

Analysis of factors affecting the decision to apply digital SCF to enterprises in Vietnam

HANG NGUYEN THI, HUAN NGUYEN VAN

Thai Nguyen University of Information and Communication Technology,
Thai Nguyen,
VIETNAM

Abstract: SMEs in Vietnam still have difficulty accessing SCF packages due to legal requirements, digital infrastructure, and SMEs' capacity. To find solutions to remove the support relationship between financial/banking institutions for SMEs, while lacking quantitative research and practical testing to measure the effectiveness of the SCF application. The paper will study and analyse the main factors affecting SCF activities in SMEs, combining a survey of representative samples and factor analysis/ANOVA, testing the reliability of the scale using Cronbach's alpha coefficient based on a survey of 174 samples and collecting data by combining online surveys (Google/Form, email) and direct interviews. The research results of the paper will make practical contributions to the scientific community, policymakers and businesses in implementing SCF in general and green SCF as a powerful tool to optimise cash flow, share risks between parties and promote green transformation in the supply chain, with the requirements of data management, measurement standards and an appropriate policy framework in Vietnam.

Key-Words: SCF, Supply Chain Finance, SMEs, Cash flow, Capital, Digital, Enterprises, Digital Technology.

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1 Introduction

In the trend of globalisation and strong international economic integration, businesses have increased their participation in global supply chain activities in recent years and have grown strongly. However, due to the impact of the world economy being affected by the COVID-19 pandemic, the impact of war has partly caused difficulties for businesses in supply chain activities. Especially small and medium enterprises (SMEs), when joining and participating in supply chains, face broken and interrupted supply chains. This causes SMEs to lack capital, cash flow and information flows to serve production and business activities. Supply Chain Finance (SCF) has become an effective tool and solution to help SMEs easily access cash flow, reduce capital costs, improve supply chain operational efficiency and thereby enhance competitiveness.

However, through a preliminary survey, SMEs still have difficulty accessing general financial funding packages and green financial funding from financial institutions. Therefore, in order to have a substantial analysis and assessment, to find out the causes and factors affecting SMEs' activities, we need to have further studies on factors affecting SCF implementation that are meaningful both in theory and practice. The article is structured in the following sections: (1) *Introduction*; (2) *Theoretical basis and related research*; (3) *Research model*; (4). *Research method* (5). *Research results*; (6). *Some policy implications*; (7). *Conclusion*.

2 Theoretical basis and related research

In recent years, the research topic on supply chain finance in enterprises and related studies on analyzing the current status of factors and factors affecting SCF activities in enterprises have received much attention from scientists, managers, etc., domestically and internationally. As a result, many international and domestic scientific works have been published in journals/conference proceedings, with approaches, analytical models, and research results being synthesised and evaluated. Below are some of the theoretical bases and related scientific research publications:

Some studies on SCF in SMEs: Supply Chain Finance (SCF) is a tool that combines corporate finance and supply chain management to help businesses conveniently access and optimise cash flow, increase the ability to improve liquidity and contribute to minimising financial risks in relationships between partners [1], [2], [3]. In the world, according to the group of publications of [4], [5], the role of SCF for SMEs is emphasised as an optimal mechanism to support effective working capital flow, helping SMEs to easily access quickly and promptly [2], [6]. In the context of the 4th

industrial revolution and global digital transformation, SCF solutions are increasingly being perfected, with the application support of advanced technologies such as blockchain, big data and IoT (Internet of Things) to create digital SCF solutions [7], [8], [9], [10].

In addition, in the world, there are studies based on theoretical research frameworks [11], [12], [13] on working capital, transaction cost theory, and supply chain relationship theory as a basis for building SCF application solutions in enterprises. According to the author group [14], [15], believes that SCF is a mechanism and solution connecting financial institutions/banks and businesses (sellers or buyers), and according to the group of authors [4], [15] again proposed a research framework on SCF with three pillars, including: cash flow management, working capital optimization and financial cooperation in the chain.

To assess the impacts on SCF activities in businesses, there have been studies and projects in the world that have pointed out several main groups of factors: the impact of digital technology such as Blockchain, IoT and big data, supporting the implementation of application solutions to help increase transparency and reduce credit risks [5], [16], [17], [18], [19], [20] AI, with its ability to analyse large data sets, forecast trends, optimise operations, and automate routine tasks, minimising the risk of errors, has enabled organisations to respond promptly to disruptions, minimise downtime and improve overall customer satisfaction [21]. Research on the relationship between supply chain partners (seller-financial institution-buyer) has shown that the level of cooperation and trust between stakeholders directly affects the success of SCF [22]. There are studies proposing legal and institutional frameworks that clearly show that differences in laws, financial systems, and accounting regulations across international financial institutions also strongly influence the ability to implement SCF [23]. The study found that firm characteristics such as size, management capacity and credit history also have significant impacts on the ability to access SCF [24]. *In addition*, studies point out that macro factors and market risks, such as global shocks, financial crises like the COVID-19 pandemic, and geopolitical competition or wars between countries, have impacted the supply chain, thereby changing the behaviour and SCF needs of stakeholders [25].

Thus, although in recent years there have been many studies on SCF and analysis of factors affecting SCF in the world, they still mainly focus on developed economies and mainly focus on large enterprises. While emerging countries such as

Southeast Asia, where enterprises are still mainly SMEs, have not really received proper attention and have not had many quantitative research models, they lack a system to generalise the theoretical basis of SCF.

In Vietnam, the term SCF has only appeared in the last decade, and SCF mainly provides financing packages in the form of factoring, invoice discounting and financing for import-export activities of enterprises, but mainly focuses on large enterprises. Meanwhile, SMEs still have difficulty accessing capital flows from SCF activities. This is partly due to the lack of information transparency and legal inadequacies that remain one of the main barriers. It can be mentioned that the research work of the group of authors in [26] emphasised that Vietnamese SMEs have difficulty accessing funding packages from SCF activities due to a lack of financial transparency. In order to overcome the above limitations, the author in [27] pointed out that businesses need to expand their cooperation with stakeholders in the chain to make it easier for businesses to access SCF capital. [28] have researched and analysed the role of digital transformation in applying it to SCF operations to help SMEs have the opportunity to access SCF. The author in [29] has researched and pointed out the incomplete legal framework for stakeholders participating in SCF to protect their rights, thus lacking an effective dispute resolution mechanism. The study also pointed out the need for a legal framework to support SMEs in accessing funding packages from SCF in Vietnam.

Thus, through the survey and analysis of the current situation of issues related to SCF and the impact on SCF of SMEs in Vietnam, it is shown that most of the research has stopped at describing the current situation, analyzing a single factor, and lacking comprehensive quantitative models. Up to now, no work has fully considered the impact of factors simultaneously, including: technology, legal, partnership and management capacity of SMEs in implementing SCF. Specifically, in terms of theoretical basis, the world has built a fairly comprehensive theoretical foundation, while in Vietnam, there is still a lack of a system of theoretical frameworks. In practice, the world has shown the benefits of SCF for global SMEs, but Vietnamese SMEs still face legal barriers and financial transparency issues. In terms of research methods for influencing factors, the world has applied the SEM model and multivariate regression, while domestic research mainly relies on descriptive surveys.

In order to overcome some of the above shortcomings and problems, we need to conduct in-

depth research on SCF and analyse the factors affecting SCF activities in Vietnamese SMEs. This includes emphasising green SCF packages as a basis for building SCF digital transformation solutions, facilitating long-term investment in clean technology and increasing the recognition of “green” products in the market. Thereby, helping to easily circulate capital, creating a mechanism to encourage sustainable behaviour: businesses improve processes to qualify for better financing packages, and buyers can request green evidence to enjoy a more stable supply chain. At the same time, digital SCF helps optimise cash flow, share risks between parties and promote green transformation in the supply chain, with data management requirements, measurement standards and appropriate policy frameworks. The results of this research not only contribute to the academic field but also bring practical value in policy making and developing suitable SCF solutions for SMEs in the current digital transformation trend.

3 Research model

The research model on factors affecting SCF activities in enterprises is built based on inheriting the results from previous domestic [30], [31], [32] and international [4], [15] research projects on the field of supply chain finance and practical research at SMEs in Vietnam. From there, the article proposes the construction of a research model to analyse factors affecting and impacting the implementation of digital SCF applications for SMEs in Vietnam in the current period.

The proposed research model is identified as consisting of 6 independent factor groups, denoted from H1 to H5, affecting the dependent variable, which is the Readiness to implement digital SCF applications.

The figure below illustrates the relationship between factors affecting the readiness to implement digital SCF applications, shown as follows:

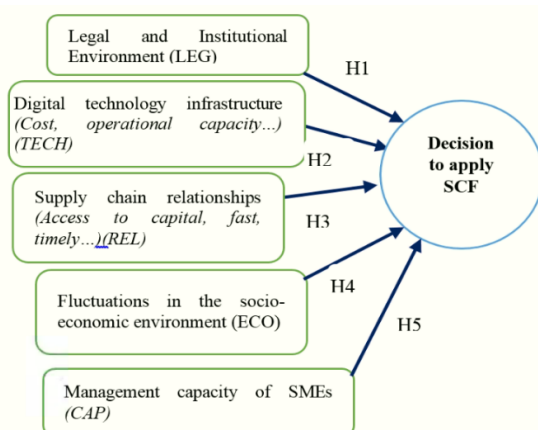


Fig. 1: Proposed research model (Source: created by the author)

Based on the five independent factors presented in Fig.1, the research hypotheses are specifically stated as follows:

H1: The legal and institutional environment (LEG) has a positive (+) influence on the consideration of the level of use and the decision to deploy digital SCF applications in SMEs or not. Having a legal and institutional basis will help stakeholders, such as financial/funding institutions or SMEs themselves, feel secure when participating in the digital SCF environment, because if there are issues of disputes, competition, etc., there will be a basis to protect stakeholders transparently and strictly. This factor includes the following 3 observed variables:

1. **LEG1:** State mechanisms, policies and regulations support SCF activities.

2. **LEG2:** There is a legal framework on SCF that supports clear and transparent financial, credit and contractual transactions in the supply chain.

3. **LEG3:** Institutional financial and banking system to meet the capital needs of SMEs.

H2: Infrastructure and Digital Technology (TECH) have a positive (+) impact on the decision to deploy digital SCF applications at SMEs or not. Because infrastructure and digital technology help illustrate products/goods to the market, to ensure of environmental factors and sustainability criteria are considered. But it requires large investment costs, a transfer recipient and especially the safety and security of transaction and financial data of related parties participating in the supply chain. This factor includes the following 4 observed variables:

1. **TECH1:** SMEs have information technology systems (ERP, CRM...) to serve supply chain management, publicly and transparently disclose SMEs' products/goods that meet environmental and social factors to the green market.

2. **TECH2:** Readiness level to apply digital platforms in financial management, cash flow and capital flow of SMEs.

3. **TECH3:** Network connection infrastructure and transaction data security in digital SCF operations are guaranteed to be safe and continuous.

4. **TECH4:** Investment costs for infrastructure, technology, training and operations are at an appropriate level, supporting SMEs to access and implement SCF.

H3: Supply chain relationship (REL) has a positive influence (+) on the consideration and decision of whether to deploy digital SCF solutions at SMEs or not. Thanks to the implementation of digital SCF applications, support for SMEs to take

advantage of technologies such as blockchain and big data... can be used to monitor, verify and report environmental, social and governance performance in the supply chain. Thereby, helping to make transparent whether products, goods produced and supplied to the market, ensure social and environmental factors and sustainability criteria or not. This will be the basis for financial institutions to provide preferential finance (digital SCF) to SMEs that meet specific sustainability criteria: carbon emission reduction, waste management efficiency, thereby directly connecting environmental performance with access to green finance. This factor includes the following 4 observed variables:

1. **REL1:** SMEs maintain long-term cooperative relationships with partners in the supply chain.
2. **REL2:** Partner trust between SMEs and partners is high.
3. **REL3:** Frequency of sharing information related to cash flow, capital needs and production and business plans, and sustainability criteria (environmental, social and governance) between SMEs and partners.

4. **REL4:** Easy access to funding packages from SCF activities with commitments and support from partners and financial institutions to help SMEs.

H4: The fluctuation of the socio-economic environment (ECO) has a positive (+) impact on the decision to deploy the SCF application at SMEs. Because the fluctuations of the socio-economic environment often include changes in financial and monetary policies, market demand, consumer trends, digital technology developments and uncertain factors such as economic conflicts and price fluctuations. However, the fluctuations of the socio-economic environment not only create challenges but also motivate SMEs to decide to implement SCF. This factor includes the following 3 observed variables:

1. **ECO1:** Macroeconomic fluctuations such as interest rates, inflation, exchange rates, etc., all impact and influence the demand and ability of SMEs to access SCF.
2. **ECO2:** Changes in market trends, as well as consumer behaviour, will impact the capital needs of SMEs.
3. **ECO3:** The issue of economic and international integration and regional and world trade organisations impacts the implementation of digital SCF solutions for SMEs.

H5: The internal management capacity of SMEs has a positive (+) impact on the ability to receive and successfully implement digital SCF solutions at SMEs. These factors reflect the motivation and

specific conditions that promote the determination of leaders to consider implementing SCF applications. This factor includes the following 3 observed variables:

1. **CAP1:** The management and operational capacity of SMEs will help improve the efficiency of production and business operations.
2. **CAP2:** Maintain transparency and publicity of financial reports on the system.
3. **CAP3:** SMEs' management capacity and ability to use capital effectively contribute to meeting cash flow needs.

In addition, the SCF-dependent factor includes 3 observed variables:

1. **SCF1:** SMEs decide to deploy the SCF solution to optimise capital flow.
2. **SCF2:** SMEs consider SCF as a useful solution and tool to help improve capital flow and solvency.
3. **SCF3:** Maintain and expand the application of SCF in many areas of SMEs' operations.

4 Research methods

The study was conducted using quantitative methods, using primary data collected from a survey of 174 small and medium enterprises (SMEs) in the Northern region of Vietnam through a questionnaire designed on a 5-level Likert scale. A convenience sampling method was applied, combining online surveys (*Google/Form, email*) and direct interviews. After refining and removing the response data from the survey results that were meaningless and invalid, a total of 174 valid samples remained and were included in the analysis and processing. The data processing tool used is SPSS 26 software with the following steps: testing the reliability of the scale using Cronbach's Alpha coefficient, exploratory factor analysis (EFA), Pearson correlation testing and multivariate linear regression to determine the level of influence of factors on the level of readiness and decision to deploy the application of digital SCF solutions at SMEs.

5. Results

5.1 Testing the reliability of the scale:

The results of Cronbach's Alpha analysis show that all scales have Cronbach's Alpha coefficients ranging from 0.714-0.986 (>0.6). All 20 observed variables have item-total correlation coefficients >0.3. Therefore, they meet the requirements for factor analysis (Table 1). This result confirms that the scales

have high reliability and are eligible to continue to be included in exploratory factor analysis (EFA).

Table 1: Cronbach's Alpha reliability test results of independent and dependent variables

Order	Scale	Sign	Number of observed variables	Cronbach's Alpha coefficient
1	Institutional and legal environment	LEG	3	0.967
2	Digital technology infrastructure	TECH	4	0.889
3	Level of supply chain relationships	REL	4	0.804
4	Socio-economic environment fluctuations	ECO	3	0.986
5	Management capacity	CAP	3	0.975
6	Decision to apply SCF	SCF	3	0.714

(Source: Author analysed SPSS data)

5.2 EFA analysis

Using the KMO test to evaluate the suitability of data for exploratory factor analysis (EFA) and Bartlett's test has Sig. value = 0.000 (< 0.05). This result shows that the research data has a fairly good suitability level to conduct EFA, and the observed variables have a close correlation large enough for factor analysis, and the research model has a statistical basis to extract potential factors (Detailed analysis results see Table 2 below).

Table 2. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.782
Approx. Chi-Square	3510.033
Bartlett's Test of Sphericity	136
Sig.	.000

(Source: Author analysed SPSS data)

Value of Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO)=0.782. The results of factor analysis show that the KMO index is $0.782 > 0.5$ and there are no bad variables. This proves that

the data used for factor analysis is completely appropriate.

The result of Bartlett's test is 3510.033 with a significance level of Sig. = $0.000 < 0.05$, showing that the observed variables are correlated with each other, the results of factor analysis ensure statistical significance (See Table 3. Total Variance Explained in Appendix A for details).

Perform factor analysis by Principal components with Varimax rotation. The results show that 20 observed variables are grouped into 6 groups. Total variance extracted value = $85.005\% > 50\%$: meets the requirements; then it can be said that these 6 factors explain 85.005% of the variation in the data.

Factor matrix with Varimax rotation (Detailed analysis results see Table 4 below):

Table 4: Rotated Component Matrix^a results

	Component				
	1	2	3	4	5
TECH1	.904				
TECH2	.891				
TECH3	.868				
TECH4	.787				
CAP1		.944			
CAP2		.934			
CAP3		.919			
ECO1			.908		
ECO2			.900		
ECO3			.884		
LEG1				.968	
LEG2				.951	
LEG3				.937	
REL1					.821
REL2					.766
REL3					.748
REL4					.736

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalisation.

^aRotation converged in 6 iterations.

(Source: Author analysed SPSS data)

The results of the rotation matrix in the EFA analysis ensure discrimination, and the convergence value of the variables on the factors is all > 0.5 higher than the required level. Therefore, all observed variables are included in the next analysis.

5.3 Pearson correlation analysis

To analyse each correlation between the dependent variable SCF and the independent variables, the paper uses the Pearson correlation analysis method. The analysis results show that the correlation coefficients are all positive and statistically significant (Sig. < 0.01). This shows that the dependent variable SCF has a relatively high

correlation with the independent variables (see the analysis values below in Table 5).

Table 5: Correlation analysis results

		SCF	LEG	TECH	REL	ECO	CAP
SCF	Pearson Correlation	1	.142	.005	.878**	.448**	.308**
	Sig. (2-tailed)		.063	.947	.000	.000	.000
	N	174	174	174	174	174	174
LEG	Pearson Correlation	.142	1	.302**	.133	.026	.070
	Sig. (2-tailed)	.063		.000	.081	.735	.360
	N	174	174	174	174	174	174
TECH	Pearson Correlation	.005	.302**	1	.031	-.093	-.034
	Sig. (2-tailed)	.947	.000		.684	.224	.655
	N	174	174	174	174	174	174
REL	Pearson Correlation	.878*	.133	.031	1	.465**	.279**
	Sig. (2-tailed)	.000	.081	.684		.000	.000
	N	174	174	174	174	174	174
ECO	Pearson Correlation	.448*	.026	-.093	.465**	1	.560**
	Sig. (2-tailed)	.000	.735	.224	.000		.000
	N	174	174	174	174	174	174
CAP	Pearson Correlation	.308*	.070	-.034	.279**	.560**	1
	Sig. (2-tailed)	.000	.360	.655	.000	.000	
	N	174	174	174	174	174	174

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

(Source: Author analysed SPSS data)

The analysis results show that SCF – REL with $r = 0.878$, $p = 0.000$ shows a very strong and statistically significant positive correlation. Changes in REL explain about 77.0% of the variance in SCF ($r^2 = 0.878^2 \approx 0.770$). This is a very large correlation.

SCF – ECO has $r = 0.448$, $p = 0.000$, showing a moderate, significant positive correlation. ECO explains about 20.1% of the variance of SCF ($r^2 \approx 0.201$). This shows that economic factors are quite closely related to the decision to apply SCF.

SCF – CAP has $r = 0.308$, $p = 0.000$, showing a weak → moderate positive correlation, significant. $r^2 \approx 0.095$, CAP explains about 9.5% of the variation in the decision to apply SCF.

SCF – LEG with $r = 0.142$, $p = 0.063$ shows a small correlation, not statistically significant at the 5% level.

SCF – TECH with $r = 0.005$, $p = 0.947$, no linear relationship.

The above analysis shows that the independent variables have a moderate correlation, and there is no serious multicollinearity. Thus, the correlation between the independent variables is at an acceptable level, does not greatly affect the model, and the independent variables explain the dependent variable separately, do not duplicate too much information,

and ensure the necessary conditions for multivariate regression analysis.

5.4 Linear regression analysis

Model fit testing:

Based on the results of the adjusted R^2 coefficient = 0.770, it shows that the 5 independent variables explain 77.00% of the variation of the dependent variable SCF. This proves that the level of explanation is high and the research model is quite suitable and has good predictive ability. The coefficient $R = 0.881$ reflects the close relationship between the variables in the proposed model. The estimated standard error reaches 0.32928 at a low level, which shows that the accuracy of the research model is reliable.

Table 6: Table of results of testing the suitability of the research model

Model Summary

Model	R	R ² Square	Adjusted R ² Square	Std. Error of the Estimate	Durbin- Watson
1	.881 ^a	.776	.770	.32928	1.730

a. Predictors: (Constant), CAP, TECH, REL, LEG, ECO

b. Dependent Variable: SCF

(Source: Author analysed SPSS data)

The independent variables CAP, TECH, REL, LEG, and ECO used to explain SCF have a very high level of suitability (See Table 6 for details above). With $R^2 = 0.776$ and Adjusted $R^2 = 0.770$, the model explains most of the variation in SCF, has low forecast error, and does not violate the assumption of autocorrelation of residuals (DW = 1.730). This proves that the research model is built with a solid statistical foundation, reliable enough to be used in analysis and to propose management implications.

Analysis of variance ANOVA

The results of Table 7 show that the statistical value $F = 116.562$ and the value Sig. (F) = 0.000 < 0.05, indicating that the multiple linear regression model fits the data set. This also confirms that the independent variables have a linear relationship with the dependent variable SCF, and the built model is statistically significant:

Table 7: Analysis of variance ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	63.192	5	12.638	116.562	.000 ^b
	Residual	18.216	168	.108		
	Total	81.408	173			

a. Dependent Variable: SCF

b. Predictors: (Constant), CAP, TECH, REL, LEG, ECO
(Source: Author analysed SPSS data)

The results of the analysis of variance (ANOVA) showed that the linear regression model with five independent variables, including CAP, TECH, REL, LEG and ECO, had a test value of $F = 116.562$, with a significance level of $\text{Sig.} = 0.000 (< 0.05)$. This allows us to reject the null hypothesis H_0 ($R^2 = 0$), which means that the regression model is statistically significant and capable of explaining the variation of the dependent variable SCF. In other words, at least one of the independent variables included in the model has a significant impact on SCF, thereby confirming that the selection of these variables is scientifically sound. At the same time, the total variance of the dependent variable (81,408) is mainly explained by the regression part (63,192), leaving only 18,216 due to random error, demonstrating that the model has explained a large proportion of the data variation. This explanatory ratio is about 77.6%, reflecting the high degree of fit and good predictive ability of the model.

Regression coefficient:

Testing the significance of the regression coefficient for 5 factors affecting the effectiveness of applying digital SCF in financial activities, providing for SMEs, shows that all 5 variables have a significant $\text{Sig.} A < 0.05$ level is statistically significant, so they have a positive impact on the effectiveness of applying digital SCF in managing financial activities for SMEs participating in the chain (See Table 8 in Appendix B for details).

Thus, the regression model not only satisfies statistical requirements but also has practical significance, providing a reliable basis for further detailed analysis of the individual impact of each factor, CAP, TECH, REL, LEG, and ECO on SCF, thereby helping managers or researchers to have accurate conclusions and appropriate solution orientation. This proves that the research model is appropriate and reflects reality. This is an important basis for proposing appropriate solutions for implementing SCF, helping to create opportunities for SMEs to easily access capital flows and expand cooperative relationships, enhancing competitiveness.

6 Some policy implications

From the above research, survey and analysis results, to support SMEs to decide to apply digital SCF to their supply chain operations and receive funding packages from financial/credit/banking institutions, the article proposes several policy-implied solutions for the following stakeholders:

❖ For State management agencies:

- It is necessary to complete the legal basis, build a legal framework on digital SCF, such as

issues of electronic contracts, digital signatures, data sharing, etc. and a mechanism to support SMEs to participate healthily, handle digital disputes and create a fair digital financial transaction environment.

- Develop and promulgate mechanisms and policies for SMEs to access capital and participate in SCF activities, such as tax incentives, credit guarantee funds, and encourage financial/credit/banking institutions to promote participation and support in SCF transactions.

- Enhance the promotion of national digital transformation in logistics transactions and connect the interconnected data infrastructure.

- Build a set of green and sustainable criteria for products/goods as a basis for banks to offer green financial packages.

❖ For financial/credit/banking institutions:

- Develop a variety of solutions and funding packages on digital platforms for digital SCF to create opportunities for SMEs to easily access, flexibly, and appropriately scale and cash flow characteristics of SMEs to participate in digital SCF.

- Promote the application of digital technology in SMEs' credit assessment to help authenticate SMEs' profiles when they need to apply for funding in a public and transparent manner.

- Develop green financial packages to implement incentive mechanisms for SMEs that meet sustainability criteria (environment, people and governance).

- Build and perfect the digital SCF platform to ensure safety, convenience and act as a bridge, intermediary to create links and an environment to expand relationships between SMEs' partners in the supply chain.

❖ For SMEs

- Improve the internal management capacity of SMEs.

- + It is necessary to build internal management capacity of SMEs in the digital environment, promote the application of digital SCF to support cash flow management, risk management, and meet the control requirements of financial institutions.

- + SMEs increase the application of digital SCF to publicise and transparently report financial statements to create trust and increase credit with financial institutions/banks.

- + Establishing a digital SCF platform that focuses on connecting parties in the chain, including: Seller/Supplier - Financial institution/Bank - Buyer/Enterprise, contributing to ensuring data connectivity, helping SMEs access SCF conveniently, transparently and at low cost.

Especially helping to improve efficiency, minimise risks and increase liquidity in the supply chain...

- Increase investment in infrastructure and digital technology

Implement investment and application of digital technology in overall corporate governance activities, electronic contracts, electronic finance... build automated monitoring, tracking, verification and reporting capabilities for environmental, people and governance performance by building digitally-enabled green supply chain finance initiatives.

- Promote cooperation in the supply chain.

Promote the implementation of green, digital SCF applications to publicise and transparently disclose information on goods/products with sustainable criteria... of SMEs in transaction activities to create trust and honesty in providing information, contributing to finding and expanding cooperation with partners in the chain, including: Seller/Supplier, Financial/credit/bank institution, Buyer/Enterprise.

- Perfecting institutions and legal framework: Proactively develop and recommend that State management agencies consider developing and promulgating a legal framework on digital SCF to create an incentive mechanism for financial/credit/banking institutions to build and deploy digital SCF applications for SMEs, such as digital signatures, smart contracts, smart transactions, etc.

- Proactively respond to changes in the socio-economic environment.

SMEs need to proactively build and equip themselves with tools for forecasting, early warning, and have flexible financial plans... to be able to respond to rapid fluctuations from the domestic and international macroeconomic environment, such as interest rates, inflation, exchange rates... In the international environment, SMEs also need to know how to grasp and take advantage of trade agreements and international integration to expand opportunities to access capital flows through cross-border digital SCF.

7 Conclusion

Supply Chain Finance (SCF) is a financial tool/solution to support SMEs to easily and conveniently access capital flows, capital sources, and information flows from financial institutions/banks in supply chain transactions. SCF is a bridge, supporting cooperation between partners in the chain, including Seller/Supplier - Financial Institution/Bank, Buyer/Enterprise, to improve

efficiency, minimise risks and increase liquidity in the supply chain.

The research results have shown 5 core factors (internal capacity, infrastructure - digital technology, supply chain relationships, institutions - legal, economic - social environment) and 17 observed variables that influence the decision to use SCF. Thus, the research results not only help identify 5 main influencing factors and point out 17 main observed variables that influence the decision to deploy digital SCF for SMEs, but also propose solutions and multi-level policy implications (State management agencies; Financial/credit/banking institutions; SMEs), creating a foundation for deploying digital SCF in Vietnamese SMEs in the context of digital transformation and international integration. On that basis, the study proposes five groups of solutions: improving corporate governance capacity, investing in digital technology, strengthening supply chain cooperation, perfecting the legal framework, and proactively responding to changes in the socio-economic environment.

The article has pointed out the need and readiness level. The decision to deploy the application of digital SCF solutions for SMEs in supply chain operations by synchronously deploying the recommended solutions given above in section 6 will not only create favourable conditions for SMEs to access capital at low cost, but also promote publicity, transparency, and reduce financial risks throughout the supply chain. Through the above analysis, it can be seen that the implementation of digital SCF will contribute significantly to the process of digitising the logistics industry ecosystem, connecting the stakeholders of Seller/Supplier, Financial Institution/Bank, Buyer/Enterprise participating in the supply chain. The development of digital SCF is not only a need for SMEs, but also an important driving force, contributing to promoting sustainable economic growth in Vietnam in the new situation. Thereby, creating opportunities to open up green supply chain finance initiatives on digital technology platforms.

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Conflict of Interest

The authors have no conflicts of interest to declare that are relevant to the content of this article.

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Appendix A

Table 3. Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.383	31.667	31.667	5.383	31.667	31.667	3.153	18.548	18.548
2	4.002	23.539	55.206	4.002	23.539	55.206	2.969	17.464	36.013
3	2.026	11.915	67.121	2.026	11.915	67.121	2.848	16.752	52.765
4	1.881	11.067	78.188	1.881	11.067	78.188	2.841	16.712	69.476
5	1.159	6.817	85.005	1.159	6.817	85.005	2.640	15.528	85.005
6	.662	3.895	88.900						
7	.452	2.662	91.562						
8	.425	2.502	94.064						
9	.365	2.145	96.209						
10	.215	1.265	97.474						
11	.128	.754	98.228						
12	.105	.617	98.844						
13	.064	.375	99.219						
14	.047	.275	99.494						
15	.042	.248	99.741						
16	.029	.169	99.911						
17	.015	.089	100.000						

(Source: Author analysed SPSS data)

Extraction Method: Principal Component Analysis.

Appendix B:

Table 8: Regression analysis results

Model	Unstandardized regression coefficients		Standardised regression coefficient	t	Sig.	Multicollinearity statistics	
	B	Standard error	Beta			Tolerance	VIF
(Constant)	1,872	,338		4,298	,000		
CAP	,290	,056	,286	4,390	,000	,910	1,098
TECH	,168	,058	,202	3,809	,002	,728	1,226
REL	,116	,051	,110	1,706	,015	,841	1,102
LEG	-,012	,032	-,020	-,419	,046	,920	1,027
ECO	,051	,029	,118	1,810	,049	,901	1,091
a. Dependent variable: SCF							

(Source: Authors' calculations)