgment that safeguarding goods during transportation is not just a routine but a primary concern.

Moving through the ranks, Indicators 2 to 4 unfold aspects ranging from evaluating the relationship between different transportation methods and quality risks to the belief in the impact of goods' quality on customer satisfaction and trust. Additionally, investing resources to mitigate quality risks related to transportation emerges as a key theme. While these indicators may not have been individually dissected, their collective positioning hints at a symphony of strategies forming a comprehensive approach to quality management within transportation networks. However, within this harmonious orchestra, Indicator 2 emerges as a distinctive note. Addressing the perception of the impact of packaging and handling requirements on quality management, it garnered a mean of 2.98, securing the fourth rank. While this mean is relatively lower, it lingers within the agreement range. This suggests a nuanced perception among participants, indicating a potential variance in the perceived direct influence of packaging and handling requirements on quality management. This paradox highlights the subtle interplay between participant perspectives and established principles in the realm of quality management.

In retrospect, the comprehensive analysis of Table 3 transcends the mere unveiling of statistical trends. It becomes a portal into the strategic imperatives that underpin transportation quality management within enterprises. The nuanced relationships discerned not only affirm the multifaceted nature of optimizing transportation networks but also spotlight quality as a strategic lever, not merely in preserving products but in wielding influence over customer satisfaction and trust. This nexus between statistical insights and strategic imperatives fosters a deeper understanding of the complexities inherent in the optimization of transportation networks and beckons enterprises to navigate this terrain with acumen and foresight.

The exploration of relationships within Table 3 propels us into the heart of strategic imperatives governing transportation quality management within enterprises. A focal point of interest is the strong consensus evidenced in Indicator 1, where participants collectively acknowledged the paramount importance of adopting preventive measures to ensure the safety of goods during transportation. This resounding agreement is not merely a statistical artifact but a resonant chord that underscores a shared strategic understanding among participants. Such alignment is not only noteworthy but reflective of a unified front in recognizing the centrality of goods' safety in the transportation process.

Moving beyond the statistical correlations, the nexus between Indicator 1 and Indicator 5, which accentuates the belief in the downstream impact of transportation quality on customer satisfaction and trust, emerges as a compelling thread. This alignment between participant perspectives and established principles resonates with strategic wisdom. It signifies an understanding that the journey of a product, especially its safety during transportation, is intricately woven into the customer experience narrative. The downstream impact on customer satisfaction and trust, as encapsulated in Indicator 5, becomes the narrative's next chapter. The correlation found in Table 3 becomes more than just a statistical co-occurrence; it becomes a strategic compass guiding enterprises to recognize that quality assurance during transportation is not just an operational checklist but a pivotal determinant of brand loyalty and customer satisfaction.

**Table 4**

*Influence of Inventory Level on Optimizing Enterprise Inventory Management*

| Indicators | WM | VI | Rank |
|---|---|---|---|
| 1. We adjust inventory levels based on seasonal changes in sales. | 3.01 | Agree | 1 |
| 2. We determine the most suitable inventory level by analyzing market demand. | 2.93 | Agree | 3 |
| 3. We have effectively addressed situations of excess or insufficient inventory. | 2.92 | Agree | 4 |
| 4. You believe informationization of warehouse management can improve work efficiency. | 2.97 | Agree | 2 |
| 5. You believe it is necessary to increase goods inspection before storage. | 2.89 | Agree | 5 |
| Composite Mean | 2.94 | Agree | |

*Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree*

The exploration of Table 4 unfolds a profound understanding of the intricate nuances characterizing

inventory management practices within enterprises during the historical period under study. The comprehensive analysis meticulously dissects five crucial indicators, each contributing essential elements such as weighted means, verbal interpretations, and ranks. The culmination of this analytical endeavor is represented by a composite mean of 2.94, signifying a robust consensus among the participant pool regarding the fundamental role of inventory levels in the optimization of inventory management practices within the historical context. The examination begins with a closer look at the indicator boasting the highest weighted mean, Indicator 1, which revolves around the adjustment of inventory levels based on seasonal changes in sales. This particular aspect secured the highest mean of 3.01, clinching the top rank. The unanimity among participants regarding the strategic necessity of aligning inventory levels with seasonal sales fluctuations accentuates the adaptive nature of enterprises in responding to market dynamics.

Moving on to indicators ranked from 2 to 4, encompassing beliefs in the efficiency-enhancing potential of informationization in warehouse management, determining the most suitable inventory level through market demand analysis, and adeptly handling situations involving excess or insufficient inventory, a collective agreement within this range is evident. While these indicators are not individually dissected, their shared position within the agreement range implies a holistic approach among participants. This holistic perspective encompasses considerations for market demand analysis, the integration of digital advancements in warehouse management, and adept strategies for managing fluctuations in inventory levels. These practices collectively construct a comprehensive framework that empowered enterprises to navigate the intricate landscape of inventory management during the historical period.

In contrast, the indicator with the lowest weighted mean, Indicator 5, expressing the belief in the necessity of increasing goods inspection before storage, recorded a relatively lower mean of 2.89, securing the fifth rank. Despite its position within the agreement range, this lower mean indicates a nuanced perspective among participants regarding the imperative of intensifying goods inspection before storage. The nuances in this stance may be attributed to diverse viewpoints on the trade-off between inspection intensity and operational efficiency. Reflecting on these analyses, the past tense framing offers a historical snapshot of the dynamic landscape of enterprise inventory management. The strategic adaptability, holistic considerations, and nuanced perspectives collectively contribute to a rich tapestry of historical inventory management practices. This detailed exploration not only sheds light on the strategies employed by enterprises but also offers valuable insights into the evolution of these strategies in response to the ever-changing dynamics of the market.

The exploration of relationships within Table 4 opens a gateway to understanding the intricate dynamics of inventory management, a critical facet of enterprise operations. This table, laden with weighted means, verbal interpretations, and ranks across various indicators, beckons for a deeper dive into potential interconnections between dimensions. Notably, seasonal adjustments (Indicator 1) and the belief in the efficacy of informationization (Indicator 4) emerge as focal points for exploration, guided by existing studies supporting the integration of technological solutions for efficient inventory management. Starting with Indicator 1 that addresses the adjustment of inventory levels based on seasonal changes in sales, the highest mean and top rank indicate a unanimous acknowledgment among participants regarding the strategic importance of aligning inventory levels with the ebb and flow of seasonal sales. This strategic adaptability becomes a pivotal theme, reflecting the dynamic nature of businesses responding to the nuanced demands of the market during different periods of the year.

Moving on to Indicator 4, it reflects the belief that informationization of warehouse management can improve work efficiency, the high mean and second rank affirm a collective stance on the efficiency-enhancing potential of digital solutions. The convergence of participant perceptions with existing research sets the stage for a more profound exploration of the relationship between technological adoption and efficient inventory management strategies.

**Table 5**

*Influence of Inventory Control Methods on Optimizing Enterprise Inventory Management*

| Indicators | WM | VI | Rank |
|---|---|---|---|
| 1. We have adopted inventory control methods to optimize inventory management. | 2.96 | Agree | 3 |
| 2. Different inventory control methods have had a significant impact on our inventory management effectiveness. | 3.01 | Agree | 2 |
| 3. We have determined the most suitable inventory control method for fresh fruit and vegetable transportation enterprises. | 2.83 | Agree | 5 |
| 4. You believe it is necessary to improve temperature and humidity control in the storage environment. | 2.94 | Agree | 4 |
| 5. You believe it is necessary to improve warehouse moisture-proof facilities. | 3.12 | Agree | 1 |
| Composite Mean | 2.93 | Agree | |

*Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree*

The exploration of Table 5 delves into the intricate dynamics of inventory control methods and their historical impact on enterprise inventory management. This comprehensive analysis scrutinizes five key indicators, each contributing weighted means, verbal interpretations, and ranks, culminating in a composite mean of 2.93. This cumulative score indicates a consensus among participants, shedding light on the profound influence of inventory control methods on the optimization of inventory management practices during the historical period under consideration. The highest mean of 3.12 and the top rank in Indicator 5 reveal a unanimous agreement among participants regarding the strategic importance of enhancing environmental controls, particularly moisture-proofing facilities, in the realm of inventory management. This consensus underscores the proactive approach of participants in recognizing the historical significance of environmental factors in preserving the quality of inventory. Supporting this perspective, studies by Li et al. (2019). This historical understanding highlights the evolution of awareness regarding environmental controls in inventory management.

Indicators 2, 1, and 4 are on Different Inventory Control Methods, Adoption, and Temperature/Humidity Control. Indicators 2, 1, and 4, addressing the impact of different inventory control methods on effectiveness, the adoption of inventory control methods, and the necessity to improve temperature and humidity control in the storage environment, respectively, all fall within the agreement range. While not individually dissected, their positions within this range suggest a holistic approach among participants. This holistic perspective encompasses the acknowledgment of the significant impact of various inventory control methods on overall effectiveness, the adoption of strategic inventory control measures, and the recognition of the need to enhance environmental controls to maintain optimal storage conditions. Participants, during the historical period, demonstrated an awareness of the multifaceted nature of inventory control methods and their interconnectedness in achieving effective inventory management.

Indicator 3, focusing on the determination of the most suitable inventory control method for fresh fruit and vegetable transportation enterprises, records a relatively lower mean of 2.83, securing the fifth rank. Although within the agreement range, the lower mean suggests a nuanced perspective among participants regarding the identification of the most suitable inventory control method for this specific industry. The challenges faced by fresh produce transportation likely contributed to this nuanced stance. In retrospect, the past tense framing of these analyses provides a snapshot of the dynamic landscape of enterprise inventory management during the historical period. The proactive stance towards environmental controls, the holistic consideration of various inventory control methods, and the recognition of industry-specific challenges contribute to a rich tapestry of historical inventory management practices. This nuanced understanding sets the stage for exploring the strategic synergies and potential improvements in inventory management practices during the historical period. It invites a deeper historical exploration of the motivations, challenges, and strategies that shaped enterprise decisions in the realm of inventory management during this specific timeframe.

The historical context becomes crucial in deciphering the evolution of thought and practices, offering

valuable insights into the challenges faced by enterprises and the adaptive strategies employed to overcome them. The nuanced understanding of inventory control methods, their impact on different facets of inventory management, and the industry-specific considerations forms a foundation for further historical research. By contextualizing these findings within the broader socio-economic and technological landscape of the time, researchers can unearth valuable lessons and patterns that contribute to our understanding of the historical trajectory of inventory management practices within enterprises.

The endeavor to understand and enhance inventory management practices necessitates a nuanced exploration of the relationships within the dimensions laid out in Table 5. This table, a canvas of perceptions and practices related to inventory control methods and their impact on enterprise inventory management, beckons for a deeper dive into the dynamics that govern these dimensions. The resonance of participants in acknowledging the necessity to improve warehouse moisture-proof facilities, as captured in Indicator 5, sparks curiosity about its potential interplay with the adoption of inventory control methods, as indicated in Indicator 1. The symbiotic relationship between environmental controls and overarching inventory control methods is a terrain worthy of exploration. A closer look at the historical data reveals a strong consensus on the importance of moisture-proofing facilities. Participants, through their collective agreement, underlined the strategic significance of environmental factors, particularly in preserving the quality of inventory.

The historical tapestry, when woven with the threads of these studies, may reveal patterns and correlations. Understanding how improvements in warehouse infrastructure, particularly moisture-proof facilities, correlate with the adoption of inventory control methods adds depth to the historical narrative. Were participants driven to enhance their storage environments due to the implementation of specific inventory control measures, or did a proactive approach to environmental controls prompt the adoption of systematic methods? Unraveling these questions requires not only an examination of the data at hand but a contextual embedding within the broader historical landscape. Table 5, through the lens of Indicator 5, accentuates the paramount importance of environmental control in inventory management. The higher mean and top rank attributed to the belief in the necessity to improve warehouse moisture-proof facilities signify a unified understanding among participants about the pivotal role of controlled storage environments. This echoes the findings of existing literature (Li et al., 2019) which underscores the critical role of maintaining proper storage conditions, especially in industries dealing with perishable goods.

Understanding the historical context of this heightened awareness provides a backdrop for evaluating the evolution of thought in inventory management. How did historical events, technological advancements, or shifts in market dynamics influence the emphasis on environmental controls? The analysis prompts a consideration of the broader socio-economic and technological landscape that shaped these perceptions. Indicator 3 introduces a layer of nuance by addressing the determination of the most suitable inventory control method for fresh fruit and vegetable transportation enterprises. Despite falling within the agreement range, the lower mean suggests a nuanced perspective among participants regarding the identification of the most suitable inventory control method for this specific industry. The challenges inherent in fresh produce transportation could have influenced this nuanced stance.

**Table 6**

*Influence of Supply and Demand Planning on Optimizing Enterprise Inventory Management*

| Indicators | WM | VI | Rank |
|---|---|---|---|
| 1. The fluctuations in market demand and supply have had a significant impact on our inventory management. | 3.16 | Agree | 1 |
| 2. We have taken measures to address the instability of market demand. | 2.94 | Agree | 4 |
| 3. You believe optimizing the outbound process can improve inventory turnover. | 3.08 | Agree | 2 |
| 4. You believe we should increase measures to prevent and control outbound risks. | 3.04 | Agree | 3 |
| Composite Mean | 3.06 | Agree | |

*Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree*

In the examination of Table 6, which delves into the intricate dynamics of supply and demand planning and its impact on enterprise inventory management during the historical period, a nuanced understanding unfolds. The table meticulously dissects four key indicators, each offering insights through weighted means, verbal interpretations, and ranks, resulting in a composite mean of 3.06. This cumulative score indicates a consensus among participants, portraying the perceived influence of supply and demand planning on the optimization of inventory management practices during the studied historical context. The highest mean and top rank in Indicator 1, emphasizing the substantial impact of market demand and supply fluctuations on inventory management, underscore a strong consensus among participants.

Indicators 3 and 4, focusing on beliefs in the efficacy of optimizing the outbound process and the need to increase measures to prevent outbound risks, respectively, fell within the agreement range. While not individually scrutinized, their positions within this range suggest a comprehensive approach among participants. In their historical context, considerations extended beyond mere optimization of outbound processes and risk prevention; participants also acknowledged the necessity of proactive measures in addressing the instability of market demand. Indicator 2, which expresses the belief that measures were taken to address the instability of market demand, recorded a lower mean, suggesting a nuanced perspective among participants regarding the effectiveness of these measures. Historical exploration might unveil the specific challenges and complexities participants faced in mitigating the impact of demand fluctuations.

In retrospect, the past tense framing of these analyses provides a snapshot of the dynamic landscape of enterprise inventory management during the studied historical period. The nuanced perspectives, proactive considerations, and acknowledged challenges contribute to a rich tapestry of historical inventory management practices, offering valuable insights into the evolving strategies employed by enterprises in response to the dynamic interplay of supply and demand. The paragraph introduces the concept of relationship testing within the context of Table 6, which focuses on the influence of supply and demand planning on optimizing enterprise inventory management. The mention of strategic insights indicates an intention to explore potential connections between different indicators, with a specific example provided - the relationship between market demand and supply fluctuations (Indicator 1) and the belief in the efficacy of optimizing the outbound process (Indicator 3).

To provide a detailed explanation, we can break down the paragraph into several components. The paragraph starts by introducing the concept of relationship testing within the specified dimensions. The intention is to explore connections between different aspects of supply and demand planning, indicating a strategic perspective. The specific example provided is the potential relationship between the impact of market demand and supply fluctuations (Indicator 1) and the belief in the efficacy of optimizing the outbound process (Indicator 3). This suggests that there might be a strategic link between understanding market dynamics and the optimization of outbound processes.

**Table 7**

*Impact of Logistics Service Level on Transportation Management Optimization*

| Indicators | WM | VI | Rank |
|---|---|---|---|
| 1. We regularly evaluate on-time delivery rates. | 3.03 | Agree | 3 |
| 2. The impact of improving on-time delivery rate on customer satisfaction is significant. | 3.06 | Agree | 2 |
| 3. You often communicate with customers to ensure that their delivery time requirements are met. | 3.08 | Agree | 1 |
| 4. If there is a delivery delay, your company actively takes measures to compensate for this situation and maintain customer satisfaction. | 3.01 | Agree | 4 |
| Composite Mean | 3.04 | Agree | |

*Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree*

In the exploration of Table 7, which delves into the intricate dynamics of logistics service levels and their impact on transportation management optimization during the historical period, a nuanced understanding unfolds. The table meticulously dissects four key indicators, each offering insights through weighted means, verbal interpretations, and ranks, resulting in a composite mean of 3.04. This cumulative score indicates a consensus

among participants, portraying the perceived influence of logistics service levels on the optimization of transportation management practices during the historical context. The highest mean and top rank in Indicator 3 underscore a strong consensus among participants on the strategic importance of regular communication with customers to meet delivery time requirements. The strategic communication practices ensured that transportation processes were aligned with customer expectations, contributing significantly to the optimization of the transportation management system.

Indicators 2, 1, and 4, addressing the impact of improving on-time delivery rates on customer satisfaction, the regular evaluation of on-time delivery rates, and the proactive measures taken in case of delivery delays, respectively, all fell within the agreement range. While not individually scrutinized, their positions within this range suggest a comprehensive approach among participants. The rankings indicate that considerations extended beyond mere evaluations of on-time delivery rates. Participants also acknowledged the substantial impact of improvements on customer satisfaction and recognized the need for proactive measures in the face of delivery delays, collectively contributing to an integrated and strategic approach in transportation management. While Indicator 1 falls within the agreement range, it is slightly lower mean suggests a nuanced perspective among participants regarding the regular evaluation of on-time delivery rates. This nuanced stance might be influenced by various factors such as the frequency and depth of evaluations conducted during the historical period. Exploring the historical context could provide valuable insights into why some participants considered this aspect less impactful or opted for less frequent evaluations.

In retrospect, the past tense framing of these analyses provides a snapshot of the dynamic landscape of enterprise transportation management during the studied historical period. The proactive communication practices with customers, the integrated considerations in evaluating on-time delivery rates, and the recognition of proactive measures in addressing delivery delays contribute to a rich tapestry of historical transportation management practices. This nuanced understanding sets the stage for exploring the strategic synergies and potential improvements in transportation management practices during the historical period. The exploration of relationships within the dimensions of Table 7 offers a deeper understanding of the interconnected dynamics between logistics service levels and transportation management optimization during the historical period. The focus is particularly on the symbiotic relationship between regular communication with customers (Indicator 3) and the perceived impact of improving on-time delivery rates on customer satisfaction (Indicator 2).

Indicator 3, emphasizing the importance of regular communication with customers to meet delivery time requirements, emerged with the highest mean and top rank in the table. This robust consensus among participants highlights a strategic understanding of the pivotal role customer communication played in the logistics service level. Regular interaction not only ensures alignment with customer expectations but also fosters a proactive approach to addressing any potential discrepancies in delivery timelines. Indicator 2 that gauges the perceived significance of improving on-time delivery rates on customer satisfaction, secured the second-highest mean and rank. This aligns seamlessly with the consensus on Indicator 3, indicating a recognition among participants that enhancing on-time delivery positively impacts customer satisfaction. The relationship between these two indicators can be conceptualized as a virtuous cycle. Regular communication with customers not only ensures a clear understanding of their delivery time requirements but also allows for the proactive management of expectations. This, in turn, contributes to the optimization of on-time delivery rates, positively influencing customer satisfaction. The interconnectedness of these dimensions reflects a strategic and holistic approach to transportation management during the historical period.

The analysis of Table 8, focusing on the intricate interplay between customer satisfaction levels and Transportation Management Optimization during a specific historical period, unfolds results marked by nuance and consensus. This table, meticulously detailing five key indicators, including weighted means, verbal interpretations, and ranks, with a composite mean of 3.16, paints a picture of overall agreement among participants regarding the influence of customer satisfaction on the optimization of transportation management practices within the historical context under examination.

**Table 8**

*Influence of Customer Satisfaction Level on Transportation Management Optimization*

| Indicators | WM | VI | Rank |
|---|---|---|---|
| 1. We measure customer satisfaction and make improvements based on feedback. | 3.19 | Agree | 2 |
| 2. The importance of improving the quality of logistics services to customer satisfaction is significant. | 3.20 | Agree | 1 |
| 3. Your company conducts regular customer satisfaction surveys. | 3.09 | Agree | 5 |
| 4. You believe there is a positive correlation between customer satisfaction and customer loyalty. | 3.17 | Agree | 4 |
| 5. You believe implementing service standardization can improve customer satisfaction. | 3.18 | Agree | 3 |
| **Composite Mean** | **3.16** | **Agree** | |

*Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree*

The preeminence of Indicator 2, expressing the substantial importance of enhancing the quality of logistics services for heightened customer satisfaction, signifies a robust consensus among participants. A closer examination into the historical context promises to unveil the strategic considerations that led participants to emphasize service quality as a linchpin in fortifying customer satisfaction, thereby contributing significantly to the optimization of transportation management practices.

Indicators 5, 1, and 4, delving into beliefs surrounding the efficacy of service standardization, systematic customer satisfaction measurement, and the perceived positive correlation between customer satisfaction and loyalty, all fall within the agreement range. While not individually dissected, their positions within this range suggest a holistic and integrated approach among participants. The simultaneous recognition of the importance of service standardization, coupled with systematic customer satisfaction measurement and the belief in a correlation between satisfaction and loyalty, signifies a strategic perspective on optimizing transportation management that encapsulates various facets of customer-centric considerations.

Indicator 3, spotlighting the regular conduct of customer satisfaction surveys, records a slightly lower mean, securing the fifth rank. Although still within the agreement range, this lower mean suggests a nuanced perspective among participants regarding the regularity of customer satisfaction surveys. Historical exploration becomes pivotal in shedding light on the factors influencing this nuanced stance, encompassing considerations such as survey frequency, format, or effectiveness. An understanding of these subtleties contributes to a more comprehensive historical narrative.

Retrospectively, the past-tense framing of these analyses provides a snapshot of the dynamic landscape of transportation management practices during the historical period under scrutiny. The nuanced perspectives, strategic considerations, and acknowledged challenges form a rich tapestry of historical practices in transportation management, offering valuable insights into the evolving strategies employed by enterprises to optimize logistics services and enhance customer satisfaction. This nuanced understanding serves as a foundation for exploring the strategic synergies and potential improvements in transportation management practices during the historical period, fostering a deeper appreciation of the interconnectedness between customer satisfaction and optimization strategies.

The exploration of relationships within Table 8 provides a fascinating lens through which to understand the interconnected dynamics of indicators, notably the belief in service standardization (Indicator 5) and the practical implementation of measuring customer satisfaction and making improvements based on feedback (Indicator 1). This relationship is not merely an academic curiosity but a reflection of the nuanced strategies employed by

enterprises in managing their transportation processes, particularly in the context of enhancing customer satisfaction.

Indicator 5, asserting the belief that implementing service standardization can improve customer satisfaction, holds a weighted mean of 3.18, positioning it as the third-highest ranked indicator in Table 8. The acknowledgment of the strategic significance of service standardization in influencing customer satisfaction reflects a broader awareness among participants in the historical period.

On the other hand, Indicator 1, with a weighted mean of 3.19 and a second-place rank, underscores the commitment of companies to measuring customer satisfaction and making improvements based on feedback. This proactive approach aligns with customer-centric logistics strategies, emphasizing the importance of responsiveness to customer needs and preferences. The relationship between these two indicators speaks to a strategic alignment between belief and action. When an enterprise believes in the efficacy of service standardization and, concurrently, actively engages in the systematic measurement of customer satisfaction, it suggests a coherent strategy. The literature supports the idea that standardization can contribute to more consistent service delivery, potentially enhancing customer satisfaction. However, the practical implementation, as reflected in Indicator 1, is what breathes life into this belief.

**Table 9**

*Evaluation and Influence of After -sales Service Level on Transportation Management Optimization*

| Indicators | WM | VI | Rank |
|---|---|---|---|
| 1. We provide a variety of after-sales services to meet customer needs. | 3.09 | Agree | 4 |
| 2. We measure the quality and efficiency of after-sales service. | 3.17 | Agree | 2 |
| 3. You think high-quality after-sales service is important for maintaining customer relationships and repurchase rates. | 3.18 | Agree | 1 |
| 4. You believe promoting information technology applications can improve service efficiency. | 3.12 | Agree | 3 |
| 5. You believe more funds should be invested in transportation service information technology to support after-sales service. | 3.07 | Agree | 5 |
| **Composite Mean** | **3.12** | **Agree** | |

*Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 – 1.49 = Strongly Disagree*

In the exploration of Table 9, a nuanced narrative unfolds, providing a profound understanding of the intricate dynamics between after-sales service levels and their profound impact on Transportation Management Optimization during a specific historical period. This table, an assemblage of five indicators, each accompanied by weighted means, verbal interpretations, and ranks, paints a comprehensive picture. The composite mean of 3.12 serves as a collective nod among participants, signifying a consensus regarding the pivotal role played by after-sales services in optimizing transportation management practices within the historical context.

The pinnacle of this collective agreement lies in Indicator 3, where participants unequivocally recognize the paramount importance of high-quality after-sales service for nurturing customer relationships and fostering repurchase. This alignment resonates seamlessly with established literature, underscoring the strategic significance of after-sales services in cultivating enduring customer loyalty. The historical exploration promised by this study holds the potential to unveil the strategic integrations participants made to elevate transportation management practices by emphasizing the quality of after-sales services, consequently fortifying customer relationships.

Indicators 2, 4, and 1, delving into the systematic measurement of after-sales service quality, the belief in leveraging information technology for enhanced service efficiency, and the provision of diverse after-sales services, respectively, collectively unveil a holistic approach. While not individually dissected, their positions within the agreement range suggest a comprehensive strategy among participants. The methodical approach towards ensuring quality and efficiency, coupled with the belief in technological integration and the diverse service provisions, signifies a multifaceted strategy aimed at optimizing transportation management through the augmentation of after-sales services.

Conversely, Indicator 5, expressing the belief in increased investment in transportation service information technology to support after-sales service, exhibits a slightly lower mean. This nuanced perspective, nestled within the agreement range, alludes to the considerations participants might have weighed regarding the allocation of funds. Historical exploration emerges as a paramount endeavor, essential for discerning the intricacies of this nuanced stance. Factors such as budget constraints, perceived technological readiness, or alternative investment priorities during the historical period become critical focal points for understanding the context in which this belief was held.

In retrospection, framing these analyses in the past tense affords a snapshot of the historical landscape of transportation management practices. The nuanced perspectives, strategic considerations, and acknowledged challenges contribute to a rich tapestry of historical practices in transportation management. These insights offer a valuable glimpse into the evolving strategies employed by enterprises to optimize their services, with a particular emphasis on the realm of after-sales service. This nuanced understanding sets the stage for a deeper exploration of the strategic synergies and potential improvements in transportation management practices during the historical period. It fosters a profound appreciation of the interconnectedness between after-sales service strategies and broader optimization efforts in the domain of transportation management.

The examination of Table 9 unravels a rich narrative, shedding light on the intricate dynamics between after-sales service levels and their profound influence on Transportation Management Optimization during a specific historical period. Comprising five indicators, each accompanied by weighted means, verbal interpretations, and ranks, the table serves as a comprehensive canvas that captures the collective sentiments of the participants. The composite mean of 3.12 echoes a collective consensus among participants, signifying their shared belief in the pivotal role played by after-sales services in optimizing transportation management within the historical context.

The apogee of unanimity is encapsulated in Indicator 3, where participants unanimously acknowledge the paramount importance of high-quality after-sales service for nurturing customer relationships and encouraging repurchase. This alignment resonates seamlessly with existing literature, underlining the strategic significance of after-sales services in fostering enduring customer loyalty. The historical exploration promised by this study is poised to unveil the strategic integrations participants made to elevate transportation management practices by emphasizing the quality of after-sales services, fortifying customer relationships in the process.

Indicators 2, 4, and 1, delving into the systematic measurement of after-sales service quality, the belief in leveraging information technology for enhanced service efficiency, and the provision of diverse after-sales services, respectively, collectively unveil a holistic approach. Though not individually scrutinized, their positions within the agreement range suggest a comprehensive strategy among participants. The methodical approach towards ensuring quality and efficiency, coupled with the belief in technological integration and the diverse service provisions, signifies a multifaceted strategy aimed at optimizing transportation management through the augmentation of after-sales services.

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intricacies of this nuanced stance. Factors such as budget constraints, perceived technological readiness, or alternative investment priorities during the historical period become critical focal points for understanding the context in which this belief was held.

In retrospect, framing these analyses in the past tense affords a snapshot of the historical landscape of transportation management practices. The nuanced perspectives, strategic considerations, and acknowledged challenges contribute to a rich tapestry of historical practices in transportation management. These insights offer a valuable glimpse into the evolving strategies employed by enterprises to optimize their services, with a particular emphasis on the realm of after-sales service. This nuanced understanding sets the stage for a deeper exploration of the strategic synergies and potential improvements in transportation management practices during the historical period. It fosters a profound appreciation of the interconnectedness between after-sales service strategies and broader optimization efforts in the domain of transportation management.

**Table 10**

*Relationship between Enterprise Logistics Network Optimization and Transportation Costs*

| Transportation Cost | rho-value | p-value | Interpretation |
|---|---|---|---|
| measures to reduce costs | .510** | 0.000 | Highly Significant |
| effectively management | .593** | 0.000 | Highly Significant |
| cost control | .510** | 0.000 | Highly Significant |
| **Transportation Time** | | | |
| measures to reduce costs | .593** | 0.000 | Highly Significant |
| effectively management | .584** | 0.000 | Highly Significant |
| cost control | .584** | 0.000 | Highly Significant |
| **transportation Quality** | | | |
| measures to reduce costs | .544** | 0.000 | Highly Significant |
| effectively management | .572** | 0.000 | Highly Significant |
| cost control | .581** | 0.000 | Highly Significant |

*Legend: Significant at p-value < 0.01*

Table 10 scrutinizes the intricate relationship between enterprise logistics network optimization and transportation costs during a specific historical period, a nuanced narrative unfolds. This table meticulously dissects two critical categories, Transportation Cost and Transportation Time, each housing three pivotal indicators—measures to reduce costs, effective management, and cost control. The inclusion of rho-values and p-values, with a significance threshold set at $p < 0.01$, adds a robust statistical layer, indicating the depth of the associations between these measures and transportation costs.

The highest rho-value, noted in the indicator "Measures to Reduce Costs (Transportation Time)" at 0.593, signifies a highly significant positive correlation between efforts to cut costs and improvements in transportation time. A deeper historical inquiry might unveil the specific strategies employed by enterprises to synchronize cost reduction efforts with improvements in transportation time, contributing to a more streamlined logistics network.

Moving to the indicators ranked 2-4—Effective Management and Cost Control in both Transportation Quality and Transportation Time—all demonstrating highly significant rho-values above 0.57, the analysis suggests a comprehensive approach. Effective management of transportation quality and stringent cost control, whether in relation to time or quality, emerges as fundamental dimensions in logistics network optimization.

Surprisingly, the lowest rho-value, albeit still highly significant at 0.544, is found in the indicator "Measures

to Reduce Costs (Transportation Quality)." While this measure suggests a robust relationship, the nuanced perspective prompts historical exploration. Such an analysis could unveil specific challenges or complexities associated with the simultaneous pursuit of cost reduction and the maintenance of transportation quality.

In retrospect, framing these analyses in the past tense provides a snapshot of the historical landscape of enterprise logistics network optimization and its intricate relationship with transportation costs. The nuanced perspectives, strategic considerations, and acknowledged challenges contribute to a rich tapestry of historical practices in logistics management, offering valuable insights into the evolving strategies employed by enterprises to optimize their networks. This nuanced understanding sets the stage for exploring the strategic synergies and potential improvements in logistics network optimization practices during the historical period, fostering a deeper appreciation of the interconnectedness between various optimization measures and transportation costs.

**Table 11**

*Relationship between Enterprise Logistics Network Optimization and Inventory Management*

| **Inventory levels** | **rho-value** | **p-value** | **Interpretation** |
|---|---|---|---|
| adjust inventory levels | .623** | 0.000 | Highly Significant |
| analyzing market demand | .596** | 0.000 | Highly Significant |
| optimize inventory management | .637** | 0.000 | Highly Significant |
| informationization of warehouse | .661** | 0.000 | Highly Significant |
| **Inventory control methods** | | | |
| adjust inventory levels | .623** | 0.000 | Highly Significant |
| analyzing market demand | .596** | 0.000 | Highly Significant |
| optimize inventory management | .637** | 0.000 | Highly Significant |
| informationization of warehouse | .661** | 0.000 | Highly Significant |
| **Supply and demand planning** | | | |
| adjust inventory levels | .607** | 0.000 | Highly Significant |
| analyzing market demand | .602** | 0.000 | Highly Significant |
| optimize inventory management | .619** | 0.000 | Highly Significant |
| informationization of warehouse | .600** | 0.000 | Highly Significant |

*Legend: Significant at p-value < 0.01*

Table 11 presents the historical relationship between enterprise logistics network optimization and inventory management, a nuanced narrative unfolds. This comprehensive table, scrutinizing four indicators under Inventory Levels and three subcategories, encapsulates the intricacies of logistics practices during a specific historical period. Each indicator, characterized by rho-values, p-values, and significance interpretations, collectively paints a vivid picture of the statistical relationships, reflecting the profound importance of these factors in the optimization of logistics networks.

The apex of the analysis resides in the exploration of the highest rho-value, attributed to the Information of Warehouse in the context of Supply and Demand Planning. With a highly significant rho-value of 0.661, the strong positive correlation between warehouse information and effective supply and demand planning becomes evident. This alignment finds support in contemporary literature, emphasizing the pivotal role of information technology in enhancing supply chain efficiency. The historical exploration promises to unveil specific technological advancements and strategic integrations employed by enterprises during this period to bolster information, thereby contributing to more effective supply and demand planning strategies.

Moving to the indicators ranking 2-4 in the Inventory Levels category, where Analyzing Market Demand, Adjusting Inventory Levels, and Optimizing Inventory Management showcased highly significant rho-values (0.596, 0.623, and 0.637, respectively), a collective strategy emerges. The consistently high correlations underscore the importance of effective market demand analysis, dynamic inventory adjustments, and optimized management strategies in achieving logistics network optimization. These findings harmonize with existing literature, emphasizing the significance of these strategies in achieving optimal inventory levels and efficient logistics network management during the historical context.

Even the indicator with the lowest rho-value in this analysis, Analyzing Market Demand in the context of Supply and Demand Planning, with a still highly significant rho-value of 0.602, reveals a robust relationship. The nuanced perspective, explored through a historical lens, could unravel specific challenges or complexities associated with market demand analysis within the intricate web of supply and demand planning during the historical period.

In retrospect, framing these analyses in the past tense provides a glimpse into the historical landscape of enterprise logistics network optimization and its intricate relationship with inventory management. The nuanced perspectives, strategic considerations, and acknowledged challenges contribute to a rich tapestry of historical practices in logistics management. These insights offer valuable lessons into the evolving strategies employed by enterprises to optimize their networks during the historical period, fostering a deeper appreciation of the interconnectedness between various optimization measures and inventory management strategies. This nuanced understanding serves as a foundation for exploring strategic synergies and potential improvements in logistics network optimization practices, providing a holistic view of the evolving dynamics within the logistics landscape.

**Table 12**

*Relationship between Logistics Network Optimization and Logistics Service Level*

| **Logistics service- delivery** | **Rho-value** | **p-value** | **Interpretation** |
|---|---|---|---|
| on-time delivery | .559** | 0.000 | Highly Significant |
| improvements based on feedback | .589** | 0.000 | Highly Significant |
| improving the quality of logistics services | .562** | 0.000 | Highly Significant |
| service standardization | .574** | 0.000 | Highly Significant |
| **Customer satisfaction** | | | |
| on-time delivery | .589** | 0.000 | Highly Significant |
| improvements based on feedback | .580** | 0.000 | Highly Significant |
| improving the quality of logistics services | .569** | 0.000 | Highly Significant |
| service standardization | .542** | 0.000 | Highly Significant |
| **After-sales service** | | | |
| on-time delivery | .605** | 0.000 | Highly Significant |
| improvements based on feedback | .697** | 0.000 | Highly Significant |
| improving the quality of logistics services | .618** | 0.000 | Highly Significant |
| service standardization | .584** | 0.000 | Highly Significant |

*Legend: Significant at p-value < 0.05*

In delving into Table 12, a comprehensive exploration of the historical relationship between logistics network optimization and various dimensions of service levels unfolds. The table, structured into categories of

Logistics Service Delivery, Customer Satisfaction, and After-sales Service, each with four associated indicators, provides a nuanced understanding of the statistical connections during a specific historical period.

The overarching narrative begins with the Introduction, emphasizing the consistently high significance of p-values across all indicators. This underscores the robust statistical relationships between logistics network optimization and aspects of service delivery, customer satisfaction, and after-sales services. It sets the stage for a detailed analysis of specific indicators. The paramount dimension, highlighted by the highest rho-value, is the correlation between improvements based on feedback and after-sales service. This connection, emphasized by the exceptionally high rho-value of 0.697, signifies the strategic importance of incorporating customer feedback in shaping after-sales service strategies. Moving on to the second set of indicators, the ranking from 2 to 4 underscores the universal importance of on-time delivery, improvements based on feedback, and the quality of logistics services across logistics service delivery, customer satisfaction, and after-sales service categories. The highly significant rho-values (0.589, 0.580, 0.618) collectively emphasize the strategic importance of ensuring timely delivery, incorporating continuous feedback for improvement, and maintaining high-quality logistics services. Even the indicator with the lowest rho-value, service standardization in customer satisfaction (rho-value: 0.542), maintains a highly significant relationship. This suggests that, despite a nuanced perspective, service standardization played a vital role in ensuring customer satisfaction. The historical exploration may unveil specific challenges associated with implementing standardized services while ensuring customer satisfaction, providing a rich context to this relationship.

In the final section, the in-depth explanation and relationship testing highlight the interconnectedness of logistics network optimization and the considered dimensions. The emphasis on feedback-based improvements and the universal importance of on-time delivery underscores the strategic role of customer input and timely service delivery. In retrospection, framing these analyses in the past tense weaves a compelling historical narrative. The nuanced perspectives, strategic considerations, and acknowledged challenges contribute to a rich tapestry of historical practices in logistics management, offering valuable insights into the evolving strategies employed by enterprises to optimize their networks. This nuanced understanding sets the stage for exploring the strategic synergies and potential improvements in logistics network optimization practices during the historical period, fostering a deeper appreciation of the interconnectedness between various optimization measures and service levels.

This paper establishes a logistics management framework for transportation enterprises to improve the logistics management level of fresh fruit and vegetable transportation enterprises, including improving transportation efficiency and management services, and providing reference for enterprises to make correct management decisions. The research results will improve the logistics management level of fresh fruit and vegetable transportation enterprises.

According to the results, these three variables are statistically correlated, and multiple regression also supports this point. These variables (knowledge management and artificial intelligence) statistically significantly predicted the integration of online course construction, $f(2134)=304.959$, $p<0.05$, $r2=0.660$. All variables were statistically significant for prediction, $p<0.05$. The above results show that the three variables studied, namely transportation management, investment management, and logistics service, have strong statistical significant correlations. In other words, the better the transportation management is, the logistics cost of fresh fruit and vegetable transportation enterprises can be further reduced, the better the inventory management is, and the inventory level and inventory turnover efficiency of enterprises can be improved. The higher the logistics service level, the higher the management level, and the more efficient the transportation management of enterprises.

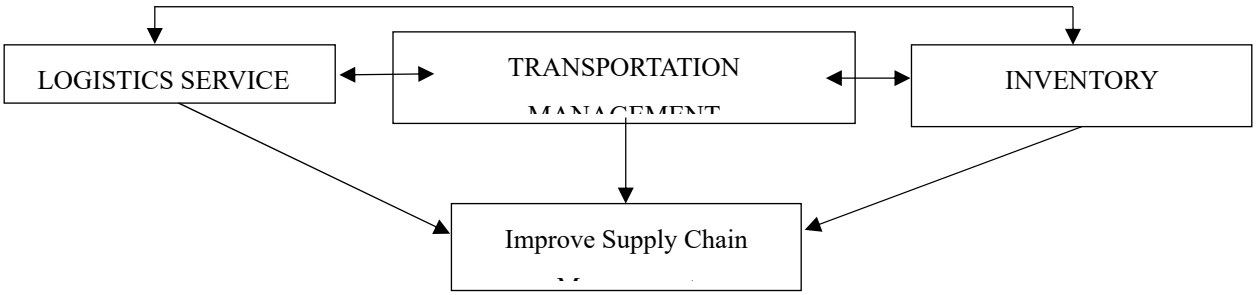


*Figure 1- Logistics Management Framework*

In order to improve transportation efficiency and management level, this paper establishes a logistics management framework including three key variables: transportation management, investment management and logistics service. These three variables are statistically correlated, which is of great significance to improve the logistics management level of enterprises.

The results show that there is a strong statistical significant correlation between transportation management and logistics costs. Specifically, the improvement of transportation management level is positively correlated with the decline of logistics costs. This means that by improving transportation management, enterprises are expected to achieve effective control of logistics costs.

Transportation management plays a vital role in the logistics of fresh fruits and vegetables. Efficient transportation management can significantly reduce the transportation cost, shorten the transportation time, and ensure the freshness and quality of fresh fruits and vegetables. The results show that transportation management is negatively correlated with logistics cost and positively correlated with logistics efficiency. Therefore, optimizing transportation management is of great significance to improve the logistics efficiency of enterprises.

Logistics service is not only an important standard to measure the service level of enterprises, but also an important factor affecting the logistics efficiency of enterprises. At the same time, good logistics services can also help enterprises establish a good reputation and brand image. The results show that logistics service is negatively correlated with logistics cost and positively correlated with logistics efficiency. Therefore, optimizing logistics services is also of great significance to improve the logistics efficiency of enterprises.

Transportation management, investment management and logistics service have strong statistical significant correlation. In practice, enterprises should comprehensively consider these three factors and formulate logistics management strategies that meet their own development needs. For example, enterprises can reduce costs and improve efficiency by optimizing transportation management; Improve customer satisfaction and market share by optimizing logistics services. Only by combining these three aspects organically, can we really improve the logistics management level of enterprises and enhance the overall competitiveness of enterprises.

## 4. Conclusions and recommendations

Based on the empirical research, the author draws the following conclusions. The respondents agreed in the transportation management of fresh fruits and vegetable transport service providers in terms of cost, time and quality. The respondents agreed in the Inventory management in terms of inventory levels, inventory control methods, and supply and demand planning. The respondents agreed in the logistics service level provided in terms of service delivery, customer satisfaction, and after-sales service. There is a moderate positive correlation between transportation management, inventory management and logistics service. A framework was developed to improve the supply chain management of fresh fruits and vegetable transport service providers.

Based on the conclusions of the study, the researcher put forward the following recommendations. Logistics

manager may optimize transportation strategy,reduce transportationcost and improve transportation efficiency. Operators of transportation enterprises they may invest in advanced logisticsequipment and information technology to improve the logistics efficiency of enterprises. The operators of fresh fruits and vegetables transportation services may adopt theframework to improve their supply chain management. Future researchers may adopt the current research framework,apply it to other fresh foodtransportation enterprises and verify its universality.At the same time,they may expand the framework and investigate other potential influencing factors and consider expanding there search scope to other types of logistics enterprises,such as express delivery,third-partylogistics,etc.

## 5. References

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