



Research of Guanxi in Transport Supply Chain and Value Chain Issues

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ABSTRACT

The article assesses the complexity of logistics features and transport management in the context of the scientific literature and discusses the possibilities of ensuring effective transport management within the value chain. It aims to explain the implications of piloting empirical ANOVA using the guanxi (Chinese interpersonal relationships) principles in transport logistics supply chain and value chain issues in loads transportation in deciding to cooperate internationally, and to analyse and empirically substantiate the behaviour characteristics expressed while managing negotiations with business partners in the logistics market. Analytical, descriptive, quantitative and statistical research methods were applied. A quantitative research strategy was used in the case of China ($n = 100$) to clarify the behaviour characteristics expressed in negotiation management towards business partners in the logistics supply chain. The research revealed a holistic picture of how transport management improvements can positively affect the overall efficiency of the entire value chain. Besides, it used the assessments of the research participants to ascertain possible ways to ensure transport management in the value chain. The data analysis showed that it is relevant to change habitual behaviour towards business partners during negotiations to predict the possibilities of ensuring transport management in the value chain and secure a competitive advantage in the logistics market. The study found that the focus is on building and maintaining formal relationships with business partners and creating long-term, close relationships. Self-interest is the least desired characteristic in negotiation management. Based on statistical data analysis, the behaviour of respondents towards business partners during negotiations in the logistics market is similar, i.e. it does not differ statistically significantly by gender, age, work experience and education. The strategies applied in negotiation management are statistically significantly related to the positions held by the respondents. A correlation analysis found negative statistically significant relationships between the indicator of the subscale for creating long-term close relationships, the indicator of the subscale for strategies applied for negotiation management, and the indicator of the subscale for creating formal relationships during negotiations. The study results provided valuable insights into the operation and dynamics of the Chinese supply chain, especially emphasising the importance of logistics characteristics. It will have lasting value in the scientific discussion by providing guidelines for implementing transportation management in the value chain. Furthermore, the study's results can be easily extrapolated to other contexts to optimally predict the possibilities of transportation management in the value chain by applying the practices in the logistics supply chain based on the Chinese case.

KEYWORDS

logistics; transport; ANOVA research; supply chain; value.

1. INTRODUCTION

ANOVA has gained popularity in quantitative research due to its ability to handle multiple dependent variables simultaneously, providing a more comprehensive understanding of the data than univariate ANOVA. However, despite its widespread use, several common misunderstandings and misapplications are associated with ANOVA, particularly concerning the steps that should be taken after rejecting a multivariate null hypothesis. Researchers often correctly use ANOVA to test for overall group differences but fail to follow up with appropriate post-hoc analyses to pinpoint specific group differences. Assumptions, such as multivariate normality, homogeneity of variance-covariance matrices and linearity, are often ignored, which can lead to incorrect conclusions. Univariate ANOVAs should be conducted for each dependent variable to identify which variables contribute to the significant multivariate effect. Bonferroni correction or other methods should be used to adjust for multiple comparisons to control the overall Type I error rate. DFA should be performed to understand the nature of group differences. DFA identifies the linear combinations of variables that best separate the groups. The canonical discriminant functions and structure coefficients should be examined to interpret the results. Multivariate post-hoc tests, such as pairwise comparisons of the group centroids, should be considered in the multivariate space. Graphical techniques, such as canonical variate plots or profile plots, should be used to visualise group differences. These visualisations can provide intuitive insights into how groups differ across multiple dependent variables. Multivariate effect sizes (e.g. Pillai's trace, Wilks' lambda) should be reported to provide a sense of the magnitude of the group differences. Also, univariate effect sizes for each dependent variable should be reported to understand their individual contributions. While ANOVA is a valuable tool in multivariate statistical analysis, its proper application requires careful attention to the assumptions underlying the method and the appropriate follow-up procedures after rejecting the null hypothesis. Researchers should ensure they conduct comprehensive post-hoc analyses to fully interpret their findings and avoid common pitfalls associated with misusing ANOVA. By doing so, they can make more accurate and meaningful inferences from their data. In the midst of this dynamic landscape, the East Asian transportation, logistics and supply chain industries are undergoing a profound evolution, becoming increasingly attractive to external stakeholders.

Therefore, to produce win-win solutions that facilitate both economic benefits and environmental sustainability simultaneously, firms have begun emphasising innovation, especially environmental innovation capability [1]. The result is a logistics landscape that is efficient and responsive to the ever-evolving global market demands. The efficiency and reliability of the logistics networks contribute significantly to the facilitation of international trade, ensuring that products reach their destinations on time. The supply chain manages business processes or activities associated with coordination, and it contains linkages in the supply chain network [2]. Amidst this modernisation and internationalisation, China's logistics sector remains deeply rooted in its rich cultural traditions. The fusion of ancient trade practices with contemporary logistics principles creates a unique and dynamic organisational ethos. The emphasis on relationships is often reflected in the traditional business philosophy of *guanxi* (Chinese interpersonal relationships). It adds a distinctive dimension to the way logistics operations are conducted in China. Based on the countries along the Belt and Road Initiative, the infrastructure affects the division status in the global value chain [3]. This research initiative is driven by the imperative to gain insights into the logistical intricacies that define China's current supply chain system. By meticulously studying the organisation of logistics entities in the region, the goal is to unearth critical information regarding operational methodologies, technological integrations and the overall adaptability of these systems to the ever-evolving demands of the global market. However, compared with developed countries, China's logistics industry is still weak in terms of international port shipping business, added value of trade exports, road transport and vehicle ownership [4]. The urgent call for a research initiative on China's recent logistics organisation stems from the imperative to navigate the complexities of the contemporary supply chain environment. At the core of this exploration lies the recognition of transportation merchandise as a key facilitator in the intricate web of supply chain logistics. Currently, the following high-quality development paths exist for China's logistics industry: the traditional path with a hinterland economy as the core condition; an open path with an opening level as the main core condition; and a comprehensive path with innovation, government intervention and opening as the main core condition [5]. Dissecting the multifaceted applications of transportation goods within China's supply chain can provide valuable insights into how these entities contribute to the seamless movement of products across the globe. Lastly, the analysis encompasses the preservation and evolution of traditional relations within the context of transportation merchandise applications.

We can promote the “intelligent + network” development of the logistics industry in the age of science and technology by utilising reasonable regional layout planning, strengthening the construction of talent teams, and scientific and perfect laws and regulations [6]. This includes the cultural and relational aspects that influence business practices, such as the role of *guanxi* in fostering trust and collaboration. An integral aspect of this research involves the logistics sector’s unique challenges. These challenges may span operational inefficiencies, bottlenecks in the supply chain or hurdles in meeting the dynamic demands of the market. The logistics and manufacturing industries have a relatively close relationship [7]. A distinctive focus of this scientific exploration is the collaborative dimension, particularly in the context of China’s logistics loads. The collaboration with China’s logistics loads adds a global perspective, acknowledging the significance of international partnerships and highlighting the interconnected nature of the logistics landscape. Technological innovation plays a leading role in the logistics industry’s development [8]. This scientific article endeavours to provide pragmatic insights and applied clarifications concerning the pivotal aspects of transport management within China’s logistics and supply chain landscape. Additionally, the study will scrutinise the intricate logistics organisation procedures employed in the Chinese context, considering the open backdrop of global and regional trade developments in the expansive field of China’s transportation sector. This includes an examination of the negotiation strategies employed in a global context, emphasising the unique challenges and opportunities that arise within the multifaceted dynamics of China’s logistics and supply chain. The improvement in the technological innovation ability of the logistics industry has promoted the development of the modern service industry [9]. Within this framework, the interconnected dynamics of logistics, supply chain and transportation-associated firms emerge as key contributors, significantly shaping and influencing the extensive landscape of global trade. Transport corridors, serving as arteries of economic activity, form a critical component of a country’s trade infrastructure. The digital economy promotes high-quality development of the logistics industry through technological innovation and improvement of factor allocation efficiency [10]. These corridors facilitate the efficient movement of goods and services, acting as conduits that connect different regions and nations. The logistics, supply chain and transportation-associated firms that operate within and along these corridors wield substantial influence over the trade dynamics of the entire world. Generally, *guanxi* applies to social/personal relationships through which employees build reciprocal and cordial links, achieving mutual benefits [11]. The acceleration of China’s transportation, logistics and supply chain sector has positioned it as an attractive hub for international investors and partners.

This sector not only plays a critical role in facilitating efficient trade but also emerges as a significant player on the global stage. A model was developed that focuses on managing logistics costs at all stages of a product’s lifecycle [12]. This multifaceted connection underscores the comprehensive nature of China’s role in the global supply chain. The integration of logistics, transportation and supply chain activities within China’s intricate network aligns with the pulse of the modern global economy. This integration optimises the movement of goods and positions China as a key player in shaping the evolution of supply chain practices worldwide. The research examined how companies affect their performance and export performance in the domestic and foreign markets when they manage their logistics performance and logistics costs effectively [13]. The article aims to explain the implications of piloting empirical ANOVA using the *guanxi* principles in transport logistics supply chain and value chain issues in loads transportation in deciding to cooperate internationally, and to analyse and empirically substantiate the behaviour characteristics expressed while managing negotiations with business partners in the logistics market. It focuses on the following scientific problem: What behaviour ensures the success of negotiation management in the logistics market? The scientific questionnaire aimed to determine the differences between business negotiations undertaken by Chinese and European managers in the field of logistics supply chain and value chain influences on making the right decision to offer transportation services in different regions of China. Scientific research will fill the knowledge gap for empirical researchers who are analysing business negotiation relations in logistics and supply chains, and for managers who participate in international business negotiations for choosing the city for loads transportation from China to Europe.

2. LITERATURE ANALYSIS

ANOVA is a member of the general linear model – a family of statistical procedures that are often used to quantify the strength between variables [14]. The independent variable in ANOVA is categorical and can be classified into two or more groups or levels. These groups represent different compared conditions, treatments or categories. ANOVA is used to compare means across different groups defined by a nominal independent

variable, with the dependent variable being a continuous measure. This method is widely used in various research fields to determine if group differences are statistically significant and to further explore the nature of these differences through post-hoc analyses. Many of the procedures in the general linear model are hierarchically organised, with more specific procedures that are often special cases of general procedures [14]. In the context of ANOVA (analysis of variance), the null hypothesis (H_0) states that the mean scores on the dependent variable are equal across all groups defined by the independent variable. In ANOVA, the null hypothesis asserts that there are no differences in the mean scores of the dependent variable across the groups. Rejecting this hypothesis suggests that the independent variable has a significant effect, warranting further investigation to identify the specific nature of the differences between groups. ANOVA, specifically, is an analysis of variance that has two or more dependent variables [15]. That is a fundamental aspect of null hypothesis significance testing (NHST) procedures, including ANOVA. The rejection of the null hypothesis implies significant differences in test scores between at least some of the teaching methods. Follow-up analyses (e.g. post-hoc tests) are needed to determine which specific methods differ from each other.

Calculating and comparing an observed statistic to a sampling distribution is central to NHST procedures, providing a basis for making inferences about population parameters based on sample data. Most behavioural scientists already have a firm grasp of ANOVA [16]. In null hypothesis significance testing, the decision to reject or retain the null hypothesis (H_0) is based on comparing the observed test statistic and the critical value from the sampling distribution. The rejection of the null hypothesis means that there is sufficient evidence to suggest significant differences between the group means. If the observed F-statistic had been less than or equal to the critical value, the null hypothesis is retained, suggesting that any observed differences in sample means could reasonably be attributed to random variation rather than a true effect. This process ensures a systematic and statistically rigorous method for making decisions about hypotheses based on sample data. ANOVA quantifies the relationship between the independent and dependent variables [17]. The fundamental logic and steps of ANOVA remain consistent with the principles of null hypothesis significance testing (NHST). However, some refinements and clarifications can enhance understanding and ensure accurate application. By refining the ANOVA logic with a focus on the assumption checking, post-hoc analyses, effect size reporting and robustness considerations, researchers can ensure more accurate and meaningful interpretations of their data. ANOVA is merely an ANOVA that has been mathematically extended to apply to situations where there are two or more dependent variables [18]. ANOVA allows researchers to simultaneously assess the effect of independent variables on multiple dependent variables. This multivariate approach can provide a more comprehensive understanding of the data and the relationships between variables. ANOVA offers significant advantages when dealing with multiple dependent variables, providing a more comprehensive analysis and better control of Type I error rates. However, it also introduces additional complexity and requires careful consideration of assumptions and sample size. Researchers should weigh the benefits of ANOVA against its complexity based on their specific research objectives, the nature of their data, and their ability to meet the method's assumptions.

When used appropriately, ANOVA can yield valuable insights that might be missed with simpler univariate methods. One alternative to using ANOVA is to conduct separate ANOVAs for each dependent variable. However, this approach has several implications and potential drawbacks compared to using ANOVA. While separate ANOVAs offer simplicity and focused analysis, they come with increased risks of Type I error and loss of multivariate insights. ANOVA, though more complex, provides a robust method for analysing multiple dependent variables simultaneously, accounting for correlations and controlling the overall error rate. Conducting multiple ANOVAs is not advantageous in the context of correlated dependent variables due to the increased risk of Type I error and the inability to detect multivariate effects. ANOVA offers a more powerful and informative approach by controlling the overall Type I error rate, accounting for correlations among dependent variables, and providing insights into the combined effects of independent variables on multiple outcomes. For behavioural scientists and researchers in similar fields, ANOVA is often the preferred method when studying complex, interrelated, dependent variables. In contemporary business landscapes, the integration of supply chain and value chain management has become synonymous with the facilitation of global load transportation. The author distinguished a decline in logistics costs and increased customer satisfaction with services [19]. The convergence of these two essential components forms a dynamic synergy that plays a pivotal role in the seamless movement of goods on an international scale. The fusion of supply chain and value chain management becomes particularly evident when considering the intricacies of worldwide load transportation. The use of tools and different strategies to help operating activities reduce logistics costs is one of the methods they use to achieve their goal, since logistics costs are a major factor

inherent in all business activities [20-22]. In the context of global load transportation, the collaboration of supply chain and value chain management becomes essential. Logistics activity is an activity that helps support the connection of the work inside and outside the organisation, both in terms of demand and supply [23]. Forming effective supply chain management involves addressing the inherent challenges associated with the obligation of loads, intricately connecting smaller, less dominant transportation firms and larger, more influential entities. Previous research has shown that *guanxi* is one of the most important success elements for managing business in China; thus, having the right *guanxi* can offer many benefits [24]. Evidently, a comprehensive approach is required to accomplish the right *guanxi*, necessitating additional guidance and insights gleaned from global firms with extensive experience in managing complex supply chain dynamics. The business *guanxi* reflects the managers' network and a social connection with their suppliers, vendors, wholesalers and competitors [25]. As China has evolved into a pivotal hub in the global economy, the dynamics of international trade and the associated negotiations have become increasingly intricate, necessitating a nuanced examination of the challenges and potential misunderstandings that may impede the seamless flow of goods. Previous research has shown that building positive *guanxi* brings benefits and competitive advantages for businesses in China [26]. Clear communication, cross-cultural understanding and a commitment to international standards are vital components of effective negotiations in global value and supply chains. *Guanxi* practice is only identified as reasonable demands and reciprocal favours in interpersonal relations, long-term personal networks and helping one another [27].

3. RESEARCH METHODS

During the visit to China, the author of this article decided to research how *guanxi* influences business and trade negotiations in transport logistics supply chain management. The research took several months and encompassed visits to five cities, managing different tasks. The population of the five cities is almost 70 million. The questionnaire involved 100 experts, and the interview types were in-depth, descriptive and interpretative. The distinction between *guanxi* and the business negotiation relationship was illustrated. The interview was characterised as a formal source of hypothesis and a general method for hypothesis generation and testing. Due to the flexibility of the in-depth interview and the difficulty of conducting and reporting descriptive and interpretive analyses, the research report should provide detailed information about how the interview proceeded and how the data were analysed. The need was emphasised to adopt the critical orientation towards explanation derived from interview data. The main factors that influence corporate reputation play a prominent role in value chain management in the Chinese logistics market. The corporate reputation construct in the Chinese market consists of a divergent set of factors resulting from cultural influences based on theoretical analysis. Based on qualitative analysis, corporate reputation in the Chinese market is the precondition for business success. *Guanxi*, as an element of corporate reputation, remains a contributor to the binding of individual firms in value chains in the Chinese logistics market based on qualitative analysis. Based on empirical research, Chinese buyers are driven by corporate reputation in their purchase decisions. The qualitative analysis showed that Chinese managers consider reputation to contribute to business success. Research on how *guanxi* influences business and trade negotiation in transport logistics supply chain management in China is intriguing and complex. The following structured overview provides key points based on observations and analysis. In the Chinese logistics market, the interplay between *guanxi* and corporate reputation is pivotal. *Guanxi* is influenced by cultural norms and values. It significantly impacts corporate reputation, which drives business success. This relationship underscores the importance of building and maintaining strong personal and professional networks in China's transport logistics supply chain management. Research suggests that for businesses operating in China, understanding and leveraging *guanxi* is essential for establishing a reputable presence in the market and ensuring long-term success. China is an emerging economic powerhouse, exploring myriad possibilities to make substantial contributions, particularly within the expansive domains of supply chain and value chain management.

The dynamic nature of China's economic growth and industrial development has opened up numerous avenues for active participation and leadership in the intricate realms of supply chain and value chain management. Chen, Ellinger and Tian [28] found that supply and demand market uncertainties and the complexity of the legal environment significantly affect the manufacturer-supplier *guanxi* level, and that *guanxi* affects the use of non-coercive power by manufacturers. China's strategic geographic positioning and extensive infrastructure development initiatives contribute to its significance in the global supply chain. Luo, Hsu and Liu [29] found that *guanxi* can enhance the impact of customer orientation and customer trust, as well

as their effect on performance. While China possesses an enormous capacity for trade expansion, characterised by a strategic approach to tapping into vast logistics markets and generating significant employment opportunities, it is essential to exercise discretion. China's trade expansion capabilities are underscored by its position as a global economic powerhouse. Further, Li and Lin [30] state that *guanxi* offers moderate resource integration and manufacturing flexibility in global logistics. The nation has demonstrated a proactive stance in engaging with international logistics markets, fostering trade relationships, and leveraging its manufacturing prowess to become a central player in the global supply chain economy.

The following scientific research hypothesis was tested: Chinese managers consider reputation a contributor to business success based on qualitative analysis. The author is well aware of the lack of objectivity while using such a small research sample and its consequences for generalising the findings; however, the research and its results can be treated as preliminary proof of the hypothesised thesis and give rise to more complex research in the future. ANOVA was practised using the SPSS data analysis, and after it was understood, ANOVA was used in statistical tests. For the purpose of the survey, the author developed a questionnaire and analysed the data using an available statistical instrument. The ANOVA extended this analysis by considering multiple continuous dependent variables and bundling them together into a weighted linear combination or composite variable. The ANOVA compared whether or not the newly created combination differs among the different groups or levels of the independent variable. The quantitative research focused on understanding the perspectives and beliefs of Chinese institutional buyers/managers across various geographical locations, including Beijing, Shanghai, Hong Kong, Tianjin and Macao. The questionnaire delved into various aspects related to business negotiation styles, practices and behaviours prevalent among Chinese institutional buyers/managers.

The survey methodology involved field professionals representing a diverse cross-section of industries and roles within the institutional buyer/manager domain. The geographical diversity of the sample, spanning key economic hubs like Beijing, Shanghai, Hong Kong and Macao, added granularity to the insights, acknowledging potential regional variations in negotiation approaches. The quantitative research offers valuable insights into the negotiation landscape among Chinese institutional buyers/managers. The comprehensive questionnaire, diverse geographical representation and sizable sample size contribute to the reliability and relevance of the findings. The results of this survey could serve as a foundation for understanding and navigating the intricacies of business negotiations in the Chinese institutional market. Including cities as fixed factors allowed for a comprehensive exploration of potential response variations based on geographical locations. Chu et al. [31] found that the impacts of *guanxi* on operational performance are positive and significant. This approach acknowledged the possibility of regional differences in negotiation styles and beliefs among institutional buyers/managers in Beijing, Shanghai, Hong Kong and Macao. The ANOVA framework provided a robust analytical lens to unveil patterns, trends and potential city-specific influences on the responses. By considering respondents from different cities as fixed factors, the analysis aimed to identify any statistically significant differences in the beliefs of institutional buyers/managers across diverse geographical locations. Essentially, the adoption of a Likert-type scale, coupled with meticulous questionnaire review, anonymity assurance and the application of advanced statistical techniques like ANOVA, collectively fortified the survey methodology. This approach not only facilitated a nuanced exploration of the beliefs of Chinese institutional buyers/managers but also ensured the reliability and validity of the gathered data, contributing to the overall robustness of the research findings. The principles of *guanxi* are frequently discussed in terms of four closely related constructs: favour, face, trust [32] and emotion.

Furthermore, the quantitative research encompassed a meticulous examination of the perspectives and beliefs of Chinese institutional buyers/managers across a diverse array of geographical locations, extending beyond mainland China to include key economic hubs, such as Hong Kong and Macao. This expansion of the study's scope acknowledges the regional nuances that can significantly impact negotiation dynamics within the institutional market. By delving into various aspects of negotiation styles, practices and behaviours, the survey aimed to elucidate the intricate interplay of cultural and business factors shaping decision-making processes among Chinese institutional buyers/managers. Through a randomised selection process, professionals from various industries and roles within the institutional buyer/manager domain were engaged, further enriching the breadth of perspectives captured. By treating geographical locations as fixed factors, the analysis sought to discern any statistically significant differences in negotiation beliefs across the surveyed cities. In summary, the methodological rigour employed in this research, characterised by the strategic formulation of survey questions, diverse geographical representation and sophisticated statistical analysis, underscores the reliability and relevance of the findings. These insights serve as a valuable resource for

understanding and navigating the complex landscape of business negotiations within the Chinese institutional market, offering practical implications for stakeholders across industries and regions. The employment of advanced statistical techniques like ANOVA further enhances the rigour of the analysis by enabling the identification of significant differences in negotiation beliefs across surveyed cities. By treating geographical locations as fixed factors, the research aims to uncover nuanced patterns and trends that may exist within and between regions. The survey presents topics for a more in-depth research: building personal *guanxi*/relationships in mutual loads transportation consensus; the goal and aim of the business deal in the logistics market; taking the initiative to show interest in the products or services transportation; maximising the interest of own company; the price or terms agreed in previously negotiated deals in the logistics market; using relationships and friendships (*guanxi*) with the counterpart to obtain a better price in loads transportation; accepting a small gift from the counterpart as a souvenir at the first negotiation meeting in the logistics market; adopting an indirect communication style in the logistics market and using gestures, such as smiles or nods, instead; sitting in the negotiation room; observing the seating position and order in accordance with the company rank of participants (e.g. the negotiation team leader or manager must sit in the front or the middle); having a formal introduction, including shaking hands, exchanging business cards with two hands, rather than a casual introduction in the logistics market; avoiding eye contact with the counterpart to show respect in the logistics market; managing own face in the deals in the logistics market; making favours to counterparts (*renqing*) and returning them when asked in a negotiation and the effect of such behaviour on corporate reputation in value chain management.

In conclusion, the credibility of the findings arises from the methodological rigour demonstrated in this research, from the strategic design of the questionnaire to the meticulous selection of respondents and the application of sophisticated statistical analysis. These insights contribute to a deeper understanding of negotiation dynamics within the Chinese institutional market and offer actionable implications for stakeholders across industries and geographical regions, facilitating more informed decision-making processes. Systematic analysis of scientific literature and research is based on comparative and generalisation methods. A quantitative research method (questionnaire survey) was used to analyse the research participants' behaviour towards business partners during negotiation management in the logistics market. The questionnaire collected demographic and social data about the respondents. Based on theoretical insights and criteria identified in the scientific literature, it included 55 statements designed to determine the research participants' behaviour used with business partners in negotiation management in the logistics market. The following variables were chosen as the object of analysis since the peculiarities of conducting negotiations to achieve successful business transactions in the logistics market are associated with the selection and application of appropriate strategies in negotiation management and ensuring mutually beneficial relationships, increasing mutual loyalty, and forming long-term and close relationships with business partners: negotiation management behaviour aimed at mutually beneficial relations; creating long-term and close relationships with business partners to succeed in the logistics market; increasing mutual loyalty and strengthening relations with business partners; applying strategies in negotiation management; expressing self-interested behaviour during negotiations, etc.

The possible answer options are assessed using a five-point Likert scale (from 1 to 5), where five points represent the strongest degree of agreement with the statement (strongly agree/agree), and one point represents the strongest degree of disagreement (strongly disagree/disagree). The results are obtained by summing up the answer variants of the statements – numerical values. When defining the features of the research participants' behaviour towards business partners in managing negotiations in the logistics market, a factor analysis of the principal components was performed, and the constructs were isolated using the Varimax rotation. The results show that the data are suitable for factor analysis: $KMO = 0.616$ (possibly not lower than $KMO = 0.6$) and Bartlett's specificity test value $p < 0.001$. The factor analysis results show that the questionnaire statements about the characteristics of behaviour towards business partners in managing negotiations form the weights of four factors after the rotation procedure. Four groups of statements (subscales) were distinguished on this basis. The validity and reliability of the questionnaire were determined by calculating *Cronbach's alpha* values in each group of questionnaire statements (subscales) separately, which made it possible to find out whether all the statements reflected the studied dimension and enabled the number of required questions in the subscales to be specified. The results of statistical data analysis show the degree of internal consistency of the group of questionnaire statements ($n = 29$). "Creating long-term and close relationships" is high enough (*Cronbach's alpha* = 0.741), varying from 0.716 to 0.793. After checking the internal consistency of the questionnaire statements ($n = 8$) of the group "Applying strategies in negotiation management", *Cronbach's alpha* = 0.735 was calculated, varying from 0.702 to 0.784. The values of the Cronbach's alpha coefficient of the group

consisting of ten statements yielded *Cronbach's alpha* = 0.827, varying from 0.796 to 0.864. The internal consistency of the group of statements ($n = 8$) "Seeking benefits during negotiations" has a *Cronbach's alpha* = 0.784, varying from 0.737 to 0.823. The internal consistency should be between 0 and 1, and the value of Cronbach's alpha coefficient reaching 0.60 is considered suitable for research and justifies the high reliability of the questionnaire [33]. Consequently, Cronbach's alpha calculated during this study shows that the variables included in the completed questionnaire reflect the research and measure what is intended, i.e. the questions are focused on examining the behaviour characteristics expressed in negotiation management towards business partners in the logistics market. Statistical data analysis was used to process the data collected during the study. The quantitative research instrument consisted of ordinal and nominal scales; therefore, absolute and percentage frequencies and scale averages were calculated. Mean (M) and its standard deviation (SD) were used to describe Likert scale variables, and Student's t -test was used to compare the means of Likert scale variables in two independent samples. ANOVA (F) was used to compare the averages of more than two groups. Pearson's correlation coefficient was also used to evaluate the interrelationships between the four groups (subscales) of the statements. When the significance level was less than 0.05, the difference in characteristics was considered statistically significant. Statistical analysis of the data was performed using SPSS software version 17 data package and MS Excel 2016 computer program.

4. RESEARCH PROGRESS AND SUBJECTS

The study sample consisted of 100 respondents, of which more than two-thirds were men ($n = 69$ (69%)) and slightly more than one-third were women ($n = 31$ (31%)). During the survey, it became clear that the majority of respondents belonged to the age groups of 36 to 50 ($n = 28$ (28%)) and 51 to 70 ($n = 59$ (59%)), and only a small group of the study participants were under 35 ($n = 13$ (13%)). The distribution of respondents according to work experience showed that all the study participants had more than five years of work experience: a third ($n = 33$) had between 11 and 15 years of work experience, almost two-thirds ($n = 58$ (58%)) had 15 years or more, and only a small part ($n = 9$ (9%)) had up to 11 years of work experience. Most research participants were directors ($n = 58$ (58%)) or supervisors ($n = 31$ (31%)), and only a small part of the respondents were managers ($n = 11$ (11%)). Also, the analysis of demographic data showed that the majority of the study participants had a university ($n = 26$ (26%)) or academic ($n = 58$ (58%)) education or a vocational degree ($n = 11$ (11%)). Only a small part of the study participants had secondary ($n = 5$ (5%)) or basic ($n = 1$ (1%)) education. The research observed the ethical principles of personal privacy, confidentiality, voluntariness, anonymity and the freedom to participate in the survey.

Research arrangement. The survey was conducted electronically, using a data collection system, which likely resulted in more passive participation. Consequently, this study is small-scale, and its results are not representative of the entire population. However, the results of this research type can be reliable without extrapolating them beyond the study group. On the other hand, large differences should be recognised in the numbers of respondents in terms of gender, age, length of service, positions and education; thus, the indicator can be identified as a limitation of the study. Therefore, from the perspective of further research, it would be appropriate to repeat the study by expanding the sample of subjects to achieve greater representativeness and formulate statistically significant conclusions regarding the phenomenon under consideration.

5. RESEARCH RESULTS AND THEIR ANALYSIS

Based on the analysis of general sample data (Table 1), the highest average of estimates shows that when evaluating the peculiarities of conducting negotiations, the research participants mostly focused on creating and maintaining formal relations with business partners ($M = 3.47$, $SD = 0.4$), perceiving this as reliability of relations due to the influence of formality and the organisational structure of process management, including such aspects as the company's reputation and its preservation, the company's rank or hierarchical level in the logistics market, the age and status of business partners, official relations with business partners, etc. Also, the sufficiently high averages of the estimates suggest that during negotiations, the research participants focus on creating mutually beneficial relationships that help business transactions, strengthening ties with business partners, forming long-term and close relationships with business partners, increasing mutual loyalty ($M = 3.39$, $SD = 0.25$), and selecting and applying strategies in negotiation management ($M = 3.38$, $SD = 0.42$). These factors are among the probable success determinants during negotiations with business partners. On the other hand, the fairly low average of the estimates suggests that the research participants least

equate their behaviour during negotiations with the pursuit of self-interest, regardless of the business partner's interests and expectations ($M = 3.16$, $SD = 0.46$).

Table 1 – Means of estimates (M) of behaviour towards business partners in managing negotiations in the logistics market in the general sample ($n = 100$; $Max = 5$)

1. Creating long-term and close relationships	3.39
2. Applying strategies in negotiation management	3.38
3. Building formal relationships during negotiations	3.47
4. Self-interest in negotiations	3.16

Summarising the general sample results, negotiation management in the logistics market is aimed at creating formal relationships. Formal mechanisms include specific structural elements (such as regular meetings, the matrix of responsibilities, following the negotiation protocol and rules to maintain the company's reputation and its preservation, the company's rank or hierarchical level, and the age and status of business partners) during negotiations, realising that formal relationships improve the work performance and increase accountability. To secure the best possible position in the logistics market, new habits are formed in negotiation management when the transaction process is no longer considered a priority in the exchange. It becomes much more important to select appropriate behavioural strategies and the perspective of relationships when the aim is to identify and get to know business partners better, establish and maintain long-term relationships, and constantly strengthen the network of mutual benefits through personalised and value-added contacts in the long term. These are possibly among the most important aspects that provide more opportunities and motivation, strengthen relationships, increase individual commitment, dedication, satisfaction, productivity and efficiency, and ensure competitive advantage in the logistics market.

A comparative analysis was performed on the gender dependence of the research participants' attitudes on the behaviour during negotiations in the logistics market (Table 2).

Table 2 – Means (M), standard deviations (SD) and level of significance of differences between the groups of men ($n = 69$; $Max = 5$) and women ($n = 31$; $Max = 5$) of the estimates of behaviour towards business partners in negotiation management in the logistics market

Subscale title	Men group		Women group		<i>t</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Creating long-term and close relationships	3.38	0.24	3.42	0.27	−0.731	0.466
Applying strategies in negotiation management	3.41	0.39	3.32	0.49	0.972	0.334
Building formal relationships during negotiations	3.46	0.44	3.5	0.29	−0.548	0.585
Self-interest in negotiations	3.18	0.46	3.11	0.49	0.682	0.497

The analysis of the study results showed that although men gave higher average estimates to the application of strategies in negotiation management in the logistics market ($M = 3.41$, $SD = 0.39$) than women ($M = 3.32$, $SD = 0.49$), after calculating the *t*-test, no statistically significant difference in means was found ($t = 0.972$, $p = 0.334$). Also, men identified their negotiation behaviour as seeking personal benefits ($M = 3.18$, $SD = 0.46$) more often than women, as this group had a lower average estimate for these aspects ($M = 3.11$, $SD = 0.49$). Meanwhile, the higher averages of the estimates in the female group show that they consider the relationship perspective much more important, directing their behaviour towards the creation, development and maintenance of successful, binding and reliable relationships. Research participants associate their negotiation behaviour with building relationships with business partners, including long-term and close relationships ($M = 3.42$, $SD = 0.27$) and formal relationships during negotiations with business partners ($M = 3.5$, $SD = 0.29$). In the group of men who participated in the study, lower mean estimates were determined in these aspects (respectively, $M = 3.38$, $SD = 0.24$ and $M = 3.46$, $SD = 0.44$). However, after calculating the Student's *t*-test, no statistically significant differences in the averages were found in terms of gender (Table 2), which suggests that men and women had a similar evaluation of the behaviour in negotiation management in the logistics market.

Since scientific literature often emphasises the aspect of the age difference, it is logical to investigate how the behaviour of business partners in negotiation management in the logistics market depends on the age of the subjects. Data were analysed using analysis of variance (ANOVA). The analysis showed that the levels of estimates for behaviour during negotiations were not statistically related to age (*Table 3*). The statistical analysis results suggest that the research participants' behaviour towards business partners during negotiations was oriented towards creating long-term and close relationships ($F = 1.201$, $p = 0.305$), building formal relationships ($F = 0.905$, $p = 0.524$), selecting and applying strategies in negotiation management ($F = 1.271$, $p = 0.263$) and self-interest in negotiations ($F = 0.843$, $p = 0.578$). All these objectives had a similar level and varied only slightly depending on age. Data for different age groups are presented in *Table 4*.

Table 3 – Results of variance analysis of estimates depending on age and its effect on the behaviour towards business partners in negotiation management in the logistics market (when $p < 0.05$)

Subscale title	III type sum of squares	Degree of freedom (df)	Means of squares	F	p
Creating long-term and close relationships	1.247	9	0.183	1.201	0.305
Applying strategies in negotiation management	1.476	9	0.164	0.905	0.524
Building formal relationships during negotiations	1.801	9	0.2	1.271	0.263
Self-interest in negotiations	1.661	9	0.185	0.843	0.578

Table 4 – Averages and standard deviations (in parentheses) in the assessment of the behaviour towards business partners in negotiation management in the logistics market, depending on the age of the subjects ($n = 100$; Max = 5)

Subscale title	Up to 25	From 26 to 30	From 31 to 35	From 36 to 40	From 41 to 45	From 46 to 50	From 51 to 55	From 56 to 60	From 61 to 65	From 66 to 70
	n = 4	n = 4	n = 5	n = 10	n = 8	n = 10	n = 12	n = 22	n = 14	n = 11
Creating long-term and close relationships	3.66 (0.12)	3.33 (0.14)	3.47 (0.29)	3.3 (0.26)	3.36 (0.28)	3.34 (0.25)	3.42 (0.3)	3.35 (0.22)	3.38 (0.25)	3.51 (0.22)
Applying strategies in negotiation management	3.16 (0.36)	3.31 (0.46)	3.63 (0.32)	3.38 (0.4)	3.56 (0.37)	3.48 (0.51)	3.27 (0.39)	3.26 (0.46)	3.46 (0.41)	3.42 (0.43)
Building formal relationships during negotiations	3.1 (0.55)	3.4 (0.42)	3.72 (0.59)	3.28 (0.44)	3.59 (0.41)	3.45 (0.31)	3.4 (0.45)	3.48 (0.33)	3.53 (0.38)	3.65 (0.34)
Self-interest in negotiations	3.28 (0.71)	3.13 (0.6)	3.4 (0.38)	2.93 (0.42)	3.0 (0.53)	3.06 (0.62)	3.11 (0.54)	3.18 (0.33)	3.33 (0.39)	3.2 (0.46)

Analysing the data differences in the levels of estimates given by the groups of research participants with different working experience, the results of the statistical analysis showed (*Table 5*) that the behaviour during negotiations was oriented towards creating long-term and close relationships ($F = 1.986$, $p = 0.075$), building formal relationships ($F = 0.882$, $p = 0.512$), selecting and applying strategies in negotiation management ($F = 0.251$, $p = 0.958$), and the pursuit of self-interest in negotiations ($F = 0.358$, $p = 0.903$) was not statistically significantly related to the available work experience of the respondents.

Table 5 – Results of variance analysis of estimates depending on the length of service and its effect on the behaviour towards business partners in negotiation management in the logistics market (when $p < 0.05$)

Subscale title	III type sum of squares	Degree of freedom (df)	Means of squares	F	p
Creating long-term and close relationships	0.686	6	0.114	1.986	0.075
Applying strategies in negotiation management	0.283	6	0.188	0.251	0.958
Building formal relationships during negotiations	0.86	6	0.162	0.882	0.512
Self-interest in negotiations	0.483	6	0.224	0.358	0.903

The study results showed similar levels and slight differences in individual variables of the behaviour of research participants with different work experience (*Table 6*).

Table 6 – Averages and standard deviations (in parentheses) in the assessment of the behaviour towards business partners in negotiation management in the logistics market, depending on the length of service of the subjects ($n = 100$; Max = 5)

Subscale title	From 5 to 7	From 7 to 9	From 9 to 11	From 11 to 13	From 13 to 15	From 15 to 20	20 and more
	$n = 2$	$n = 3$	$n = 4$	$n = 12$	$n = 21$	$n = 31$	$n = 27$
Creating long-term and close relationships	3.48 (0.1)	3.61 (0.12)	3.3 (0.2)	3.55 (0.14)	3.36 (0.24)	3.41 (0.26)	3.31 (0.26)
Applying strategies in negotiation management	3.5 (0.88)	3.17 (1.01)	3.5 (0.53)	3.33 (0.45)	3.36 (0.36)	3.38 (0.39)	3.44 (0.41)
Building formal relationships during negotiations	3.4 (0.57)	3.53 (0.76)	3.63 (0.43)	3.68 (0.28)	3.46 (0.46)	3.46 (0.36)	3.39 (0.39)
Self-interest in negotiations	3.13 (0.88)	3.5 (0.38)	3.09 (0.72)	3.13 (0.46)	3.21 (0.44)	3.14 (0.39)	3.12 (0.54)

Tables 7 and 8 present the differences in estimate levels by groups of research participants with different education. After performing a statistical analysis of the data (Table 8), a higher average of estimates was found in the group with secondary education ($M = 3.68$, $SD = 0.31$), which suggests their tendency to choose and apply strategies more often compared to groups with vocational ($M = 3.45$, $SD = 0.36$), university ($M = 3.48$, $SD = 0.37$) or academic ($M = 3.3$, $SD = 0.45$) education. The groups with vocational ($M = 3.59$, $SD = 0.3$) and university ($M = 3.55$, $SD = 0.35$) education had higher mean estimates than the group with secondary education ($M = 3.48$, $SD = 0.5$). Respondents with an academic ($M = 3.42$, $SD = 0.43$) education equated their behaviour with building formal relationships. Self-interest in negotiations was characteristic of secondary ($M = 3.25$, $SD = 0.39$) and vocational ($M = 3.3$, $SD = 0.4$) education groups, while groups with a university ($M = 3.12$, $SD = 0.51$) and academic ($M = 3.12$, $SD = 0.45$) education had lower mean estimates for this variable. However, the analysis of variance (ANOVA) revealed that behaviour during negotiations was not statistically significantly related to the level of education (Table 7). Consequently, the behaviour was oriented towards creating long-term and close relationships ($F = 0.561$, $p = 0.691$), building formal relationships ($F = 0.713$, $p = 0.585$), selecting and applying strategies in negotiation management ($F = 1.617$, $p = 0.176$) and the pursuit of self-interest during negotiations ($F = 1.884$, $p = 0.12$). These objectives had similar levels and only slightly differed depending on the education level. The estimate averages by respondent groups with different education levels are presented in Table 8.

Table 7 – Results of dispersion analysis of estimates for behaviour towards business partners in negotiation management in the logistics market and available education ($p < 0.05$)

Subscale title	III type sum of squares	Degree of freedom (df)	Means of squares	F	p
Creating long-term and close relationships	0.139	4	0.486	0.561	0.691
Applying strategies in negotiation management	1.134	4	0.283	1.617	0.176
Building formal relationships during negotiations	0.465	4	0.116	0.713	0.585
Self-interest in negotiations	1.569	4	0.392	1.884	0.12

A comparative analysis of estimate levels by different positions held by respondents revealed a statistically significant relationship with strategies applied in negotiation management ($F = 2.777$, $p = 0.05$). Respondents in the position of director ($M = 3.34$, $SD = 0.45$) or supervisor ($M = 3.35$, $SD = 0.38$) were less likely to focus on applying strategies than respondents in the position of manager ($M = 3.66$, $SD = 0.3$). Also, higher estimate averages in the group of managers suggest a greater likelihood for them to build formal relationships during negotiations ($M = 3.66$, $SD = 0.3$) and indicate their self-interest ($M = 3.34$, $SD = 0.33$). Respondents in supervisor or director positions had lower averages of estimates (Table 10). However, the variance analysis (ANOVA) showed (Table 9) no statistically significant relationship between respondent positions and building formal relationships during negotiations ($F = 1.184$, $p = 0.31$) and self-interest in negotiations ($F = 1.342$, $p = 0.266$).

Table 8 – Averages and standard deviations (in parentheses) in the assessment of the behaviour towards business partners in negotiation management in the logistics market, depending on the level of education of the subjects ($n = 99$; Max = 5)

Subscale title	Elementary	Secondary	Vocational	University	Academic
	$n = 1^*$	$n = 5$	$n = 11$	$n = 26$	$n = 57$
Creating long-term and close relationships	3.76 (.)	3.4 (0.29)	3.41 (0.16)	3.39 (0.23)	3.39 (0.27)
Applying strategies in negotiation management	3.25 (.)	3.68 (0.31)	3.45 (0.36)	3.48 (0.37)	3.3 (0.45)
Building formal relationships during negotiations	3.3 (.)	3.48 (0.5)	3.59 (0.3)	3.55 (0.35)	3.42 (0.43)
Self-interest in negotiations	4.25 (.)	3.25 (0.39)	3.3 (0.4)	3.12 (0.51)	3.12 (0.45)

Note: * Data analysis does not include the group with basic education due to the small number of respondents ($n = 1$).

Table 9 – Results of the dispersion analysis for the estimates of the behaviour towards business partners in negotiation management in the logistics market and the positions held by subjects (when $p < 0.05$)

Subscale title	III type sum of squares	Degree of freedom (df)	Means of squares	F	p
Creating long-term and close relationships	0.862	2	0.294	0.255	0.775
Applying strategies in negotiation management	0.963	2	0.481	2.777	0.05
Building formal relationships during negotiations	0.381	2	0.19	1.184	0.31
Self-interest in negotiations	0.575	2	0.287	1.342	0.266

Table 10 – Averages and standard deviations (in parentheses) of the assessment of behaviour towards business partners in negotiation management in the logistics market by to the positions of the subjects ($n = 100$; Max = 5)

Subscale title	Manager	Supervisor	Director
	$n = 11$	$n = 31$	$n = 58$
Creating long-term and close relationships	3.41 (0.22)	3.37 (0.2)	3.4 (0.27)
Applying strategies in negotiation management	3.66 (0.3)	3.35 (0.38)	3.34 (0.45)
Building formal relationships during negotiations	3.61 (0.36)	3.52 (0.28)	3.43 (0.46)
Self-interest in negotiations	3.34 (0.33)	3.08 (0.44)	3.16 (0.49)

The research aimed to find how the indicators of behaviour towards business partners in negotiation management in the logistics market were interrelated in the four groups of statements (subscales). Pearson's correlation analysis was performed for that purpose, and its data are presented in Table 11.

A weak but statistically significant negative correlation shows that the research participants focusing on creating long-term and close relationships are less likely to apply behavioural strategies in negotiation management ($r = -0.198$, $p = 0.05$). On the other hand, an analogous but somewhat stronger, statistically significant negative relationship suggests that research participants who tend to maintain long-term and close relationships are less focused on creating formal relationships ($r = -0.213$, $p = 0.033$). Thus, the study results suggest that in negotiation management in the logistics market, the aim is to identify and get to know business partners as much as possible, establish and maintain long-term and close relationships, increase mutual loyalty, and constantly strengthen the network of mutual benefits. When personal relationships are considered more vulnerable and provide richer information, less official information is used, and then, the behaviour is less likely to focus on the selection and application of negotiation strategies and conducting negotiations in line with the formal protocol and rules. Also, lower attention to the company's reputation and its preservation is coupled with less consideration of the company's rank or hierarchical level and the age or status of business partners during negotiations. Correlational relations of indicators for statement groups (subscales) ($n = 100$, when $p < 0.05$) are presented in Table 11.

Table 11 – Correlational relations of indicators for groups (subscales) of statements regarding behaviour towards business partners in negotiation management in the logistics market ($n = 100$, when $p < 0.05$)

Subscale title	Creating long-term and close relationships	Applying strategies in negotiation management	Building formal relationships during negotiations	Self-interest in negotiations
Creating long-term and close relationships	1.000 100	–0.198* 0.05 100	–0.213* 0.033 100	–0.07 0.491 100
Applying strategies in negotiation management		1.000 100	0.124 0.219 100	0.096 0.341 100
Building formal relationships during negotiations			1.000 100	0.138 0.17 100
Self-interest in negotiations				1.000 100

Summary of the empirical study results showed an obvious change in the concept of negotiation management in the logistics market, with long-term relationships becoming one of the bases of marketing due to their importance and benefits. Also, already-formed relationships focus on the mutual benefit as a result of the exchange agreement achieved during negotiations. Thus, despite self-interest in pursuit of economic benefit, which is one of the main marketing aspects, the empirical study results suggest other aspects, prioritising successful relationship-based management of negotiations in the logistics market based on cooperation, long-termism, mutual exchange, reciprocity, dedication and commitment. Such management is described as a long-term process that promotes close, emotional and dependent relationships between stakeholders. Besides, it is based on trust, assurance, promise-keeping, dependence, mutual benefit, etc. Such negotiation management is used to identify potential relationships with logistics market stakeholders as well as create, develop and strengthen them to achieve a long-term perspective, continuity and mutual (economic) benefits, probably leading to the satisfaction of expectations for stakeholder cooperation in the long-term perspective. The investigation explored a case using a primary survey methodology.

A multifaceted approach was used, combining closed-ended inquests and valuation ratio queries to systematically gather a diverse data set. In parallel, the inclusion of valuation ratio queries added a quantitative dimension to the survey, allowing for the collection of numerical data that could be utilised to assess and analyse various aspects of the case study dynamics. This approach not only provided a more objective measure of certain variables but also enriched the dataset, enabling a deeper exploration of the factors influencing the investigated subject. To elucidate the scenario further, envision yourself as a representative of your current company, actively involved in a trade deal in a foreign country. In this pivotal role, your task is to navigate and negotiate various aspects of the trade agreement. Delve into how you would strongly concur or align with specific issues that are crucial to the success of the trade deal. By strongly aligning with these critical issues, you not only position your company for success but also contribute to building a collaborative and sustainable relationship with the stakeholders.

A diverse and representative sample was meticulously chosen to comprehensively explore the present negotiation modes, methods and conduct of traders. This sample encompasses five distinct cities, with a total of 100 respondents. The strategic selection of cities and participants ensures a broad and nuanced understanding of the current trader behaviour landscape. The inclusion of five cities is intentional, aiming to capture the diversity in trading practices across various regions. Each city may possess unique economic dynamics, cultural influences, guanxi principles and market characteristics, contributing to a more comprehensive analysis of intervention modes and conduct. Guanxi philosophy impacts supply chain management, the effect of personal relationships on the selection of and cooperation with suppliers, the peculiarities of the logistics outsourcing industry and the characteristics of business relations in China [34].

6. DISCUSSION

Further research and analysis are needed in the future, delving into the intricacies of East Asia's value chain transportation management, recognising it as a pivotal topic that holds implications for the evolution of logistics processes. The research highlights the importance of staying attuned to the trends in logistics management and strategic business developments, providing valuable insights for practitioners and policymakers alike. Overall, this article serves as a foundation for future investigations into the nuanced dynamics of China's modern supply chain and its broader implications for global logistics. In summary, this exploration into the applications of transportation merchandise in China's supply chain retail sector offers a holistic understanding of its multifaceted role. This underscores the imperative for continued investigation and in-depth analysis in the coming years to unravel the complexities of transportation management within East Asia's value chain. Further research is essential, recognising this critical area with far-reaching ramifications for the advancement of logistical operations. It is necessary to remain vigilant in the evolving landscape of logistics management and strategic business strategies. Consequently, this article lays the groundwork for future inquiries into the intricate dynamics of China's contemporary supply chain, shedding light on its broader implications for global logistics networks. This examination into the utilisation of transportation merchandise in China's supply chain retail sector offers a comprehensive understanding of its multifaceted significance. Moreover, as globalisation continues to reshape the landscape of trade and commerce, the complexities of transportation management within East Asia's value chain become even more pronounced. Thus, an urgent need exists for sustained inquiry and thorough analysis to fully grasp the intricacies. Understanding the critical role of transportation in the seamless flow of goods throughout the region is paramount for enhancing logistical efficiency and competitiveness. This research not only underscores the importance of staying abreast of evolving logistics management practices but also emphasises the significance of strategic business decision-making in a rapidly changing environment. In essence, this article serves as a cornerstone for future investigations into the dynamic interplay of factors shaping China's modern supply chain and value chain. The collected data demonstrated the relationship between supply chain and value chain load transportation. By shedding light on the multifaceted significance of the transportation of merchandise within the retail sector, it deepens the understanding of the broader implications for global logistics networks.

7. CONCLUSIONS

This research is of paramount importance, as its purpose extends beyond a singular analysis. It presumes that considerations are autonomous, case selection lacks a discernible pattern and the sample is casual. The research reveals that China's logistics strategic decisions are rooted in the *guanxi* approach, reflecting essential cultural features that have flourished globally. Logistics processes contribute significantly to speculative intricacy, benevolence and the vitality of the logistics market. The analysis within this scientific article attempts to provide perspectives on logistics and value chains, considering both internal and external aspects of China's *guanxi* loads market. The investigated results of this scientific article underscore the importance for international logistics companies to prioritise business culture. Understanding the global value chain is crucial for managing supply chain costs within the logistics area. Such a continuous exploration is essential for adapting strategies and ensuring resilience in the ever-evolving landscape of global supply chains. Moreover, descriptive statistics play a pivotal role in elucidating the nuances of the data by providing essential measures such as the mean and standard deviation. These metrics offer valuable insights into the central tendency and variability of the two distinct dependent variables, further segmented by the independent variable. By splitting the data in this manner, researchers can discern patterns and trends within each subgroup, thereby gaining a deeper understanding of how the independent variable influences the dependent variable. Additionally, the inclusion of "Total" rows in the table enhances the comprehensiveness of the analysis by offering aggregated statistics for groups solely divided by the dependent variable. This allows researchers to compare and contrast the means and standard deviations across different levels of the dependent variable, providing a comprehensive overview of the data distribution. Overall, the utilisation of descriptive statistics not only facilitates a clearer interpretation of the data but also aids in identifying potential outliers or anomalies that may warrant further investigation. By presenting key summary measures in a concise and structured format, researchers can effectively communicate the characteristics of the dataset and draw meaningful conclusions from their analysis. Output 1 presents the primary results table, while descriptive statistics delve into the overall and group means alongside standard deviations for each dependent variable individually. This statistical analysis assesses the null hypothesis positing that the variance–covariance matrices remain consistent across all groups.

Therefore, a non-significant result would suggest equality in the matrices, indicating adherence to the assumption of homogeneity.

Consequently, it becomes evident that the covariance matrices deviate significantly from equality, thereby violating the assumption. To find out the specifics of behaviour towards business partners in negotiation management in the logistics market using a descriptive study, the highest estimated averages were used, which showed that during negotiations, most attention is paid to building and maintaining formal relations with business partners and creating long-term and close relationships, while self-interested behaviour had the least control of negotiations. The statistical analysis of the data showed that men and women who participated in the study evaluated the behaviour in negotiation management similarly. The results showed that the behaviour of research participants towards business partners during negotiations in the logistics market does not change statistically significantly with age, remaining fairly stable. Individual variables showed that the negotiation behaviour of research participants with different work experience and education levels was similar, with only slight differences. The results showed that the application of strategies in negotiation management is statistically significantly related to the positions held by the subjects, while the negotiation behaviour seeking to create long-term and close relationships and build formal relationships, as well as pursuing self-interest, differs only slightly regardless of the positions held. The negative correlations of the evaluation indicators of behaviour towards business partners in managing the negotiation process in the logistics market were fixed by the research: the indicator of the subscale for creating long-term and close relationships is connected to negative significant relationships with the indicators of the subscales for applying strategies in negotiation management and building formal relationships during negotiations.

REFERENCES

- [1] Wang, TT, Liao ChM. The evolution of the supply chain management and the analysis of research trends. *International Journal of Organizational Innovation*. 2021;13(3):300–314.
- [2] Lin G, Wang F, Pei J. Global value chain perspective of US–China trade and employment. *World Economy*. 2018;41(8):1941–1964. DOI:10.1111/twec.12545
- [3] Hao X, et al. How the infrastructure affects division status in global value chain: Based on the countries along the Belt and road. *International Economics and Trade Research*. 2021;37:15.
- [4] Wang J, Liu L. The measurement of the status quo of the value chain of China's logistics industry and its international comparative analysis. *Logistics Sci-Tech*. 2019;42(8):8–12.
- [5] Cao YC, Li T, Lin HN. Research on high-quality development path of China's regional logistics industry: An empirical study based on 31 provinces (municipalities and autonomous regions). *Commercial Research*. 2020;12:66–74.
- [6] Huang Y, Wang J. Development problems and optimization schemes of logistics industry under the background of "intelligence + Network connection". *Journal of Commercial Economics*. 2021;5:98–100.
- [7] Wang H, Zhao Z. The international comparison of Chinese logistics industry under the new development pattern. *Shandong Social Sciences*. 2021;2:168–173.
- [8] Su Y, Liu Z. Logistics efficiency, technological innovation and the threshold effect of modern service industry development: An analysis of provincial panel data. *Macroeconomics*. 2022;7:149–162.
- [9] Luo R, Qinmei W. The influence of Chinese urban digital economy on the high quality development of logistics industry. *Urban Problems*. 2022;6:35–46.
- [10] Chen Z. Research on Consumption upgrading effect of artificial intelligence and its promotion of high-quality development of logistics Industry. *Journal of Commercial Economics*. 2021;24:122–125.
- [11] Ali M, et al. The moderating effect of supervisor–subordinate guanxi on the relationship between transformational leadership and organizational effectiveness. *Journal of East-West Business*. 2019;26(2): 161–192. DOI: 10.1080/10669868.2019.1692987.
- [12] Škerlić S, Sokolovskij E. A model for managing logistics costs throughout a product's life cycle: A case study of a multinational manufacturing company. *Transport*. 2019;34(5):517–528. DOI: 10.3846/transport.2019.11080.
- [13] İrak G, Şen H. Lojistik maliyetler ve lojistik performansın, firma ve ihracat performansına etkisinin analizi. *Journal of Accounting and Taxation Studies*. 2021;14(3):1109–1131. DOI: 10.29067/muvu.901392.
- [14] Zientek LR, Thompson B. Matrix summaries improve research reports: Secondary analyses using published literature. *Educational Researcher*. 2009;38(5): 343–352. DOI:10.3102/0013189X09339056.
- [15] Fish LJ. Why Multivariate methods are usually vital. *Measurement and Evaluation in Counseling and Development*. 1988;21(3):130–137.

- [16] Aiken LS, West SG, Millsap RE. Doctoral training in statistics, measurement, and methodology in psychology: replication and extension of Aiken, West, Sechrest, and Reno's (1990) survey of PhD programs in North America. *American Psychologist*. 2008;63(1):32-50. DOI:10.1037/0003-066X.63.1.32.
- [17] Thompson B. *Foundation of behavioral statistics*. New York: The Guilford Press. 2006.
- [18] Stewens J. *Applied multivariate statistics for the social sciences*. Mahwah: Lawrence Erlbaum Associates. 2002.
- [19] Wang X. Study on relationship between green logistics activity and logistics performance. *Cluster Computing*. 2019;22(3):6579–6588. DOI: 10.1007/s10586-018-2344-3.
- [20] Han C, Wang Q. Research on commercial logistics inventory forecasting system based on neural network. *Neural Computing & Applications*. 2021;33:691–706. DOI: 10.1007/s00521-020-05090-4.
- [21] Mashinini ZM. *The role of logistics in enhancing competitive advantage in global logistics organization*. University of Johannesburg. 2020. <https://ujcontent.uj.ac.za/esploro/outputs/graduate/The-role-of-logistics-in-enhancing/999997307691#file-0>
- [22] Stepień M, Łęgowik-Świącik S, Skibińska W, Turek I. Identification and measurement of logistics cost parameters in the company. The 2nd International Conference "Green Cities - Green Logistics for Greener Cities", 2-3 March 2016, Szczecin, Poland, 16, pp. 490-497. 2016. DOI: 10.1016/j.trpro.2016.11.046.
- [23] Nivarat W, Valaya A. Logistics Cost Management for SME's Entrepreneur in Thailand. *Logistics Cost Management for SME's Entrepreneur in Thailand*. 2018;8(2):197-213.
- [24] Chao P. *The impact of multimodal transport service value and relationships on business performance - The Thai shippers' perspective*. Cardiff University. 2011. DOI:10.13140/RG.2.2.11737.24164.
- [25] Chung HF. Market orientation, guanxi, and business performance. *Industrial Marketing Management*. 2011;40(4):522-533. DOI: 10.1016/j.indmarman.2010.12.008.
- [26] Shaalan A, Reast J, Johnson D, Tourky M. East meets West: Toward a theoretical model linking guanxi and relationship marketing. *Journal of Business Research*. 2013;66(12):2515-2521. DOI:10.1016/j.jbusres.2013.05.043.
- [27] Hsu CH, Yang LT. Dynamic intelligence towards smart and green world. *International Journal of Communication Systems*. 2014;27(4):529–533. DOI: 10.1002/dac.2777.
- [28] Chen H, Ellinger AE, Tian Y. Manufacturer–supplier Guanxi strategy: An examination of contingent environmental factors. *Industrial Marketing Management*. 2011;40:550–560. DOI: 10.1016/j.indmarman.2010.12.011.
- [29] Luo X, Hsu MK, Liu SS. The moderating role of institutional networking in the customer orientation–trust/commitment–performance causal chain in China. *Journal of the Academy Marketing Science*. 2008;36:202–214. DOI: 10.1007/s11747-007-0047-z.
- [30] Li PC, Lin BW. Building global logistics competence with Chinese OEM suppliers. *Technology in Society*. 2006;28:333–348. DOI: 10.1016/j.techsoc.2006.06.003.
- [31] Chu Z, Wang Q, Lai F, Collins BJ. Managing interdependence: Using Guanxi to cope with supply chain dependency. *Journal of Business Research*. 2019;103:620–631. DOI: 10.1016/j.jbusres.2017.11.035.
- [32] Liu H, Wang TY, Bernardo ABI, Shen H. Cooperating with different types of strangers: The influence of Guanxi perception, trust, and responsibility. *Behavioural Sciences*. 2023;13:473. DOI: 10.3390/bs13060473.
- [33] Pakalniškienė V. Determining the reliability and validity of research and evaluation tools [Tyrimo ir įvertinimo priemonių patikimumo ir validumo nustatymas. Metodinė priemonė. Leidinys lietuvių kalba]. In Lithuanian. Vilnius: Vilniaus Universiteto leidykla. 2012.
- [34] Kuranovič V, et al. Estimating the intensity of cargo flows in warehouses by applying Guanxi principles. *Sustainability*. 2023;15(23):16226. DOI: 10.3390/su152316226.