

Financing Alignment and Performance of Chinese Companies within Buyer-Supplier Relationships: Supply Chain Finance Challenges

Muhammad Ashfaq^{*1}, Aoer Zhang^{*2}, Adeel Tariq^{*3}, Rashedul Hasan^{*4},

^{*1,2}*School of Business, Wittenborg University of Applied Sciences, Spoorstraat 23, 7311 PE Apeldoorn, Netherlands*

^{*3}*Department of Management & HR, NUST Business School, National University of Sciences and Technology Islamabad, Pakistan.*

^{*3}*Department of Accounting, INTI International University, Malaysia.*

¹muhammad.ashfaq@wittenborg.eu

²aoerzhang@gmail.com

³adeel.tariq@nbs.nust.edu.pk

⁴rashedul.hasan@newinti.edu.my

Abstract— The aim of this paper is to evaluate the literature on financing alignment and performance of Chinese companies within buyer-supplier relationships and the moderate effect of supply chain finance challenges. Another purpose is to consider the application of blockchain technology in Supply Chain Finance (SCF) adoptions, especially in emerging countries like China. Through a cross-industry survey, 152 responses from companies located in China have been collected to test the hypotheses empirically. The results show that buyer-supplier financing alignment could positively influence the buyer-supplier financing performance in the context of Chinese companies. However, insufficient evidence exists to suggest a moderating effect of SCF challenges. This paper identifies that both buyers and suppliers could consider applying blockchain technology-driven SCF to enhance the financial performance in a supply chain. Additionally, when companies are implementing SCF, it is essential to maintain the long-term buyer-supplier relationship in order to improve the financing performance. This study enriches the scarce empirical researches regarding SCF adoptions. This paper contributes by presenting a detailed analysis on the influence of buyer-supplier financing alignment on buyer-supplier financing performance, especially in the emerging country.

Keywords — *Supply chain finance, Finance collaboration, Finance performance, Challenges, China*

1. Introduction

Physical goods flow and information flow are two main issues that are frequently discussed in supply chain management (SCM) research studies [1]. However, in a supply chain, suppliers often face the same problem: supplying products or materials to the focal company, but experiencing the postponement of account receivables at the same time.

Consequently, insufficient working capital could impact the SCM as well as the supply chain performance [2].

This problem leads to the study of supply chain finance (SCF) initially proposed by [3], in order to optimise the capital flow in SCM. It considers not only the visible goods flow, but also the embedded invisible financial flow in a supply chain [1]. As a financing procedure, SCF highly concerns the financing collaboration, also known as the financing alignment between the buyers and suppliers. Furthermore, from the SCF perspective, the buyer-supplier relationship is often viewed as a crucial partnership to create a win-win situation across the supply chain [4]. Hence, financing alignment based on a buyer-supplier relationship plays an important role in SCF [5], [6], [7].

However, [8] summarises that several elements are affecting the financing alignment, such as openness, trust, information sharing, and communication. Therefore, the operations of SCF heavily depend on the technology to minimise the collaboration problem. Recently, the development of blockchain technology supports the SCF since applying blockchain technology make it possible to complete more transparent, more effective, and more efficient transactions in a supply chain [9]. The facts show that blockchain, as an innovative method, contributes to a stronger buyer-supplier financing alignment, through providing a capital management platform [10].

In practice, the related technical services of the SCF have been addressed and provided by the so-called FinTech companies, a new type of company acting as an intermediate between suppliers and buyers using relevant financial technology [11]. In the literature, prior research studies mainly explore SCF with blockchain technology in two categories. One is mathematical modelling to understand the benefits of SCF [12], [13], [14], [15], and the second is a case study to know how companies deploy SCF in practice [2],[16].

On the other hand, buyer-supplier financing performance is one of the critical indicators reflecting the implementation of SCF [6]. The research of [6] also indicates that inter-organisational financial alignment has a significant positive effect on the overall financing performance, but this has only been proved in European countries. Thus, the researchers suggest that one of the possibilities in future studies is to focus on the buyer-supplier financing performance of the companies in emerging countries. Since blockchain has been applied in SCF in emerging countries, such as China [17], the influence of buyer-supplier alignment in SCF in emerging countries should be considered.

Despite the growing attention of SCF, few studies combine the SCF challenges into the relationship between buyer-supplier financing

alignment and buyer-supplier financing performance [18], [19]. [18] conduct an extensive survey to address the challenges that confront SCF in India, and they classify the challenges into six categories: human resource (HR), information technology (IT) and technology, finance, inter and intra-firm coordination, collaboration and alliance, organisational policy, strategies and practices, and macro-institutional. The researchers also suggest future research to extend the survey study in different countries. Furthermore, [19] indicate that there is a lack of empirical study on the application of SCF.

1.1 Aim of Study

Related projects of applying blockchain in SCF have been successfully launched in China [17]. For instance, Foxconn, one of the largest electrical device manufacturers, together with the Chinese online lender Dianrong, have built up chained finance and successfully assisted the small-medium sized enterprises (SMEs) in terms of funding of up to 6.5 million USD [20]. Meanwhile, IBM also launches a project with a Chinese company, Sichuan Hejia, in an attempt to improve the transparent and efficient supply chain applying blockchain technology [21]. Also, the total scale of SCF will reach around 2.18 trillion USD (14.98 trillion CNY) in China by 2020, which means China could be viewed as a significant emerging country of SCF. Hence, the study of SCF in China is desired in order to embrace the popularity of the application of blockchain technology. By exploring the literature in both English and Chinese, [22] indicate that the research of SCF in China is growing and evolving to a significant level. Thus, it raises the interest of this study to understand whether the positive effect of buyer-supplier financing alignment on financing performance also exists among different types of companies in China. Meanwhile, it is worth investigating whether the SCF challenges can impair the relationship between buyer-supplier financing alignment and financing performance.

Also, following the study of [23], we consider buyers as the focal company in a supply chain that purchases materials from the second and third-tier suppliers. On the other hand, we consider suppliers as the manufacturers that supply raw materials to the focal company in a supply chain. Therefore, this study aims to investigate the relationship between buyer-supplier financing alignment and buyer-supplier financing performance in the context of Chinese companies, while considering SCF challenges as a moderator. Empirical research is required to test how seriously SCF challenges limit the positive effect. The potential contributions of this paper are twofold. This study attempts to enrich the scarce empirical literature regarding SCF adoptions.

Meanwhile, in practice, this study aims to support the buyers and suppliers in a supply chain that considers the application of blockchain technology in SCF, especially in emerging countries. Based on all the concerns described above, the research questions of this study are generated as follows:

RQ1: Does buyer-supplier alignment have a positive impact on buyer-supplier financing performance in Chinese companies?

RQ2: What is the influence of SCF challenges on the relationship between buyer-supplier alignment and buyer-supplier financing performance in Chinese companies?

The remainder of this paper is organised as follows: Section 2 presents the literature related to buyer-supplier financing performance, buyer-supplier financing alignment, and SCF challenges. In Section 3, the methodology of the research is elaborated. Section 4 discusses the statistical results and findings. The discussion and conclusion, research limitations, and suggestions for future study are discussed in Section 5.

2. Theoretical Background and Hypothesis Development

Supply chain is a process to coordinate the flows of materials, information and financials by a company to effectively deliver products and services. Hence, researchers consider Supply Chain Management (SCM) from different perspectives including the philosophy, the discipline, the process, the function, and the governance structure, to manage the issues within a supply chain [24]. In the past decade, researchers not only focused on the physical and information flow in SCM studies, but they also raised the concerns of capital flow in SCM. SCM studies have evolved in recent years and research interest has attracted various issues in SCF. While [66] explored the determinants of SCF, [67] investigated the application of SCF for children with special needs. Thus, the researcher topics started to address SCF in their studies. Furthermore, the emergence of blockchain technology has provided more efficient operations in SCF, and it has been successfully applied in China [9]. The relative literature is reviewed in this section, including SCF, blockchain, buyer-supplier financing alignment, buyer-supplier financing performance, and SCF challenges. The research concepts are discussed first, and then the hypotheses are posited.

2.1 Supply chain finance and blockchain

The SCF issue is firstly proposed by [3] in his study of extending SCM with the interface between corporate strategy and finance. Researchers define SCF in both a broad and a narrow sense with different proposes of the investigation. Among them, [1] define SCF as: “*the inter-company optimisation of financing as well as the integration of financing processes with customers, suppliers, and service providers in order to increase the value of all participating companies*”. In other words, SCF aims to optimise financial flow and structure through financial institutions or technology providers [25].

Previously, SCF has relied on the paperwork to process among buyers, suppliers, and service providers. Along with the development of technology, notably blockchain, the operations in SCF become more effective and efficient. Blockchain is a decentralised method for data management with cryptography technology so that it ensures the reliability of the distributed data [17]. It is “*an open, distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way*” [26]. Since the emergence of blockchain, it presents an innovative technology for a fully digital procedure of SCF, and it allows each party within a supply chain to obtain transparent and up-to-date information [27]. Specifically, the capital transaction becomes more transparent and reliable through the platform provided by blockchain due to cryptography technology [28]. Therefore, blockchain strengthens the buyer-supplier financing alignment in SCF [10]. As mentioned in the introduction, blockchain technology has been applied in emerging countries, such as China [17]. It is desirable to study the buyer-supplier financing alignment in the context of China.

2.2 Supply chain finance in China

Unlike the general vision perceived in the mature economy, the SCF phenomenon plays a different role in China. After conducting a content analysis of 151 Chinese-written SCF papers, [22] indicate that SCF is operating as a “1+N” model in the Chinese environment. In China, there are three main participants involved in the “1+N” SCF: borrowing companies, commercial banks, and logistics service providers (LSPs). [22] recognise that borrowing companies are SMEs in most of the reviewed literature. Commercial banks are represented by the institutions that accept deposits, make business loans, and offer essential investment products. LSPs refer to the organisations monitoring the assets and providing other related services. The commercial banks entrust LSPs since policies restricted that commercial banks are not allowed to engage in non-financial business. LSPs have sufficient knowledge and information to take advantage of

dealing with the products. Figure 1 demonstrates the SCF model in China. [22] conclude that the “1+N” SCF model in China is regarded as a multi-organisational collaboration.

This paper adopts the definition of SCF by [1], and follows the understanding of [22] to address the SCF in the context of Chinese companies.

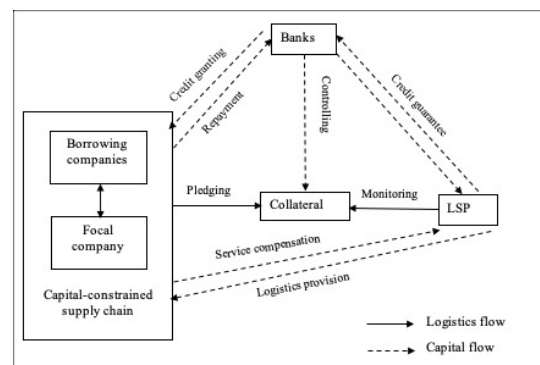


Figure 1 Supply chain finance model in China (Adopted from [22])

2.3 Financing alignment and financing performance

[3] proposes SCF as an approach for two or more organisations within a supply chain to control the financial flow on an inter-organisational level. Meanwhile, SCF is viewed as a process or solutions to optimise the financial flow/structure by the members in a supply chain [1], [29]. [2] conclude that the ultimate objective of the SCF is to align financial flows with product and information flows within the supply chain, and improve the capital flow management from a supply chain perspective. In other words, financing collaboration at a supply chain level could be considered as one of the critical characteristics of SCF. Among the researchers, [6] define financing alignment as the financing collaboration between the buyer and the supplier within a supply chain based on a buyer-supplier relationship context. According to the study of [6] the researchers consider that there are three main objectives concerning financing alignment. The first one is the collaboration among supply chain partners in an attempt to initiate the potential of costs saving. The second one is that supply chain members work carefully and try to

achieve lower capital commitment [31]. In this case, capital commitment means the willingness of both buyers and suppliers to invest in financial and physical resources. The third one is that buyers and suppliers within a supply chain together invest in the productions and logistics capacity, in order to lower the capital input of each party.

Moreover, financing performance is one of the critical elements to evaluate the SCM performance in SCF studies (e.g., [30], [65]). There are three main factors that researchers view as the metrics to measure the financing performance, which include: the operations costs of inventory and equipment management (e.g., [31],[32]) liquidity as the ability of organisations to manage their capital flow (e.g., [33], [2], [34], [35]), and strategy of financial risks management (e.g., [36], [37]).

2.4 The effect of financing alignment on financing performance in the buyer-supplier relationship

Various researchers develop the study about the effect of alignment on financing performance. Firstly, [8] suggests that managerial process alignment and joint decision-making lead to successful collaboration in the supply chain. Meanwhile, researchers indicate that both supplier partnership and strategy alignment increase the financial performance of each member within a supply chain [38]. Also, supply chain financing performance could be improved by supply chain collaboration. The study by [63] proves that the alignment between supply chain strategy and environmental uncertainty positively influence the financial SCM performance. Besides, [39] found out a positive relationship between supply chain fit and the financing performance. The research of [40] also shows that collaborative behaviour has a positive impact on the supply chain financial performance, while researchers also argue that the costs of suppliers' alignment may exceed the benefits if companies overly emphasise on supply chain alignment [41]. Later, the meta-analysis study by [5] shows that both the intra- and inter-organisational alignment could improve

the companies' financial performance through the creation of superior customer value positional advantage. [6] prove that the inter-organisational financing alignment has a positive impact on the European companies' supply chain financing performance. This study attempts to extend the study of [6] to investigate the impact of financial collaboration on the companies' financing performance in emerging countries, and also applies to the buyer-supplier relationship context.

Furthermore, [42] indicate that assessing the financing performance of the companies before and after implementing SCF could be viewed as two different situations to measure the effect of SCF on the companies' performance. This study focuses on companies after implementing SCF. Hence, this paper follows the buyer-supplier relationship context concerning the circumstance of Chinese companies that implemented SCF, to investigate the relationship between buyer-supplier financing alignment and buyer-supplier financing performance. In order to investigate *RQ1*, the first hypothesis is proposed:

H₁: Buyer-supplier financing alignment has a positive effect on buyer-supplier financing performance in the context of Chinese companies.

2.5 Supply chain finance challenges

In the study of [18], the researchers indicate that organisations, as well as the entire supply chain, are facing many challenges, especially at the SCF implementation stage. Furthermore, they classify SCF challenges into six categories, which are as follows:

Human resource (HR) challenges: Managers of firms may not be aware of the benefits of SCF implementation, or they are not even acquainted with the idea of SCF. Lacking expertise in the company to plan, manage, and train personnel to utilise a variety of SCF instruments may add challenges to implement SCF.

Information technology (IT) and technology challenge: IT facilitates the payment transactions

process as well as provides visibility into the movement of goods and the ability to access SCF at various stages (e.g., procurement, daily operations management, and logistics management). That is the crucial information for the buyer-supplier interactions, such as information sharing, joint determination of strategies, and giving operational suggestions, etc. Thus, the lack of IT and technology may create limitations to SCF implementation.

Finance challenges: There are several financial challenges affecting the implementation of SCF. First of all, the SCF providers have difficulty in the implementation of working capital and third-party financing programmes because of the unstable cash flows through the supply chain caused by the lack of automated payment processes. Additionally, there is no standardised settlement mechanism connecting the cash management from the trusted providers. This problem is the result of the myopic objective in the current cash management systems because most of the organisations only attempt to maximise their cash returns without considering the situation of the whole supply chain. Moreover, the long days sales outstanding (DSO) may increase by the delayed receipt of payments, since the cash flow management is experiencing challenges.

Inter- and intra-firm coordination, collaboration, and alliance challenge: Companies nowadays recognise the importance of business partner collaboration to seek common goals, improved performance, and better practice. Members in the same supply chain could operate as a single cohesive and strengthened entity by cooperating in two main areas. The first one is information, such as electronic data exchange (EDI), and information and communication technology (ICT). The second is operations, such as joint decision-making, physical resource sharing, or ultimately in partnerships to develop a stable relationship, mutual transparency, and trust. Moreover, cross-department cooperation is also essential in order to align strategies among different departments within a company. Inter-department compromise

and negotiation may be needed to implement SCF measures, which are decided at an organisational level or a supply chain level. For example, the finance department and the operations department could discuss the possibility to lower the unit cost of production, and the marketing department may initiate the issue of increasing the business diversity with other departments, and the corporate finance department aims at improving the critical financial ratio through exerting pressure on the procurement and sales department.

Organisation policy, strategies, and practices challenge: The organisation policy affects the implementation of SCF. Nowadays, the selection of global suppliers is a strategic decision, due to the increasingly large amount of data and information provided by global suppliers. Besides the cost-related parameters, the internal process and management of the suppliers are essential factors on supplier selections. The operational and financial stability of the suppliers seriously affects the whole supply chain. Hence, both the internal coordination and collaboration in the payment process and shared vision among members within a supply chain are crucial challenges when implementing SCF.

Macro-institutional challenges: In the era of global supply chain and global sourcing, a company can frequently be confronted with cross-border transactions, which involve different cultural backgrounds, different languages, and different law restrictions. Usually, these factors are challenges for a company to handle. The reasons could be twofold. On the one hand, cross-border transactions usually require lots of paperwork and government approvals, and the process can be slow and inefficient. On the other hand, geographical or cultural distance is crucial for relationship and trust development among supply chain partners. Doubts on a business partner's honesty and information transparency may arise when the geographical or cultural distance is too large between a buyer and a supplier. Therefore, geographic, culture and government laws are

viewed as three main elements to force the SCF implementation progress.

2.6 The moderating effect of supply chain finance challenges

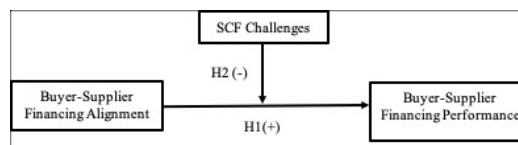
Adding disruptive factors may influence the relationship between financing alignment and financing performance, which implies that SCF challenges may have a moderating effect. The disruption of SCF adoption may result from the challenges of SCF implementation [43], [44]. For instance, both inter- and intra-organisational collaboration may moderate the adoption of SCF solutions [45]. Insufficient professional and inappropriate capital management tools may lead to the worse financial performance of SCF implementation [46], [47]. Additionally, a company’s financial performance may be decreased when the supply chain network power is weak, which is also challenging the buyer-supplier relationship [48]. Therefore, if there is a positive relationship between financing alignment and financing performance, the SCF adoption challenges may weaken this relationship. It means that when the financing alignment is high, the financing performance would be improved in general. Nevertheless, SCF challenges have the probability of disrupting this positive connection. Continuing

to follow the aforementioned context, Hypothesis 2 is proposed to investigate *RQ2*.

H₂: Supply chain finance challenges negatively moderate the relationship between buyer-supplier financing alignment and buyer-supplier financing performance in the context of Chinese companies.

Based on the two hypotheses discussed above, the conceptual model is displayed in Figure 2.

Figure 2 Conceptual model



Source: Authors

Furthermore, the definitions of the key concepts within this paper are summarised in Table 1. The methodology of this study is elaborated in Section 3.

Table 1 Definition of key concepts

Key concept	Definition	Adopted from
Supply chain finance in China	“The inter-company optimisation of financing as well as the integration of financing processes with customers, suppliers, and service providers in order to increase the value of all participating companies”, which involves the multi-organisational collaboration characteristics of the Chinese environment.	[1] [22]
Buyer-supplier financing alignment	The finance collaboration between buyers and suppliers within a supply chain, includes three main objectives: costs saving, lower capital commitment, and joint investment.	[6]
Buyer-supplier financing performance	The critical metrics to measure the SCM performance, and SCF adoption, which includes operations costs, liquidity, and the financial risk management strategy.	[6]
SCF challenges	The disruption of SCF implementation at both organisation and supply chain level, which consist of six categories: human resource (HR), information technology (IT) and technology, finance, inter- and intra-firm coordination, collaboration, and alliance, organisation policy, strategies, and practices, macro-institutional.	[18]

3. Methodology

The methodology of this study is explained in this section, which consists of questionnaire development, sample and data collection, and data reduction and analysis.

3.1 Questionnaire development

This research aims to investigate the influence of SCF challenge on the relationship between buyer-supplier financing alignment and buyer-supplier financing performance in the context of Chinese companies. In the context of SCF research, conducting a questionnaire survey is a feasible and appropriate approach for testing the proposed model and hypotheses [19]. The entire questionnaire consists of 30 questions, and all items were adopted from those measures used in previous studies for similar purposes and thus have already been pre-validated. Plus, these survey questions are divided in a way that has been previously validated, ensuring that the questionnaire items match the theoretical constructs. Excluding the questions of demographic characteristics, a seven-point Likert-scale was used for all items, with scores ranging from “1” representing “strongly disagree” to “7” representing “strongly agree”. The designed survey (English version) with a full list of items is presented in Appendix A.

Buyer-supplier financing alignment. The items from the scale are developed by [6] to measure this construct. This scale includes three items to measure the degree to which the organisations align their corporate financing strategy at a buyer-supplier level.

Buyer-supplier financing performance. A three-items scale to measure this construct is developed by [6] as well. [8] discusses that process alignment supports the enhancement of buyer-supplier relationship performance. However, the positive effect has only been tested by [6]. The researchers conducted a cross-industry survey with 145 Swiss companies in October 2013. As this study considers the context of Chinese companies, it is rational to use the constructs from the study of [6] for both buyer-supplier financing alignment and buyer-supplier financing performance, but applying them to the Chinese companies.

Supply chain finance challenges. The items to measure the construct are from the scale developed

by [18]. The researcher's designed a survey in order to have an overview of the SCF challenges realised by a survey with 80 different companies in India. There are six perspectives identified by [18]: human resource challenges, IT and technology challenges, finance challenges, inter- and intra-firm coordination, collaboration-related challenges, organisation policies, strategies, and practice-related challenges, and macro-institutional challenges. Each aspect consists of three items, and these items collectively represent the total input of SCF challenges.

Control variables. In addition to the primary constructs, the considered control variables include the number of employees, annual turnover, and time for the SCF initiative in place. These control variables may have an influence on the extent of organisations SCF challenges and their financing performance [18], [6].

Questionnaire structure

As mentioned above, there are three constructs in the conceptual model: buyer-supplier financing alignment, buyer-supplier financing performance, and SCF challenges. Several questions from the questionnaire, in fact, represent each construct. Table 2 shows the number of questions of demographic characteristics, control variables, and corresponding constructs.

Table 2 Questionnaire structure

	Question number
Demographic characteristics and control variables	Q1 - Q6
Buyer-supplier financing alignment	Q7 - Q9
Buyer-supplier financing performance	Q10 - Q12
SCF challenges	Q13 - Q30

After the survey was designed, two academic researchers were invited to check and review to ensure the constructs were well selected in the questionnaire. The original survey questions were translated from English to Chinese. In order to improve the accuracy of information translation

and wording, two Chinese native-speaking academic researchers were asked to translate the questionnaire back into English for comparison with the original version.

3.2 Sample and data collection

The questionnaires were distributed to the Chinese companies in cross-industries that are applying SCF. The unit of analysis targeted the representative company members, who are in charge of purchase, supply chain, or finance management. The reason is that the middle to the senior position of the survey respondents are supposed to obtain knowledge and experience related to the companies' operations and participated in the decision-making processes.

An online survey instrument was developed and applied, and this approach has been noted for its speed, low administration cost and improved quality of completion of answers [49]. Researchers also suggest that online survey instruments enhance the opportunity to access large and various populations [49]. In this study, the questionnaires were distributed to respondents via an online survey service provider WJX. WJX was established in 2006, and the company has provided more than 2.2 billion survey services since then. More than 90% of the customers of WJX are universities, research institutions, and organisations in China, and the company continuously provides sample services (e.g., survey distribution and collection from target sample). Hence, the validity and reliability of the data collected by WJX could be guaranteed. Furthermore, it is rational to ask the survey service provider to support in collecting the national-wise data.

The period of data collection spanned from 6 November to 13 December 2018. In total, 243 surveys have been distributed, 156 responses were obtained from the distribution, and the response rate is 64.2%. However, four respondents are not currently working as the middle to senior-level personnel, which are viewed as invalid responses. After data elimination, 152 valid respondents have remained, and the demographic characteristics of the sample are summarised in Table 3.

Table 3 Demographic characteristics of respondents

Demographic Characteristics	Sample N=152	Percentage
Industry		
Computer, electronic and optical products	43	28.3%
Construction	14	9.2%
Mechanical engineering	43	28.3%
Mining, quarrying, and processing of raw materials	13	8.6%
Pharmaceutical and food products	22	14.5%
Wholesale and retail trade	13	8.6%
Others	4	2.6%
Number of Employees (FTEs)		
> 50	2	1.3%
50 - 249	57	37.5%
250 - 999	65	42.8%
1000 - 9999	21	13.8%
≥ 10000	7	4.6%
Annual Turnover (in CNY)		
10,000 - 1,000,000	9	5.9%
1,000,001 - 5,000,000	32	21.1%
≥ 5,000,001	111	73.0%
Time for the SCF Initiative in Place		
Implementing this year	4	2.6%
1-2 years	28	18.4%
3-4 years	61	40.1%
5-10 years	45	29.6%
More than 10 year	14	9.2%
Position of Survey Respondents		

Member of executive board	11	7.2%
Head of division	23	15.1%
Head of department	103	67.8%
Team leader	15	9.9%
Field of Activity of Survey Respondents		
Operative procurement	66	43.4%
Strategic procurement	8	5.3%
Supply chain management	59	38.8%
Financial management	17	11.2%
Others	2	1.3%

3.3 Data reduction and analysis

Before processing the data analysis, the quality of the multi-item constructs needs to be ensured. The factor analysis was applied to determine the validity, and Cronbach's alpha was utilised to determine the reliability.

3.3.1 Factor analysis

Factor analysis is a statistical technique to extract the common factors among the variables. It aims to search for the joint variations that are related to the unmeasurable latent variables from the measured variables. Hence, it describes the more representative latent variables by considering the correlated measurable variables as a factor. Exploratory factor analysis (EFA) is a type of factor analysis, and it is used to uncover the latent factors. Although certain variables are supposed to be indicators of an identical factor in this study, it is wise and appropriate to apply EFA since those assumptions are not theoretically proven. [64] factor analysis was conducted through R. The fitting method is the principal analysis method, which is considered as a basic method in EFA [50]. The rotation method is varimax, which is a method to simplify the expression of the sub-space in the principal component analysis.

To determine if the factor analysis is useful for the dataset, the Kaiser-Meyer-Olkin test and Bartlett's test are two critical tests before the factor analysis.

The Kaiser-Meyer-Olkin (KMO) test indicates the percentage of the variance that is probably explained by the respective factors. The KMO value ranges from 0 to 1.0, and the closer the KMO value to 1.0, the higher the probability that the factor analysis is useful to the dataset [51]. As introduced by [51], it is acceptable to use the factor analysis when the KMO value is higher than 0.5.

On the other hand, Bartlett's test is used to test the hypothesis that the variables in the correlation matrix are from the population with equal variance. If the significant value (p) is small enough, it indicates that the factor analysis might be useful. The factor analysis is probably useful in a study as long as these two tests show positive outcomes to approve that a dataset is suitable for the factor analysis.

Conducting the factor analysis in R shows two main types of results: the sum of squared loading and the loading values. The eigenvalue in factor analysis is related to the number of variations to the total samples in each factor. The sum of squared loadings outputted by R is the same as the initial eigenvalue in the case of the principle methods factor analysis. [52] suggests that when the eigenvalue of a latent factor is higher than 1, the factor should be included. As the number of common factors can be pre-defined in R, the eigenvalue of each factor shows if a particular factor should be included. Thus, the eigenvalue can indicate the number of latent factors since all the latent factors with an eigenvalue smaller than 1 should be excluded. If the number of factors is confirmed, the factor loading value of each variable to every latent factor is meaningful for further analysis. The factor loading is the correlation score between an observed variable and a latent variable. It reflects the reliability level that the overserved variable is assigned to the latent variable. It is suggested that the relation is reliable when the factor loading exceeds 0.4. In case of an observed variable being assigned to more than one latent factor, it should be assigned to the latent factor with the highest factor loading. After that, the observed variables are grouped by the latent factors. The observed variables in the identical factor are considered as potentially related, and the relations are worth being further investigated.

Moreover, the output of the factor analysis in R includes the "Cumulative Var". It indicates the

cumulative proportion of variance that is explained. The higher the value of "Cumulative Var", the higher the proportion of explained variance.

3.3.2 Cronbach's alpha

Cronbach's alpha measures the reliability of the consistency level within a group. It indicates how closely related a set of items are considered as a group [49]. The higher the value of Cronbach's alpha, the closer the relation for a set of items considered in a group. When the Cronbach's alpha is more significant than 0.6, the internal consistency is considered acceptable [49]. In this study, it is used to decide if the items in a scale are consistent so that these items should be considered within a group.

3.3.3 Hierarchical regression analysis

After the data validity and reliability were confirmed, a hierarchical regression analysis was applied to test the hypotheses. Researchers introduce the hierarchical regression analysis as an appropriate method to test the different forms of relationships. When the variables are measured on ordinal scales, this method provides an unambiguous conclusion for the presence of moderating interaction. Since this study proposes to examine the existence of a moderating effect, it is logical to use the hierarchical regression analysis.

3.3.4 Analysis tools

As previously mentioned, the analysis within this study is conducted through R and SPSS. R is a free software environment, which provides an integrated suite of software facilities for data controlling and calculation [53]. SPSS Statistics is a software package developed by IBM, and its primary function is statistical analysis [54]. Table 4 summarises the usage of the two analysis tools concerning the statistical analysis in this study.

Table 3 Applied data analysis tools

R	SPSS
Factor analysis	Kaiser-Meyer-Olkin test
	Bartlett's test
	Cronbach's alpha
	Hierarchical regression analysis

3.3.5 P-value

In a statistical model, a p-value indicates the probability of a null hypothesis (H_0) based on the observed data [55]. If the p-value is smaller than a significant level (e.g., 0.05), the probability of happening a null hypothesis is small, and it results in the rejection of H_0 . In other words, the hypothesis (e.g., H_1) is supported. In this study, the p-value was applied to observe and determine the results in all of the statistical tests.

To summarise, the hypotheses were investigated through the method of questionnaire surveys in this study. Specifically, a conceptual SCF model inspired by the studies of [6] and [18] is applied. With the support of a third-party survey service provider WJX, the designed questionnaire was distributed to more than 200 Chinese companies involved in SCF. Eventually, 152 valid datasets were received, and the data was explored via various statistical methods in order to test the proposed hypotheses in this study. Two statistical tools, R and SPSS, were used for the analysis. A factor analysis was conducted to ensure which variables contribute to a respective identical factor.

Furthermore, the Cronbach's alpha of variables under a factor was calculated to evaluate the internal consistency of the variables. Finally, the hierarchy regression analysis was used for testing the hypotheses of the conceptual models. In the next section, the results of the statistical analysis are presented. Meanwhile, the result is analysed from the perspective of statistics.

4. Results

In this section, the results of testing the hypotheses are presented. The hierarchical regression analysis is applied to test the hypotheses. Researchers introduce hierarchical regression analysis as an appropriate method to test a different form of relationship. When the variables are measured on ordinal scales, this method provides an unambiguous conclusion in case of moderating interaction. Since this study proposed to examine the existence of a moderating effect, it is logical to use the hierarchical regression analysis. All of the applied statistical results in R and SPSS are attached in Appendices B, C, and D.

4.1 Validity and reliability

Before the data analysis, items of SCF challenges were recoded to align with the same coding sequence as the other constructs. The factor analysis was conducted to examine the data validity in three steps. Firstly, the KMO test was conducted, and the result indicates that 83.7% of variance might be caused by the underlying factors. Secondly, Bartlett's test was conducted, and the result ($p=0.000 < 0.001$) shows that the items of each factor are significantly correlated. Thirdly, the EFA was conducted with principal component analysis, in which the varimax rotation is used to clarify the factors. The questions are divided into different groups, as shown in Table 2. However, the results of factor loading present that there are four factors instead of three, as proposed in the conceptual research framework. After reviewing all the items in the construct of SCF challenges, they could be divided into two different components: *Internal challenges* (Q13-Q27), including human resource challenges, IT and technology challenges, finance challenges, inter- and intra-firm coordination, collaboration-related challenges, organisation policies, strategies, and practice-related challenges; *External challenges* (Q28-Q30), including macro institutional challenges. The findings of EFA also match the assumption of [18] that the SCF challenges faced by companies could be internal as well as external. Therefore, the hypotheses of this study are re-proposed as:

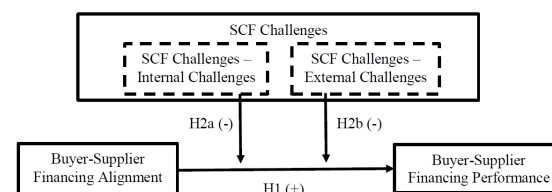
H₁: *Buyer-supplier financing alignment has a positive effect on buyer-supplier financing performance in the context of Chinese companies.*

H_{2a}: *Supply chain finance challenges – internal challenges negatively moderate the relationship between buyer-supplier financing alignment and buyer-supplier financing performance in the context of Chinese companies.*

H_{2b}: *Supply chain finance challenges – external challenges negatively moderate the relationship between buyer-supplier financing alignment and buyer-supplier financing performance in the context of Chinese companies.*

Based on the re-proposed hypotheses, a new conceptual model is illustrated in Figure 3:

Figure 3 Conceptual model after EFA



Source: Authors

Perhaps, the questions in the questionnaire should be assigned to various constructs, as shown in Table 5.

Table 4 Questionnaire after EFA

	Questions number
Demographic characteristics and control variables	Q1 - Q6
Buyer-supplier financing alignment	Q7 - Q9
Buyer-supplier financing performance	Q10 - Q12
SCF challenges-internal challenges	Q13 - Q27
SCF challenges-external challenges	Q28 - Q30

Another fact identified by the EFA is that four of the items within SCF challenges-internal challenges construct were not relevant to other items (Q20=0.365, Q22=0.256, Q23=0.148, and Q24=0.266). After the removal of these items, the eigenvalue of each factor exceeds 1 (6.263, 2.151, 1.994, and 1.897), and the factor loading value of each item is larger than 0.4, which warrants that each item is assigned to the corresponded factor without cross-loading. Also, the cumulative proportion of variance explained is 61.1% in the case of four factors. After that, each factor has at least three items, and the data is valid for further analysis.

Cronbach's alpha was used to evaluate the data reliability. The Cronbach's alpha value of each scale is above the generally agreed limit of 6.0 (0.762, 0.699, 0.923, and 0.655). Therefore, the data reliability of this study is supported, as well. Table 6 below presents the results of EFA and the Cronbach's alpha value of each factor.

Table 5 Factor analysis and Cronbach's alpha

Constructs and Associated Indicators	Factor Loading			
	1	2	3	4
1 Buyer-supplier financing alignment: $\alpha = 0.762$				
<i>To what extent do you agree with the following statement?*</i>				
We collaborate with our supply chain partners to try to minimise the financing cost along the supply chain		0.875		
We collaborate with our supply chain partners to try to reduce the capital commitment		0.734		
We collaborate with our supply chain partners to invest in production or logistics capacities		0.787		
2 Buyer-supplier financing performance: $\alpha = 0.699$				
<i>To what extent do you agree with the following statement?*</i>				
Inventories and equipment are financed by the supply chain partners with the lowest capital costs				0.738
If one of the supply chain partners has a liquidity problem, the other one supports the organisation by adapting the payment				0.742
The financial risks are shared along the supply chain and the risks are rewarded accordingly				0.834
3 Supply chain finance challenges – internal challenges: $\alpha = 0.923$				
<i>To what extent do you agree with the following statement?*</i>				
We lack knowledge and information about supply chain finance	0.704			
We lack training on supply chain finance	0.828			
We lack IT experts to support the automation of transactions	0.699			
We have slow processing of payment transactions	0.614			
We have poor visibility into the movement of goods	0.790			
We lack the ability to access the Supply Chain Finance at various stages in the supply chain, such as procurement management, daily operations management, or logistics management	0.761			
Our cash flows are unreliable and unpredictable	0.739			
We lack working capital/cash management tools	0.809			
We lack coordination and collaboration in payment processes	0.738			
We lack coordination collaboration between different departments	0.747			
We lack a common vision among supply chain partners	0.756			
4 Supply chain finance challenges – external challenges: $\alpha = 0.655$				
We have geographical challenges			0.684	
We have challenges to adapt to the local culture			0.848	
We have challenges to comply with the government laws and regulations			0.691	
Eigenvalues	6.263	2.151	1.897	1.994
Percentage of variance explained (%)	31.3%	10.8%	10.0%	9.5%

*Scale: strongly disagree – strongly agree (1-7)
Extraction method: Principal Component Analysis
Rotation method: Varimax with Kaiser Normalisation

4.2 Descriptive statistics and correlation analysis

The descriptive statistics with means, standard deviations, and intercorrelations between every two constructs with the Pearson correlation coefficient are presented in Table 7. In this study, the main effects, including financing alignment, financing performance, SCF internal challenges, and SCF external challenges, are represented by the mean values of their own items. The inter-correlations between every two constructs are calculated

through two-tailed Pearson correlations. In the following analysis, the buyer-supplier financing alignment is considered as the independent variable, buyer-supplier financing performance is processed as the dependent variable, and the SCF challenges (both internal challenges and external challenges) are treated as the moderator.

Table 7 Descriptive statistics and correlation

Variable	M	SD	1	2	3	4	5	6
Control Variable								
1 Number of employees	2.83	.852						
2 Annual turnover	3.67	.584	.272**					
3 Time for SCF initiative in place	3.24	.949	.322**	.002				
Main Effect								
4 Financing Alignment	5.50	1.03	.114	.097	.169*			
5 Financing Performance	5.03	1.06	.003	.026	-.044	.314**		
6 SCF Internal Challenges	5.13	1.21	.134	.245**	.234**	.193*	.049	
7 SCF External Challenges	3.46	1.15	-.100	.014	.017	.000	-.174*	.266**

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

The outcomes of the correlation analysis show that the number of employees is significantly correlated to the annual return ($r=.272$, $p<0.01$) and time for the SCF initiative ($r=.322$, $p<0.01$). Annual turnover significantly correlates to the SCF challenges-internal challenges ($r=.245$, $p<0.01$). Time for the SCF initiative in place is significantly correlated to the buyer-supplier financing alignment ($r=.169$, $p<0.05$) and the SCF challenges-internal challenges ($r=.234$, $p<0.01$). In terms of the conceptual model, a significant correlation exists between the buyer-supplier financing alignment and the buyer-supplier financing performance ($r=.314$, $p<0.01$). The significant correlation also shows in between the buyer-supplier financing alignment and the SCF challenges-internal challenges ($r=.193$, $p<0.05$). Moreover, the buyer-supplier financing performance has a significantly negative correlation with the SCF challenges-external challenges ($r=-.174$, $p<0.05$).

4.3 Regression analysis for buyer-supplier financing alignment and buyer-supplier financing performance

The results of the hierarchical regression analysis for hypothesis 1 are presented in Table 8. The analysis was conducted in two stages. Step 1 included all control variables and buyer-supplier financing performance as the dependent variable. The results reveal that none of the control variables has a significant effect on buyer-supplier financing performance. At step 2, buyer-supplier financing alignment was added as the independent variable, and the results indicate that buyer-supplier financing alignment contributes significantly to the regression model ($F(4,147)=4.473$, $p<0.01$), and accounted for 10.9% of the variance of buyer-supplier financing performance ($R^2=.109$). The results prove hypothesis 1 that a higher financing alignment within the buyer-supplier relationship is subjected to better financing performance ($\beta=.341$, $p<0.001$). Since hypothesis 1 is supported, it could be concluded that buyer-supplier financing alignment has a positive influence on the buyer-supplier financing performance.

Table 6 Results of the direct effect on the buyer-supplier financing performance

Step	Variables	Buyer-Supplier Financing Performance (FP)	
		1	2
1	<i>Control</i>		
	Number of employees	.015	-.001
	Annual turnover	.041	-.011
	Time for the SCF initiative in place	-.054	-.112
2	<i>Main Effect</i>		
	Buyer-Supplier Financing Alignment (FA)		.341***
	R ²	.003	.109
	Adjusted R ²	-.017	.084
	F	.136	4.473**

***. Significant at the 0.001 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

4.4 Regression analysis for the moderating effect of SCF challenges

In order to investigate the moderation effect, all values of the buyer-supplier financing alignment, buyer-supplier financing performance, SCF challenges-internal challenges, and SCF challenges-external challenges were transformed into standardised

scores. After that, the construct of buyer-supplier financing alignment and SCF challenges-internal challenges, as well as the buyer-supplier financing alignment and SCF challenges-external challenges, were multiplied and treated as the interaction effect.

A three-stage hierarchical regression analysis was conducted to test hypothesis 2a with regard to the moderation effect of SCF challenges-internal challenges. Step 1 included all control variables and buyer-supplier financing performance as the dependent variable. The results reveal that none of the control variables has a significant effect on buyer-supplier financing performance. Step 2, buyer-supplier financing alignment and SCF challenges-internal challenges were added as the attachment variable, and the results indicate that buyer-supplier financing alignment contributes significantly to the buyer-supplier financing performance ($\beta=.350$, $p<0.001$; $F(5,146)=3.558$, $p<0.01$), and accounted for 10.9% of the variance of the buyer-supplier financing performance ($R^2=.109$). However, the significant correlation between the SCF

challenges-internal challenges and buyer-supplier financing performance is not observed ($\beta=.012$, $p=0.893$). At step 3, the interaction effect of SCF challenges-internal challenges was included. The results show that the interaction effect significantly contributed to the regression model ($F(6,145)=3.052$, $p<0.01$), and accounted for 11.2% of the variance of the buyer-supplier financing performance ($R^2=.112$). However, the results reveal the moderating effect of the SCF challenges-internal challenges does not significantly affect the relationship between the buyer-supplier financing alignment and buyer-supplier financing performance ($\beta=.058$, $p=0.450$). Thus, hypothesis 2a could not be accepted. Table 9 below demonstrates the results of the second hierarchical regression analysis for testing the moderation effect of SCF challenges-internal challenges.

Table 7 Results of the moderation effect of the SCF challenges-internal challenges

Step	Variables	Buyer-Supplier Financing Performance (FP)		
		1	2	3
1	<i>Control</i>			
	Number of employees	.015	-.001	-.009
	Annual turnover	.041	-.016	-.005
	Time for the SCF initiative in place	-.054	-.114	-.115
2	<i>Main Effect</i>			
	Buyer-Supplier Financing Alignment (FA)		.350***	.355***
	SCF Challenges-Internal Challenges (SCF_CI)		.012	.014
3	<i>Interaction Effect</i>			
	FA \times SCF_CI			.058
	R ²	.003	.109	.112
	Adjusted R ²	-.017	.078	.075
	F	.136	3.558**	3.052**

***. Significant at the 0.001 level (2-tailed).

**. Significant at the 0.01 level (2-tailed).

With the same methodology, the hypothesis 2b regarding the moderation effect of SCF challenges-external challenges was also implemented through three-stages hierarchical regression analysis. At step 1, the results indicate that none of the control variables have a significant effect on buyer-supplier financing performance. Step 2, both buyer-supplier financing alignment ($\beta=.352$, $p<0.001$) and SCF challenges-external challenges ($\beta=-.186$, $p<0.05$) significantly contribute to the regression model ($F(5,146)=4.704$, $p<0.001$) is observed, and accounted for 13.9% of the variance of the buyer-supplier financing performance ($R^2=.139$). At step 3, the results reveal that the

interaction effect significantly contributed to the regression model ($F(6,145)=4.332$, $p<0.001$), and accounted for 15.2% of the variance of the buyer-supplier financing performance ($R^2=.152$). However, the results show that the moderating effect of SCF challenges-external challenges do not significantly influence the relation between buyer-supplier financing alignment and buyer-supplier financing performance ($\beta=.112$, $p=0.134$). Hence, hypothesis 2b is not supported. The results of the third hierarchical regression analysis for testing the moderation effect of SCF challenges-external challenges are presented in Table 10.

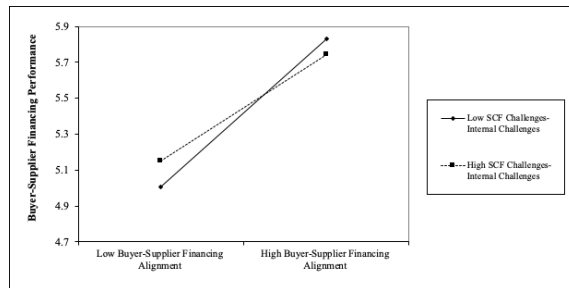
Table 8 Results of the moderation effect of the SCF challenges-external challenges

Step	Variables	Buyer-Supplier Financing Performance (FP)		
		1	2	3
1	<i>Control</i>			
	Number of employees	.015	-.030	-.031
	Annual turnover	.041	.005	-.003
2	<i>Main Effect</i>			
	Buyer-Supplier Financing Alignment (FA)		.352***	.350***
	SCF Challenges-External Challenges (SCF_CE)		-.186*	-.182*
3	<i>Interaction Effect</i>			
	FA × SCF_CE			.112
	R ²	.003	.139	.152
	Adjusted R ²	-.017	.109	.117
	F	.136	4.704***	4.332***

***. Significant at the 0.001 level (2-tailed).
*. Significant at the 0.05 level (2-tailed).

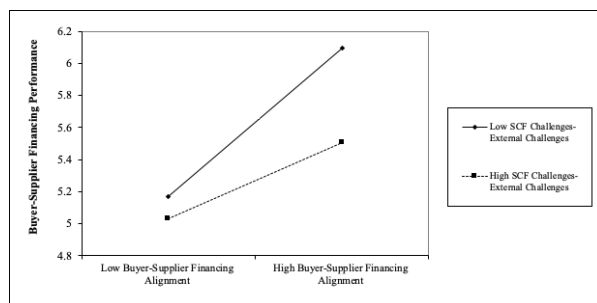
Furthermore, the moderating effects of internal and external SCF challenges are illustrated in Figure 4 and Figure 5 via a plotting slope tool in Microsoft Excel.

Figure 4 Moderating effect of the SCF Challenges-Internal Challenges



Source: Authors

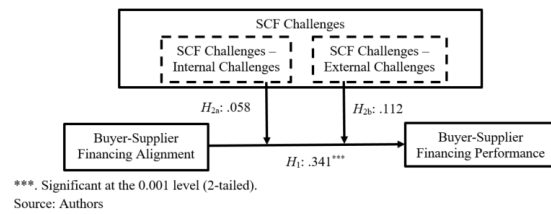
Figure 5 Moderating effect of the SCF Challenges-External Challenges



Source: Authors

In this section, data validity and reliability are evaluated through the exploratory factor analysis (EFA) and Cronbach's alpha. While the results of EFA reveal that it is appropriate to split hypothesis 2 into two sub-hypotheses: one is related to internal SCF challenges, and the other one is for external SCF challenges. Hence, the hypotheses and conceptual research model are reformulated according to the statistical indications. After that, the hierarchical regression analysis was applied to test the hypotheses. The results indicate that buyer-supplier financing alignment contributes significantly to the regression model. However, neither the moderating effect of internal SCF challenges nor the moderating effect of external SCF challenges significantly contribute to the regression model, although it is obviously shown in Figure 5 that the moderator affects the relation between buyer-supplier financing alignment and buyer-supplier financing performance. To summarise, based on the statistical results, hypothesis 1 is supported, but both hypotheses 2a and 2b are rejected due to them not being at a significant level of 5%. Figure 6 presents the overall result of the conceptual frame through the hierarchical regression analysis. The discussion and conclusion of the statistical findings are further discussed in Section 5.

Figure 6 Overall result of the hypothesis



5. Discussion

This study confirms that buyer-supplier financing that has higher alignment could positively facilitate a better buyer-supplier financing performance in the context of China (hypothesis 1). A positive and significant relationship between buyer-supplier financing alignment and buyer-supplier financing performance was found in the data analysis. It implies that a robust buyer-supplier financing alignment is beneficial for the financing performance in the supply chain. The finding is in line with the research of [6], and extends the context to the emerging country. In other words, the results suggest that blockchain technology can enhance the buyer-supplier financing performance, since blockchain could strengthen the buyer-supplier financing alignment.

Additionally, this paper also attempts to understand whether internal and external SCF challenges exert influence on the positive relationship between buyer-supplier alignment and buyer-supplier financing performance in Chinese companies (hypotheses 2a and 2b). The statistical results reveal that the moderating effect of both internal and external SCF challenges have an impact on the relationship, but they are insignificant. It infers that the SCF challenges barely affect the financing performance driven by a strong financing alignment in the Chinese business environment. In other words, it suggests the relationship between the buyer-supplier financing alignment and buyer-supplier financing performance is so stable that the mentioned internal and external challenges for SCF implementation are probably negligible.

Although a significant moderating effect was not observed in the regression model, the moderating effect has a certain probability of existing. As shown in Figure 4, when it is in the low internal SCF challenges situation, the plotting slope demonstrates that higher financing alignment corresponds to more exceptional financing performance. However, the slope becomes less steep in the high internal SCF challenges situation. It indicates that internal SCF challenges have a negative influence on the relationship between buyer-supplier alignment and buyer-supplier financing performance, but the effect is not significant. With the same understanding, Figure 5 presents external SCF challenges as having a negative influence on the relationship between buyer-supplier alignment and buyer-supplier financing performance.

Moreover, from the plotting slope, external challenges could be recognised to have a higher impact on the relationship, compared to the internal challenges. This result matches several related studies. The geographic policy creates an unstable market environment and potential risks when financing the supply chain [37]. The prior research of [56] proposes that Chinese national attribute (e.g., unique Chinese characteristics and regulations) as a moderator that may impact on the financing and logistics service performance in the stage of SCF implementation. Besides, [57] indicate that the cultural environment of China is a crucial aspect when considering to perform SCF in Chinese firms.

Furthermore, two main possible reasons are weakening the impact of the moderating effect on the relationship. Firstly, the SCF challenges considered in this study are based on the prior study in India. This study adopts the construct developed by [18], formulating the hypotheses in the context of China, while it is probable that the main challenges in China are different from the challenges in India. A study by [58] reveals that the risks in China when financing the supply chain include macro-economy, industry,

credit and liquidity control, and operations. Another research study of [59] indicates that the inadequate credit system in China creates a significant challenge in SCF implementation. Secondly, with the items regarding inter- and intra-firm coordination, collaboration-related challenges are excluded from the SCF challenges-internal challenges construct due to the low factor loading value presented in the EFA. Since fewer factors are considered, it might decrease the level of the moderating effect.

6. Conclusion

This study explores issues related to SCF in China. More specifically, we focus on the need for buyer-seller alignment to ensure better performance among organisations. We provide empirical evidence on the positive impact of the buyer-supplier alignment on SCF in Chinese companies. However, there are various challenges that could affect the effectiveness of supply chain finance in maintaining buyer-seller alignment. Therefore, we identify internal and external challenges of supply chain finance and explore the moderating influence of supply chain challenges on the relationship between buyer-supplier financial alignment and financing performance. Regression results based on primary data from employees responsible for procurement, supply chain or finance indicate that buyer-supplier financial alignment positively contributes to the buyer-supplier financial performance. However, we did not find any moderating influence of SCF challenges, both internal and external, on the relationship between buyer-supplier alignment and financial performance. Findings provided by the study can provide valuable insight to management and regulators. We make several contributions to the supply chain finance literature. First, we confirm the importance of buyer-supplier alignment, which could result in better financial performance among Chinese firms. Second, our paper identifies various internal and external challenges affecting supply chain finance. Finally, we emphasise the application of blockchain technology to improve the efficiency of supply chain financing transactions. However, effective use of blockchain in SCF would require sound regulatory framework to improve accountability among stakeholders.

7. Managerial implications

Currently, researchers mainly concentrate on discussing how blockchain could improve the SCF performance from a technology perspective [28], [60], [61]. This paper conducts an empirical study to address the financing alignment and performance within the buyer-supplier relationship based on a SCF implementation perspective. This study also tries to provide an insight into the management practices and managerial decision making, when buyers or suppliers consider applying blockchain technology to enhance SCF performance.

On the one hand, the results theoretically support the buyers and suppliers to apply blockchain technology to improve the financing performance in a supply chain. The reason is that stronger financing alignment leads to better financing performance, and the ability of blockchain technology to facilitate the financing alignment has been recognised. On the other hand, the results imply that buyers and suppliers could concern the cooperative relationship and collaboration approach to enhance the efficiency of the business, rather than only focus on their own companies' development strategies. On this account, when companies implement SCF, it is important to maintain the long-term buyer-supplier relationship in order to improve the financing performance.

8. Limitations and future research

There are several limitations in this study, which raise concerns for future study. First of all, the survey constructs of SCF challenges in this study are adopted from the previous study of SCF challenges in Indian companies. The challenges proposed in the construct are not entirely appropriate in the case of China. In order to adequately investigate the proposed model, the external challenges should be especially further extended. A reason is that the external challenges have a more significant impact on the relationship between buyer-supplier financing alignment and buyer-supplier financing performance, based on the results of this study. Another reason is that the number of questions related to external challenges is limited compared to the internal challenges. Hence, it is desirable to have further study identify the related SCF challenges, especially for the external SCF challenges in China. Besides, [10] summarise the SCF challenges in their integrated

blockchain technology-driven SCF framework, which includes supplier financing in a multi-tier supply chain, disputed invoices, and lack of trust infrastructure. It is recommended to seek other related SCF challenges in future studies.

In terms of the research method, the reliability of the survey method strongly depends on the respondent qualities of the questionnaires, and it is an uncontrollable factor. To have an in-depth understanding of the implementation of the SCF in China, a case study in the future is a proper method to realise how the SCF is implemented in China and gain insights that are more practical.

In this study, the proposed model is investigated in the context of China. Supply chain finance is probably highly demanded in other emerging markets similar to China, such as Brazil, India, and Turkey. For example, according to [62] 99% of the companies in Brazil are small to medium-sized enterprises. Based on data from this model, the moderating effect of SCF challenges might be generalised and analysed in Brazil or other emerging countries.

Finally, this study only focuses on the buyer-supplier relationship to conduct the research; however, multi-organisation characteristics exist in the Chinese SCF environment. It might be interesting for future research to involve other participants in the supply chain, such as logistics service providers.

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