

Does supply chain finance improve SMEs performance? The moderating role of trade digitization

Zulqurnain Ali and Bi Gongbing

School of Management, University of Science and Technology of China, Hefei, China, and

Aqsa Mehreen

School of Public Affairs, University of Science and Technology of China, Hefei, China

Abstract

Purpose – A growing need for financing in small and medium enterprises (SMEs) has become a significant obstacle to the development of firms. To remove this barrier, the purpose of this paper is to examine how supply chain finance (SCF) assists the firms to improve their performance by utilizing the resource-based view (RBV). Furthermore, the present study also pursues to test the effect of trade digitization as a moderating variable in the relationship between SC finance and the firm performance.

Design/methodology/approach – Using data from the textile sector, the authors run confirmatory factor analysis in AMOS 24 and hierarchical linear regression model in SPSS 23 to measure the proposed model and hypotheses, respectively.

Findings – The study suggests that SCF significantly improves the SMEs performance. Moreover, trade digitization strengthens the relationship between SCF and SMEs performance. Thus, the current study significantly describes the firm RBV through SCF and trade digitization to predict the SMEs performance.

Practical implications – SMEs entrepreneurs or executives can optimize the working capital through SCF and enhance the visibility of transactions through digitization for improving SMEs performance. Moreover, SCF protects the SMEs due to its nature of risk mitigation strategy.

Originality/value – This study covered the unexplored gap in the previous literature of supply chain management by establishing the relationship between SCF and the firm performance empirically while identifying the role of trade digitization as moderating variable in the context of textile SMEs by employing RBV theory.

Keywords Small- and medium-sized enterprises, Supply chain finance, Trade digitization, Small and medium enterprises performance

Paper type Research paper

1. Introduction

The world has been changed drastically due to globalization. The pressure of globalization is having a significant effect on small and medium enterprises (SMEs). Globally financial crunch, credit shortages and high borrowing cost create obstacles for SMEs to obtain risk-free credit to manage their daily operations (Lekkakos and Serrano, 2016; Matamanda and Chidoko, 2017; Song *et al.*, 2016; Kumar *et al.*, 2015). On the other hand, SME has become a significant growing strength for every country's economic development (Lawal and Akingbade, 2018; Kunday and Şengüler, 2015). SMEs are playing a pivotal role in the development of economic infrastructure with the help of scientific and technological advancement to improve national productivity (Khalique *et al.*, 2015). Extreme market rivalry, capital deficiencies and globalization produce mind-boggling and dynamic supply chains (SCs) (Kumar *et al.*, 2015). To strengthen the SMEs performance and SC cycle, SMEs

Conflict of interest declaration: this research has no any conflict of interest. This research was supported by the Natural Science Foundation of China (Nos. 71731010 and 71571174).



entrepreneurs and executives are searching for new ways of financing to obtain easy credit so that they would compete with their rivals and challenges of globalization. Underpinning the control of informational stream and the material stream does not bring about the increment in the SC management (Caniato *et al.*, 2016). Therefore, in today's world, a SC executive's focus is to design and maximize the cash flow. In SC management, supply chain finance (SCF) has become a hot issue which is growing the product category of financial institutions. SCF is a unique kind of financing product which oversees, plans and controls all money streams across SC members to lift the working capital (More and Basu, 2013).

The importance of SCF cannot be ignored for the development of SMEs in this modern age because SMEs have limited options to obtain loans to overcome their daily financing needs (Lekakos and Serrano, 2016). Therefore, the availability of SCF solutions enables the firms to accomplish their targets in time by obtaining loans from financial institutions. SCF aims to optimize the cash flow at the inter-organizational level while employing the solutions given by service providers or financial institutions (Lamoureux and Evans, 2011; Camerinelli, 2009; Hofmann, 2005). The mechanism of SCF demonstrates the alignment of cash flow with the product and information flow to obtain the vibrant results from the existing SC cycle in the view of SC perspective (Wuttke *et al.*, 2013). Lekakos and Serrano (2016) stated that SCF is an event-driven approach in the physical SC that promptly facilitates the SMEs to settle their operations in this era of globalization. For getting maximum advantages from this approach, SCF relies on cooperation from all concerned members of the SC which results in lower capital cost, low risk of default and new loan opportunities. Moreover, SCF enhances the level of commitment, trust, confidence and profitability at an inter-organizational level among all members of SCs (Randall and Farris, 2009).

In principle, the reason why SCF is getting famous is that of its vibrant nature of fulfilling the funding needs of SMEs by providing SCF solutions according to the requirements of the borrowers. For instance, financial institutions, technology providers or service providers are providing working capital, inventory financing, reverse-factoring and consignment stock as SCF solutions (Lekakos and Serrano, 2016; Hofmann, 2005; Klapper, 2006). Song *et al.* (2018) mentioned that transaction information in SCF reduces the information asymmetry which encourages trade digitization and provides easy credit to SMEs. Despite the significance of the topic (SCF) for SCM research and practice, so far, little contributions have been made demanding more examination to enrich the knowledge about SCF. Although, there is a consensus on the significance of SCF solutions, yet literature and practice present two perspectives of SCF; SC-oriented perspective and financial perspective. SC-oriented perspective deals with the decisions of working capital to optimize the financial flow by employing financial and non-financial solutions (Hofmann, 2005; Pfohl and Gomm, 2009). While SCF financial perspective focuses on purely financial products (reverse-factoring) for the firms in the SC (More and Basu, 2013). Hence, previous studies did not deliver the sufficient empirical-based research that can support the firms in matching up the multiple SCF solutions with their particular needs.

Literature shows that firm performance can be predicted by multiple factors (Johnson and Templar, 2011). To the best of our knowledge, such suggested factors in improving firm performance in relative to SCF have not been yet explained and empirically investigated. Despite its significance, no research is available regarding the influence of SCF on firm performance by employing resource-based view (RBV) theory. Therefore, to fill this void gap, the objective of the present study is to explore the influence of SCF on SMEs performance. Furthermore, the current study also pursues to test the moderating effect of trade digitization on the relationship between SCF and firms performance to predict the specific model for supporting the managerial decisions making at the organizational level.

1.1 Research motive

Financing remains a serious concern for all the time for the SMEs. That is why managing the finance is a tough task for the smooth running of any business along the lines. Traditionally, SMEs took loans from banks and kept assets as collateral which increases the risk and pays the high cost of capital. Currently, financial institutions or service providers have introduced an innovative financing scheme; SCF is another arrow in the quiver-encouraging the SMEs to get loans by their creditworthiness (Pfohl and Gomm, 2009), which reduced the fear of default and capital cost. The firms spend different resources for acquiring the cutting edge techniques to be competitive to manage their operations effectively. Trade digitization is one of the factors which lead the organizations to compete in the market and create a sharp competitive edge to secure more market share. Dealing with suppliers or financial intermediaries, a firm should have a technology-oriented system which provides exact visibility of multiple transactions throughout the SC cycle for achieving the superior firm's performance. To assess the firm (SMEs) performance, the current study formulates the following research questions:

RQ1. Whether SCF enhances the firm performance or not?

RQ2. How trade digitization leads to SCF and firm performance?

The present study significantly contributes to empirically establish the relationship between SCF and firm performance. Another contribution of this study in the literature of SC management is to identify the trade digitization as a moderating tool that significantly strengthens the relationship between SC finance and the firm performance. The current study also expands the perspective of resource-based theory by establishing that SCF is a valuable financial resource available to the firm for fulfilling their financing needs, and performing daily business operations smoothly to obtain best firm performance. Our study contributes that SCF is a double-edged sword. On the one hand, SCF optimizes the firm's working capital and enhances the firm performance. On the other hand, SCF offers low-cost capital and mitigates the risk of default. Moreover, our study complements and extends the research work of Caniato *et al.* (2016). They performed case studies and theoretically concluded that trade digitization plays a vital role in the adoption and implementation of SCF. Finally, the present research successfully responds to the future call for research, made by Gelsomino *et al.* (2016). They did a systematic review of the literature on SC finance and presented the SC finance challenges, potentials and described the pattern of relationship among SC allies.

The current study is summarized as follows: after the introduction, a literature review is conducted to explore the previous relevant studies and the models or theories related to explaining the relatively new concept of SCF. The methodology was presented to elaborate on the nature of population, sampling, reliability, measures and data analysis. After that, the results and discussions of the study were discussed. In the end, theoretical and practical implications were presented followed by limitations and future research directions.

2. Literature review

2.1 SCF and firm performance context

In this age of globalization, organizations seem to be under pressure in running their operations without any disruption to provide better services to their customers (Kunday and Sengüler, 2015). Due to the emergence of a new paradigm of information technology, the disappearance of boundaries between nations, and recent financial crisis create many challenges for SMEs to contribute to the development of a country. One of the core reason for this is the non-availability of easy and risk-free credit (Matamanda and Chidoko, 2017; Song *et al.*, 2016; Kumar *et al.*, 2015). To enhance the level of satisfaction, organizations

require efficient cash flow for performing their daily operations effectively. Firms do not exist in isolation but are inter-linked with each other through SC networks. SCF is an innovative solution which helps the firms to meet their financing needs effectively. The concept of SCF first originated by Stemmler (2002), he explained that the principle of SCF is to integrate the finance with the SC process. SMEs in the SCs are facilitated with innovative credit and trade finance services by service providers or financial institutions. Johnson and Templar (2011) defined SCF as a promising solution for settling current credit issues by enhancing the overall financial performance of the partnered firms and minimizing the financial and operational risk of interruption in the SC. Gupta and Wang (2009) highlighted in their research that commercial settings emphasize trade finance in the SCs. While in his study of Chen (2016) explained that SCF integrates the inventory system with the financial system. He divided the SCF into two categories: trade credit (B2B) and crowdfunding. In practice, working capital scarcity is a common-occurring constraint in the firm's operational decisions to enhance the firm performance. Therefore, exploring the apparatus of SC financing is not just essential, but adequate sources of capital are required for improving the SC efficiency and enhancing the SC partners' profitability (Chen, 2016). Zhao and Huchzermeier (2018) said that SCF is an event trigger financing solution to fulfill the firm's operations. They classified the SCF into three categories; time-based SCF, focal point of credit risk and SCF availability of collateral. Evolutionary economics theory suggests the enhancing ability of SMEs to acquire specific firm's capabilities-composed of essential competencies that are important for achieving the organizational goals (D'Avanzo *et al.*, 2003). D'Avanzo *et al.* (2003) stated that SC excellence could be derived through erudite SC plans. Chen (2016) stated that SCF is a profit-shifting and risk-shifting mechanism in different market environments to improve business performance in the presence of banks. Mason (2012) explained that some firms use reverse factoring to relax their working capital stream which hurts the operational performance of suppliers. Zhao and Huchzermeier (2015) studied the risk management for improving the firm performance by jointly considering the operational and financial management of firm resources. While Gupta and Wang (2009) argued that some studies reveal the dynamics between financial and physical flow on a firm level, indicating toward the measures of enhancing financial and operational performance (Protopappa-Sieke and Seifert, 2010). Gronum *et al.* (2012) examined the SMEs performance concerning SC network, and they found that strong-ties improve the firm performance. Song *et al.* (2016) studied the SMEs SC network influence on information sharing and credit quality (SCF) and found that bridge ties have a significant direct effect on the credit quality of SMEs. Zhu *et al.* (2017) designed an SMEs credit risk prediction model in the context of SCF and found that this model is important for financiers to access the SMEs creditability, enhance the cash flow, minimize the risk of whole SC default and make correct credits decisions. Recently, Song *et al.* (2018) studied the role of banks and financial service providers in granting the loans to SMEs in an easy way and found that transaction information and history of business loans in SCF can reduce the information asymmetry of borrowers in sectioning the loans. Moreover, as compared to banks, financial service providers in the SC have the most relevant information of borrowers than banks. Relationship continuity, therefore, can improve the performance of buyers and suppliers and their dependency. Thus, this research is conducted to identify the SCF arrangements to fulfill the multi-purpose criteria of SMEs operational and financial performance.

2.2 Digital trade process

Information technology has drastically changed the ways of running businesses in the world. IT-enabled services have an enormous impact on services, manufacturing and trading sector for both developed and developing countries (Maiti and Kayal, 2017). Stemmler (2018) mentioned that digitization is the third wave, after transportation and

information sharing cost, which has a significant impact on the business model sustainability of logistics industry, manufacturing, trading and their SCs. SCF is an innovative financial solution; supporting the SMEs to fulfill their operational and financial needs in a digitized way for improving the visibility and flexibility of transactions throughout the SC cycles. Brynjolfsson and McAfee (2011) stated that digitalization is changing work relations and enhancing the firm performance. Digitization is re-shaping the business preferences to create competitiveness and firm's value (Lusch *et al.*, 2010). Gautam *et al.* (2017) stated that ongoing digitization of operations in warehousing, logistics and manufacturing strengthens digital transformation of the SC management. Thus, digitalizing SC networks through trade digitization enable the SMEs to reduce uncertainty and enhance entrepreneur decision making. Kindstrom and Kowalkowski (2014) highlighted that the digitization of business operations supports the development of cost-efficient operations and provides the right information inside and outside the firm's boundaries. Such information helps the financial institutions to assess the SMEs creditworthiness to grant them loans (SCF). Greenstein (2010) highlighted that digital services are a substitute for traditional products and increase the efficiency of business transactions which, in turn, improve the SMEs performance. Therefore, in this study, we use trade digitization as a moderating variable to explore the relationship between SCF and firm performance.

2.3 Theoretical background and hypotheses

The resource view of the firm originates from the research work of Penrose (1959), he described that firms have a bundle of resources and firm's growth is both supported and limited by management research for the best use of existing resources. Barney (1991) offered an accurate and formalized detail about resource view perspective by identifying its two central roles; heterogeneity (multiple resources and capabilities possessed by the firm) and immobility (these difference may be long-lasting) (Mata *et al.*, 1995). In this paper, we adopted Barney's (1991) theory of RBV to create a competitive edge for measuring the SMEs performance. He proposed that the firms have different types of resources including SCF and system of digital trading, and firm uses such resources to obtain possible superior performance. In this way, SCF and trade digitization are considered valuable resources that can increase the firm's capabilities and eventually lead toward higher firms performance. Crook *et al.* (2008) stated that RBV is a crucial perspective which provides a guided inquiry into the determinants of a firm's performance. Many researchers have adopted the RBV to addressing the utilization of the firm's resources for the achievement of higher firm's performance (Melville *et al.*, 2004). In their studies, the firm's resources are conceptualized in a variety of fashion. Rivard *et al.* (2006) studied the relationship of IT resources and performance by employing RBV in SMEs. They found that IT resources significantly enhance the SMEs performance. Bakar and Ahmad (2010) studied the relationship between firms' resources and product innovation performance by integrating the resource-based perspective in the Malaysian context. They found that intangible resources are the main predictors of product innovation performance. In a recent study of Yang and Lirn (2017), they applied the RBV to examine the relationship of logistics service, firm resources and logistics performance. They indicated that inter-firm relationships and logistics service capabilities act as the mediator between intra-firm relationship and logistics performance.

SC executives take decisions while using the firm's resources that ultimately have an impact on the financial outcome of the firm. To obtain the best results from the firm's resources, SC executive or entrepreneurs align firms SC decisions with the financial goals (Wisner, 2011). Due to limited operating history, non-availability of financial statements and high default risks, SMEs always face a shortage of funds to meet their daily operational requirements which directly or indirectly influence on the firm performance (Song *et al.*, 2016; Lekkakos and Serrano, 2016). To cope with such issues, SCF is a vibrant and

innovative financial solution offered by financial institutions or financial service providers to SMEs which helps them to optimize their working capital with lower capital cost and lower risk level (Lamoureaux and Evans, 2011; Pfohl and Gomm, 2009). Financial indicators are vital for evaluating the business operational success. SC performance represents the direct or indirect effects of different financial and non-financial metrics. Gunasekaran *et al.* (2004) suggested that the performance of a firm depicts how the firms are patching up the ways for achieving their operational and financial goals. Therefore, the present study predicts that SCF, a risk-free financial solution, may optimize the firm liquidity position which, in turn, helps to manage the firm's operations smoothly and improve the SMEs performance. For entrepreneurs, it is essential to understand and optimize the firm's working capital in order to run the daily firms operations for achieving the firm's goals. Thus, SCF helps the SMEs to meet their financial needs for achieving desired performance. Therefore, we predict that:

H1. SCF is positively related to firm performance.

Currently, firms are adopting multiple automation systems to obtain significant economic benefits (Al-Mashari, 2001). SC professionals are interested in adopting digitization supply chain (DSC) to improve the SC performance (Caniato *et al.*, 2016). Therefore, firms are investing heavily in developing their version of DSC to digitize their SCs processes. Johnson and Bharadwaj (2005) defined that digitization is a process of making all or few information processes, business activities, offering and actors digital with the help of information technology. With the rapid development of technology, currently SMEs are adopting well-managed and transparent online digital systems which facilitate all SC partners to ensure visibility of business orders (Fairchild, 2005). Trade digitization process provides a remarkable decline in cost as compared to paper-based trading (Perego and Salgaro, 2010). Therefore, Caniato *et al.* (2016) highlighted that firms which adopt a higher degree of trade digitization tend to adopt more innovative finance solution (SCF) to enhance the organizational performance. Digitization makes the SCF more efficient and agile than traditional ways of financings to improve the firm performance. Thus, we predict the following hypotheses:

H2. Trade digitization is positively and significantly related to the firm performance.

H3. Trade digitization moderates the relationship between SCF and firm performance.

Figure 1 presents the proposed research model which indicates the proposed relationship between predictors and criterion variable. Firm performance is predicted by SCF whereas trade digitization is moderating the relationship between SCF and firm performance. This model is extending the theory of Barney (1991); RBV by employing SCF as an innovative financing resource for enhancing the firm performance in the context of textile SMEs.

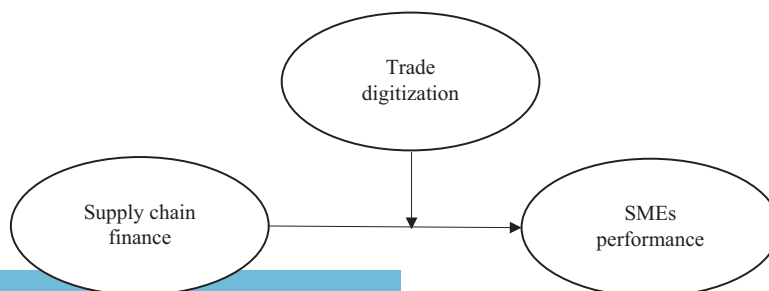


Figure 1.
Proposed empirical
model

3. Research methodology

Nature of the present study is explanatory which comprises of the respondents belonging to SMEs of textile sector, located in a big city Faisalabad, Pakistan. The reason to conduct this research in textile sector is that this sector is contributing more than 40 percent in the GDP of the country (Wadho and Chaudhry, 2018). According to the State Bank of Pakistan (2011), 1,900 SMEs are operating under the umbrella of the textile industry. Respondents of the study were SMEs entrepreneurs, SC executives and SC managers. A structured questionnaire was used to collect responses from the respondents. One thousand questionnaires distributed to the respondents by employing a convenience sampling technique in June and July 2017. A pilot study consisted of 25 participants was undertaken to check the questions understanding by the respondents. Furthermore, the questionnaire items were examined by two textile industry experts, a university teacher, and a fellow researcher. We incorporated their suggestions and comments to enhance the readability and understanding of questionnaire items by the participants. The result of the pilot study indicated that nobody reported any confusion toward responding to the questionnaire items. After two months, 380 questionnaires received back, and after deleting the unfilled and unusable questionnaires, we found 330 usable questionnaires with a response rate of 33 percent. SBP refers to SMEs that any firm which has following characteristics will be considered as an SME. A firm has employees less than 250, earned Rs800m as annual sales and has up to Rs200m as total assets.

3.1 Measures

An extensive review of the literature was done to explore the relevant constructs for ensuring the correctness, consistency and worthiness of the research instrument, and we adopted the study measures from the previous splendid works (see Appendix). Trade digitization scale was adapted from the study of Choi (2013). He measured trade digitization with four items. The α value of this scale was 0.768. SCF scale was adapted from the study of Zhang (2015). He measured the SCF with five items. The α value of this scale was 0.862. The scale of the firm's performance was adopted from the study of Kotabe (1990) and Matsuno *et al.* (2000). They measured the firm performance with four items. The α value of this scale was 0.912. In line with the previous studies concerning firm performance (Song *et al.*, 2018), the current study included the stay in business, annual sales, number of employees and total assets the as the control variables and measured through a self-reported questionnaire (see Table I).

4. Results

Table I represents the overall demographic statistics of the sample. The present study indicates that 45 percent of SMEs have annual sales up to Rs400m and 49 percent of SMEs

	%	Cum. %		%	Com. %
<i>Annual sales^a</i>			<i>Stay in business</i>		
0–200	10	10	0–2	05	05
201–400	45	55	3–5	16	21
401–600	34	89	6–10	45	66
600 above	11	100	10 above	34	<u>100</u>
<i>Total assets^a</i>			<i>Number of employees</i>		
1–75	23	23	0–100	23	23
76–150	49	72	101–200	47	70
151–200	28	100	200 above	30	100

Table I. Demographic statistics **Note:** ^aMillion rupees

own assets up to Rs150m. Moreover, most of the SMEs are involved in the textile business for about ten years, and about 47 percent of the SMEs have 200 employees. Table II indicates the mean, standard deviation and inter-correlations among all study constructs. The outcomes reported in Table II state that SCF and firm performance are positively and significantly correlated ($r = 0.353$, $p < 0.001$). Trade digitization is significantly associated with firm performance ($r = 0.445$, $p < 0.001$). Thus, all these findings are presenting the preliminary support for the three proposed hypotheses.

The current study employed *t*-test to check the difference of responding individuals by comparing the response of late ($n = 25$) and early ($n = 25$) respondents to measure the non-response bias and ensure that sample of the firm was representative toward the population of study (Rogelberg and Stanton, 2007). The *t*-test indicates that there is no significant difference between early ($p = 0.71$) and late respondents ($n = 0.91$). In addition to non-response bias, common method bias (CBM) also checked through the suggested method of Harman single method test (Podsakoff *et al.*, 2003). This method states that all factors should be extracted into one factor and one factor should not explain more than 50 percent of the variance. In the current study, we run factor analysis as per Harman single-factor test, and factor analysis resulted in 24 percent variance accounted by one factor which is less than 50 percent. Hence, our study did not indicate any issue of CBM. Another proof of common method variance is non-availability of high correlations ($r > 0.9$) among all inter-correlation constructs (see Table II) (Pavlou and El Sawy, 2006).

4.1 Reliability and validity analysis

Reliability and validity of the measures were extracted through the values of α , composite reliability (CR), and average variance extracted (AVE) (Fornell and Larcker, 1981). As per Bagozzi and Yi (1988), convergent validity is established if the value of CR is larger than 0.60 and the value of AVE is larger than 0.50. Findings of Table II indicate that CR of all constructs: SCF, trade digitization, and firm's performance ranged from 0.83 to 0.91 and the values of AVE ranged from 0.56 to 0.73. Thus, these findings reflected that convergent validity for this study established. Furthermore, discriminant validity was assessed. As per Fornell and Larcker (1981), the value of the square root of AVE for each construct should be larger than the value of inter-correlation of each construct. Thus, results of the study show in Table II that all values of the square root of AVE for each construct were larger than the values of inter-correlation of each construct thereby confirming the discriminant validity.

4.2 Measurement model

Before proceeding toward analysis, we checked data for any issue of multicollinearity, missing values and outliers. Our sample did not indicate any such issue. CFA was run by employing AMOS 24 version to validate the proposed model (see Figure 2). Table III indicates the results of CFA; all factors loadings are higher than the threshold criteria of

Constructs	Mean	SD	1	2	3
1. Supply chain finance (SCF)	4.12	0.541	<i>0.75</i>		
2. Trade digitization (TD)	3.69	0.622	0.519***	<i>0.72</i>	
3. Firm performance (FP)	3.41	0.738	0.353***	0.445***	<i>0.86</i>
Cronbach's alpha (α)			0.862	0.768	0.912
Composite reliability (CR)			0.865	0.809	0.917
Average variance extracted (AVE)			0.568	0.522	0.738

Notes: ***Correlation is significant at the 0.001 level (two-tailed). Diagonal line placed in the italic show the square root of the AVE of each construct

Table II.
Descriptive statistics
and inter-correlation
matrix

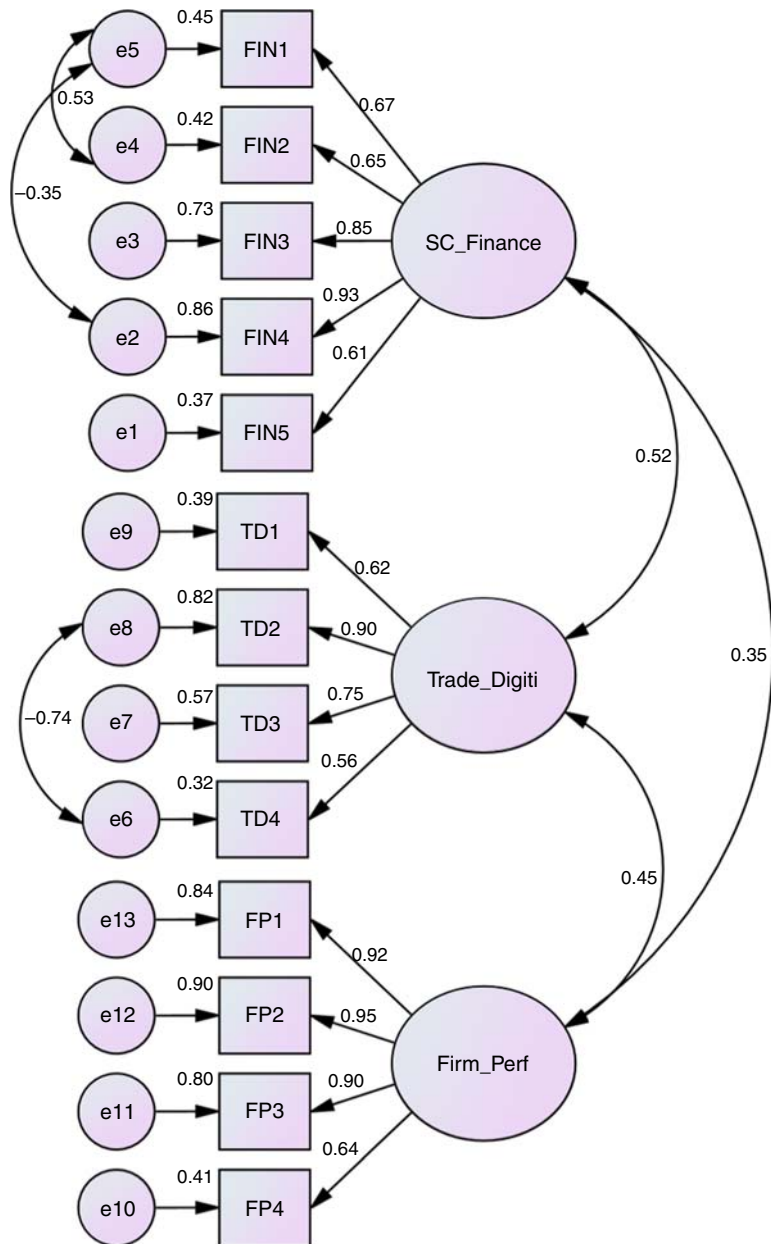


Figure 2.
Confirmatory factor
analysis

0.50 (Hair *et al.*, 2007; Hu and Bentler, 1999). Furthermore, the proposed model is acceptable and achieved the minimum criteria of model fitness suggested by Hair *et al.* (2007) and Hu and Bentler (1999). The model indices indicate excellent fit to the data: χ^2 (CMIN/df) (162.661/55) = 2.957, $p = 0.001$, GFI = 0.934, AGFI = 0.891, SRMR = 0.064, CFI = 0.961, NFI = 0.942, NNFI = 0.918, IFI = 0.961, TLI = 0.944 and RMSEA = 0.077.

Table III.
The outcome of confirmatory factor analysis

Constructs	Relationship	Factor Loadings	Estimates	SE	CR	p-value
SC finance	FIN5←SC_Finance	0.609	1.000			
	FIN4←SC_Finance	0.928	1.340	0.109	12.317	***
	FIN3←SC_Finance	0.855	1.216	0.101	12.096	***
	FIN2←SC_Finance	0.649	1.007	0.102	9.899	***
	FIN1←SC_Finance	0.673	1.048	0.107	9.817	***
Trade digitization	TD4←Trade_Digit	0.565	1.000			
	TD3←Trade_Digit	0.753	1.362	0.157	8.657	***
	TD2←Trade_Digit	0.903	1.633	0.197	8.287	***
	TD1←Trade_Digit	0.623	1.111	0.140	7.949	***
Firm performance	FP4←Firm_Perf	0.640	1.000			
	FP3←Firm_Perf	0.895	1.655	0.122	13.548	***
	FP2←Firm_Perf	0.950	1.691	0.120	14.079	***
	FP1←Firm_Perf	0.916	1.646	0.120	13.762	***

Note: ***All estimates are significant at $p = 0.000$ level

Thus, our measurement model is acceptable. Now, we move toward the verification of the proposed structural relationship through hierarchical linear regression model due to the moderation nature of the model.

4.3 Hierarchical regression analysis

To confirm the proposed relationships, we run hierarchical regression analysis by using SPSS 23 version. Currently, many organizations follow a systematic and hierarchical order system for making decisions. Therefore, it is essential for the organizations to include multilevel theoretical and analytical model in their general approach. Hierarchical regression model offers a statistical and conceptual mechanism for examining associations of cross-level analysis (Hair *et al.*, 2007). On the recommendation of Aiken and West (1991) all metric measures were mean centered ($\pm 1SD$). Control constructs are inserted in Model 1. Independent construct and moderator are entered in Model 2 and Model 3, respectively. Finally, the product term is inserted in Model 4. Table IV shows the path coefficients of the proposed relationships of the regressed models. In line with our hypotheses, SCF ($\beta = 0.206$, $t = 3.813$, $p = 0.000$: Model 4) has a significant direct effect on firm performance ($H1$ accepted). This result depicts that if SMEs owners or executives adopt one time SCF as lifting working capital to perform their business operations effectively then it is expected to bring an increase of SMEs performance by 21 times. Similarly, trade digitization ($\beta = 0.319$, $t = 5.892$, $p = 0.000$: Model 4) has a positive and significant influence on firms performance ($H2$ accepted). This finding demonstrates that if SMEs executives adopt digitization or in other words if they align their transactions with a digital system to improve the visibility and flexibility of business cycle by one time, then it is expected to bring an increase of SMEs performance by 32 times. As expected, the findings are also evident that trade digitization positively and significantly moderates the relationship between SCF and firm performance ($\beta = 0.189$, $t = 4.496$, $p = 0.000$: Model 4) ($H3$ accepted). This outcome means that being SMEs digitized regarding business transactions; SCF is expected to enhance the SMEs performance by 19 times.

Figure 3 shows the interaction effect of trade digitization in the relationship between SCF and firm performance (Dawson, 2014). In Model 4 of Table IV, we found that the interaction effect of SCF and trade digitization was significant ($\beta = 0.189$, $p < 0.05$). Interaction graph states that as the level of SCF (adoption) increases the firm performance also increases positively. The outcome of simple slope analysis (Aiken and West, 1991) presented that the association between SCF and firm performance was significant at high

Constructs	Dependent variable: firm performance			
	Model 1	Model 2	Model 3	Model 4
<i>Control variables</i>				
Annual sales	0.184*	0.183*	0.164*	0.162*
Stay in business	0.025	0.059	0.075	0.042
No. of employees	-0.101	-0.099	-0.090	-0.099
Total assets	0.074	0.093	0.107	0.119
<i>Predictor</i>				
Supply chain finance		0.362***	0.204***	0.206***
<i>Moderator</i>				
Trade digitization			0.334***	0.319***
<i>Product</i>				
SC finance × Trade digitization				0.189***
<i>N</i>	330	330	330	330
<i>R</i> ²	0.018	0.148	0.233	0.279
Change in <i>R</i> ²	0.018	0.130	0.086	0.045
<i>F</i> -statistics	1.448	11.227***	16.394***	17.775***
Change in <i>F</i> -statistics	1.448	49.482***	36.139***	20.213***

Table IV.
Hierarchical linear
model results

Notes: * $p < 0.05$; *** $p < 0.001$

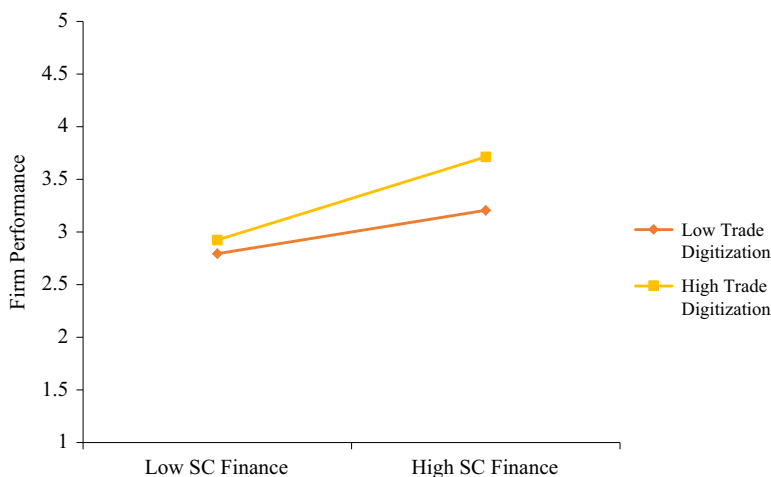


Figure 3.
Interaction effect of
trade digitization

trade digitization (simple slope = 0.395, $t = 2.866$, $p = 0.004$) and was positively significant at low trade digitization (simple slope = 0.206, $t = 3.761$, $p = 0.000$). Therefore, high level of trade digitization is desirable for improving the SMEs performance in the current modernized business world. Thus, the findings state that trade digitization helps the SMEs to boost up their operations to enhance business efficiency which creates SC visibility and easy access to SC orders. None of the control variables has a significant effect on firm performance except annual sales ($\beta = 0.162$, $t = 2.233$, $p = 0.026$). Furthermore, the value of R^2 represents that our model significantly explained the 26 percent variance by predictors in criterion variable (i.e. firms performance). Thus, we conclude that our hypothesized model is acceptable.

5. Discussion and conclusion

The purpose of this paper was to examine the influence of SCF on the firm performance in the context of SMEs textile sector and to test the moderation effect of trade digitization in the relationship between SCF adoption and firm performance. As expected, SCF has a significant effect on firm performance. This finding is consistent with the study of Terziovski (2010), Ansong (2017), Song *et al.* (2016) and Lekakos and Serrano (2016). Terziovski (2010) studied the innovative practices by employing an RBV to predicting the SMEs performance. He stated that innovative practices enhance the firm performance of the manufacturing sector. Similarly, Ansong (2017) obtained SMEs performance through external factors, such as corporate social responsibility and engaging the stakeholders toward maximizing the firm's value. Trade digitization also has a significant effect on firm performance. Trade digitization has successfully moderated the relationship between SCF and firm performance. These findings also complement the research work of Maiti and Kayal (2017), Stemmler (2018) and Gautam *et al.* (2017). Maiti and Kayal (2017) studied the SMEs performance in relation to digitization and found that digitization improves the SMEs performance and facilitates in reducing the financial challenges. Similarly, Stemmler (2018) highlighted that digitization reduces the substantial cost of the firms just like a reduction in transportation and information sharing cost and has a significant effect on the whole SC. While Gautam *et al.* (2017) highlighted that digitization of firms operations transformed whole SC management and enabled the firms to view their business transactions over digital devices for better forecasting and sustainability of the current business model to improve the firm performance. The current study examines the three hypotheses, and the findings showed that the relationships are significant. The results also show that SMEs with a high level of trade digitization are likely to continue or improve their performance in future. It is evident from the results that SCF can improve the firm performance because of its innovative nature of financing solution to optimize the firm's working capital for successfully performing their routine business operations. Trade digitization is a key process which significantly contributes to the relationship between SCF adoption and firm performance.

5.1 Theoretical implications

First, the primary contribution of the present study is to empirically develop the association between SCF and firm performance which was previously ignored in the literature of SC management. Furthermore, this is the first study which significantly assessed the influence of SCF on firm performance in the view of resource-based theory. The current study expands our insights about how SC finance and trade digitization enhance working capital of firm which, in turn, improve the SMEs performance.

Second, the current study expands the perspective of resource-based theory by establishing that SCF is a valuable financial resource available to the firm for fulfilling their financing needs, and performing daily business operations smoothly to obtain best firm performance. The current study represents how insights from the SC management literature can enrich our understanding of SCF and firm performance. The accepted model also advances our understanding of how proper and well-managed usage of SCF and trade digitization can improve the SMEs performance.

Third, we also contribute to the understanding of firm performance and SCF by incorporating a moderation mechanism of trade digitization. The findings indicate that trade digitization significantly improves firm performance and strengthens the association between SC finance and firm performance at both levels (low and high).

Fourth, the present study complements the study of Caniato *et al.* (2016), they worked on the factors by employing a case study method which leads SCF adoption in Italian firms. Furthermore, the current study extends the research work of Caniato *et al.* (2016) by utilizing survey approach and establishes the effect of trade digitization (as moderator) in the relationship between SCF and firm performance. Moreover, the current study considers

digitization as an adoption factor of SCF. We also find that in the context of SMEs, SCF is an adaptation response strategy used by the firms to meet their financial requirements (optimize their working capital) for achieving their goals. Finally, our research successfully responds to the future call for research made by Gelsomino *et al.* (2016). They did a systematic review of the literature on SC finance and presented the SC finance challenges, potentials and describe the pattern of relationship among SC allies.

5.2 Practical implications

First, this study will help the SMEs entrepreneurs and SC officials to obtain secure financing without any collateral for fulfilling their working capital needs and increase visibility over SC orders through digitization in a cost-effective way. Our study contributes that SCF is a double-edged sword, being optimized for the firm's working capital, enhancing the firm performance, reducing the cost of capital and mitigating the risk of default. Such functions of SCF enhance the SMEs operations effectively.

Second, it will enrich our knowledge and provide a supportive decision making to SC executives while gaining a better understanding of the SCF, trade digitization and firm performance, their potentials, requirements and challenges.

Third, adoption of SCF enables the SMEs entrepreneurs and officials to take a loan for optimizing the working capital with low cost and low risk. Such type of financing encourages the firms to produce more innovative products for achieving their goals and enhance their performance.

Fourth, this study provides an opportunity for the buyers and the suppliers for working together and building strong relationships while interacting with each other. SCF creates a win-win situation for both parties which caters the problems of credit shortage in a cost-effective manner. Buyers can get secure financing at low cost and risk, and suppliers can get their payments back before a fixed time through reverse factoring option from mutually agreed financial institutions.

5.3 Limitations and future research

The current study has certain limitations. First, this study was conducted in SMEs textile sector of a big city Faisalabad, Pakistan which may result in low generalizability in other settings. Second, we used survey method and cross-sectional data design in this study which may introduce CMB, but in our study, CMB is not an issue; however, future research can be done with longitudinal data collection. This study was performed on SMEs, and future research can be done on large scale organizations. A comparative study can be done on SMEs and large organizations to check the efficiency and effectiveness of the current model.

In addition to this, future studies can be done to enhance the firm performance by employing other internal and external factors, for example, SC collaboration and SC negotiation. Future studies can incorporate the mediating factors which strengthen the relationship between SCF and firm performance.

References

- Aiken, L.S. and West, S.G. (1991), *Multiple Regression: Testing and Interpreting Interactions*, Sage, Newbury Park, CA.
- Al-Mashari, M. (2001), "Process orientation through enterprise resource planning (ERP): a review of critical issues", *Knowledge and Process Management*, Vol. 8 No. 3, pp. 175-185.
- Ansong, A. (2017), "Corporate social responsibility and firm performance of Ghanaian SMEs: the role of stakeholder engagement", *Cogent Business & Management*, Vol. 4 No. 1, pp. 1-17.
- Bagozzi, R.P. and Yi, Y. (1988), "On the evaluation of structural equation models", *Journal of the Academy of Marketing Science*, Vol. 16 No. 1, pp. 74-94.

- Bakar, L.J.A. and Ahmad, H. (2010), "Assessing the relationship between firm resources and product innovation performance: a resource-based view", *Business Process Management Journal*, Vol. 16 No. 3, pp. 420-435.
- Barney, J.B. (1991), "Firm resources and sustained competitive advantage", *Journal of Management*, Vol. 17 No. 1, pp. 99-120.
- Brynjolfsson, E. and McAfee, A. (2011), *Race Against the Machine: How the Digital Revolution is Accelerating Innovation, Driving Productivity, and Irreversibly Transforming Employment and The Economy*, Digital Frontier Press, Lexington, MA.
- Camerinelli, E. (2009), "Supply chain finance", *Journal of Payments Strategy & Systems*, Vol. 3 No. 2, pp. 114-128.
- Caniato, F., Gelsomino, L.M., Perego, A. and Ronchi, S. (2016), "Does finance solve the supply chain financing problem?", *Supply Chain Management: An International Journal*, Vol. 21 No. 5, pp. 534-549.
- Chen, Y. (2016), "Essays on supply chain finance", unpublished PhD dissertation, The Graduate School of The University of Minnesota.
- Choi, E. (2013), "Digitalising Korea-transformations and tensions: the case of audiovisual service trade and intellectual property rights", unpublished doctoral dissertation, Loughborough University, Loughborough.
- Crook, T.R., Ketchen, D.J., David, J., Combs, J.G. and Todd, S.Y. (2008), "Strategic resources and performance: a meta-analysis", *Strategic Management Journal*, Vol. 29 No. 11, pp. 114-154.
- D'Avanzo, R., Lewinski, H.V. and Wassenhove, L.N.V. (2003), "The link between supply chain and financial performance", *Supply Chain Management Review*, Vol. 7 No. 6, pp. 40-47.
- Dawson, J.F. (2014), "Moderation in management research: what, why, when and how", *Journal of Business and Psychology*, Vol. 29 No. 1, pp. 1-19.
- Fairchild, A. (2005), "Intelligent matching: integrating efficiencies in the financial supply chain", *Supply Chain Management: An International Journal*, Vol. 10 Nos 3/4, pp. 244-248.
- Fornell, C. and Larcker, D.F. (1981), "Structural equation models with unobservable variables and measurement error: algebra and statistics", *Journal of Marketing Research*, Vol. 18 No. 3, pp. 382-388.
- Gautam, R., Singh, A., Karthik, K., Pandey, S., Scrimgeour, F. and Tiwari, M.K. (2017), "Traceability using RFID and its formulation for a kiwifruit supply chain", *Computers & Industrial Engineering*, Vol. 103 No. 1, pp. 46-58.
- Gelsomino, L.M., Mangiaracina, R., Perego, A. and Tumino, A. (2016), "Supply chain finance: a literature review", *International Journal of Physical Distribution & Logistics Management*, Vol. 46 No. 4, pp. 1-19.
- Greenstein, S. (2010), "Digitalization and value creation", *IEEE Micro*, Vol. 30 No. 4, pp. 4-5.
- Gronum, S., Verreynne, M.L. and Kstelle, T. (2012), "The role of networks in small and medium-sized enterprise innovation and firm performance", *Journal of Small Business Management*, Vol. 50 No. 2, pp. 257-282.
- Gunasekaran, A., Patel, C. and McGaughey, R.E. (2004), "A framework for supply chain performance measurement", *International Journal of Production Economics*, Vol. 87 No. 3, pp. 333-347.
- Gupta, D. and Wang, L. (2009), "A stochastic inventory model with trade credit", *Manufacturing & Service Operations Management*, Vol. 11 No. 1, pp. 4-18.
- Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E. and Tatham, R.L. (2007), *Multivariate Data Analysis*, 6th ed., Pearson Education, New Delhi.
- Hofmann, E. (2005), "Supply chain finance: some conceptual insights", in Lasch, R. and Janker, C.G. (Ed.), *Logistik Management Innovative Logistikkonzepte*, German Universitätsverlag, Wiesbaden, pp. 203-214.
- Hu, L. and Bentler, P.M. (1999), "Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives", *Structural Equation Modeling: A Multidisciplinary Journal*, Vol. 7 No. 1, pp. 1-55.

- Johnson, D.S. and Bharadwaj, S. (2005), "Digitization of selling activity and sales force performance: an empirical investigation", *Journal of the Academy of Marketing Science*, Vol. 33 No. 1, pp. 3-18.
- Johnson, M. and Templar, S. (2011), "The relationships between supply chain and firm performance-the development and testing of a unified proxy", *International Journal of Physical Distribution & Logistics Management*, Vol. 41 No. 2, pp. 88-103.
- Khalique, M., Bontis, N., Abdul Nassir bin Shaari, J. and Hassan Md. Isa, A. (2015), "Intellectual capital in small and medium enterprises in Pakistan", *Journal of Intellectual Capital*, Vol. 16 No. 1, pp. 224-238.
- Kindstrom, D. and Kowalkowski, C. (2014), "Service innovation in product-centric firms: a multidimensional business model perspective", *Journal of Business & Industrial Marketing*, Vol. 29 No. 2, pp. 96-111.
- Klapper, L.F. (2006), "The role of factoring for financing small and medium enterprises", *Journal of Banking & Finance*, Vol. 30 No. 11, pp. 3111-3130.
- Kotabe, M. (1990), "Corporate product policy and innovative behavior of European and Japanese multinationals: an empirical investigation", *Journal of Marketing*, Vol. 54 No. 2, pp. 19-33.
- Kumar, R., Singh, R.K. and Shankar, R. (2015), "Critical success factors for implementation of supply chain management in Indian small and medium enterprises and their impact on performance", *IIMB Management Review*, Vol. 27 No. 2, pp. 92-104.
- Kunday, Ö. and Şengül, E.P. (2015), "A study on factors affecting the internationalization process of small and medium enterprises (SMEs)", *Procedia-Social and Behavioral Sciences*, Vol. 195 No. 2015, pp. 972-981.
- Lamoureux, J.F. and Evans, T.A. (2011), "Supply chain finance: a new means to support the competitiveness and resilience of global value chains", Working Paper No. 2179944, Social Science Research Network, Rochester, NY.
- Lawal, A.A. and Akingbade, W.A. (2018), "Diversity Management and Organizational Performance: Evidence from Nigerian Small and Medium Enterprises", *Journal of Knowledge Globalization*, Vol. 10 No. 1, pp. 1-25.
- Lekkakos, S.D. and Serrano, A. (2016), "Supply chain finance for small and medium sized enterprises: the case of reverse factoring", *International Journal of Physical Distribution & Logistics Management*, Vol. 46 No. 4, pp. 367-392.
- Lusch, R.F., Vargo, S.L. and Tanniru, M. (2010), "Service, value networks, and learning", *Journal of the Academy of Marketing Science*, Vol. 38 No. 1, pp. 19-31.
- Maiti, M. and Kayal, P. (2017), "Digitization: it's impact on economic development & trade with special reference to services and MSME sector of India", *Asian Economic and Financial Review*, Vol. 7 No. 6, pp. 541-549.
- Mason, R. (2012), "David Cameron heralds 'win-win' finance scheme for business", *The UK Telegraph*, October 23, p. 1, available at www.telegraph.co.uk/finance/newsbysector/industry/9626578/David-Cameron-heralds-win-win-finance-scheme-for-business.html (accessed October 10, 2017).
- Mata, F.J., Fuerst, W.L. and Barney, J.B. (1995), "Information technology and sustained competitive advantage: a resource-based analysis", *MIS Quarterly*, Vol. 19 No. 4, pp. 487-505.
- Matamanda, S.H. and Chidoko, C. (2017), "Accessing formal financing by small and medium enterprises in Zimbabwe: the case of SMEs and banks in Chiredzi Urban", *Cell*, Vol. 263 No. 773, pp. 555-908.
- Matsuno, K., Mentzer, J.T. and Rentz, J.O. (2000), "A refinement and validation of the MARKOR scale", *Journal of the Academy of Marketing Science*, Vol. 28 No. 4, pp. 527-539.
- Melville, N., Kraemer, K. and Gurbaxani, V. (2004), "Information technology and organizational performance: an integrative model of IT business value", *MIS Quarterly*, Vol. 28 No. 2, pp. 283-322.
- More, D. and Basu, P. (2013), "Challenges of supply chain finance: a detailed study and a hierarchical model based on the experiences of an Indian firm", *Business Process Management Journal*, Vol. 19 No. 4, pp. 624-647.

- Pavlou, P.A. and El Sawy, O.A. (2006), "From IT leveraging competence to competitive advantage in turbulent environments: the case of new product development", *Information Systems Research*, Vol. 17 No. 3, pp. 198-227.
- Penrose, E.T. (1959), *The Theory of the Growth of the Firm*, Wiley, New York, NY.
- Perego, A. and Salgaro, A. (2010), "Assessing the benefits of B2B trade cycle integration: a model in the home appliances industry", *Benchmarking: An International Journal*, Vol. 17 No. 4, pp. 616-631.
- Pfohl, H. and Gomm, M. (2009), "Supply chain finance, optimizing financial flows in supply chains", *Logistics Research*, Vol. 1 Nos 3-4, pp. 149-161.
- Podsakoff, M.P., Mackenzie, B.S., Lee, J. and Podsakoff, P.N. (2003), "Common method biases in behavioral research: a critical review of the literature and recommended remedies", *Journal of Applied Psychology*, Vol. 88 No. 5, pp. 879-903.
- Protopappa-Sieke, M. and Seifert, R.W. (2010), "Interrelating operational and financial performance measurements in inventory control", *European Journal of Operational Research*, Vol. 204 No. 3, pp. 439-448.
- Randall, W. and Farris, T. II (2009), "Supply chain financing: using cash-to-cash variables to strengthen the supply chain", *International Journal of Physical Distribution & Logistics Management*, Vol. 39 No. 8, pp. 669-689.
- Rivard, S., Raymond, L. and Verreault, D. (2006), "Resource-based view and competitive strategy: an integrated model of the contribution of information technology to firm performance", *The Journal of Strategic Information Systems*, Vol. 15 No. 1, pp. 29-50.
- Rogelberg, S.G. and Stanton, J.M. (2007), "Introduction understanding and dealing with organizational survey nonresponse", *Organizational Research Methods*, Vol. 10 No. 2, pp. 195-209.
- Song, H., Yu, K. and Lu, Q. (2018), "Financial service providers and banks' role in helping SMEs to access finance", *International Journal of Physical Distribution & Logistics Management*, Vol. 48 No. 1, pp. 69-92.
- Song, H., Yu, K., Ganguly, A. and Turson, R. (2016), "Supply chain network, information sharing and SME credit quality", *Industrial Management & Data Systems*, Vol. 116 No. 4, pp. 740-758.
- State Bank of Pakistan (2011), "Textile fabric: 2016", available at: www.sbp.org.pk/departments/ihfd/Sub-Segment%20Booklets/Textile%20Fabric.pdf (accessed May 4, 2017).
- Stemmler, L. (2002), "Supply chain finance: Eine notwendige Erweiterung der Lieferkettensteuerung", *Wissenschaftssymposium Logistik der BVL*, Vol. 1 No. 1, pp. 113-124.
- Stemmler, L. (2018), "Global value chains and supply chain trade: how organizations create sustainable business models", *International Conference on Dynamics in Logistics*, Springer, Cham, pp. 184-188.
- Terziovski, T. (2010), "Innovation practice and its performance implications in Small and Medium Enterprises (SMEs) in the manufacturing sector: a resource-based view", *Strategic Management Journal*, Vol. 31 No. 8, pp. 892-902.
- Wadhwa, W. and Chaudhry, A. (2018), "Innovation and firm performance in developing countries: the case of Pakistani textile and apparel manufacturers", *Research Policy*, Vol. 47 No. 7, pp. 1283-1294.
- Wisner, P. (2011), "Linking supply chain performance to a firm's financial performance", available at: www.scmr.com/article/linking%20supply_chain%20performancetoaffirmsfinancialperformance (accessed October 12, 2017).
- Wuttke, D.A., Blome, C. and Henke, M. (2013), "Focusing the financial flow of supply chains: an empirical investigation of financial supply chain management", *International Journal of Production Economics*, Vol. 145 No. 2, pp. 773-789.
- Yang, C. and Lirn, T. (2017), "Revisiting the resource-based view on logistics performance in the shipping industry", *International Journal of Physical Distribution & Logistics Management*, Vol. 47 No. 9, pp. 884-905.

- Zhang, R. (2015), "The research on influence facts of supply chain finance operation", *Proceedings of International Conference the Management Engineering and Management Innovation, Changsha*.
- Zhao, L. and Huchzermeier, A. (2015), "Operations–finance interface models: a literature review and framework", *European Journal of Operational Research*, Vol. 244 No. 3, pp. 905-917.
- Zhao, L. and Huchzermeier, A. (2018), "Supply chain finance", in Speranza, M.G. and Oliveria, J.F. (Eds), *Supply Chain Finance. EURO Advanced Tutorials on Operational Research*, Springer, Cham, pp. 105-119.
- Zhu, Y., Xie, C., Wang, G.J. and Yan, X.G. (2017), "Comparison of individual, ensemble and integrated ensemble machine learning methods to predict China's SME credit risk in supply chain finance", *Neural Computing and Applications*, Vol. 28 No. 1, pp. 41-50.

Appendix. Questionnaire: items for survey scales

Supply chain finance (Zhang, 2015) (1 = "strongly disagree" to 5 = "strongly agree")

- SCF1: you see supply chain finance as a risk prevention system (Strategy).
- SCF2: supply chain finance increases the capital flow coordination in the supply chain.
- SCF3: supply chain finance brings the high level of overall supply chain efficiency.
- SCF4: supply chain finance considers as high-risk prevention capability of core enterprise.
- SCF5: supply chain finance requires a high degree of technology for its application.

Trade digitization (adapted from Choi, 2013) (1 = "strongly disagree" to 5 = "strongly agree")

- TD1: interactive technologies offer valuable new ways of the engaging buyer (SMEs) and suppliers (Sellers).
- TD2: training of digital technologies are needed to upgrade buyer and supplier trading.
- TD3: the future of digital trading lies in the relationship between buyers and suppliers.

Firm performance (Kotabe (1990) and Matsuno *et al.* (2000))

How does your company perform compared with your major competitors; (1 = very low and 5 = very high):

- FP1: sales growth.
- FP2: pre-tax profit.
- FP3: cash flow.
- FP4: stakeholders value.

About the authors

Zulqurnain Ali is a PhD Scholar at School of Management, University of Science and Technology of China, Hefei. He received the MPhil (Business Administration) degree from National College of Business Administration & Economics, Lahore, Pakistan and the Master Degree (Public Administration) from Quaid-i-Azam University Islamabad, Pakistan. He worked as Operations Manager at United Bank Limited, Pakistan. His area of interest is supply chain finance, organizational behavior, succession planning and human resource management. He has published research papers in *Journal of Computers in Education*, *European Journal of Social Sciences*, *International Journal of Academic Research in Business and Social Sciences* and *International Journal of Academic Research in Management Sciences, Accounting, and Finance*. Zulqurnain Ali is the corresponding author and can be contacted at: zaki.qasms.qau@gmail.com

Bi Gongbing is Associate Professor at the School of Management, University of Science and Technology of China, Hefei. He obtained his PhD Degree from the School of Management, University of Science and Technology of China in 2007 and Master in Political Economics from Anhui University, Hefei, China. His area of interest is supply chain finance, decision science and organizational behavior.

Aqsa Mehreen is Master Student at the School of Public Affairs, University of Science and Technology of China, Hefei. She earned her Master Degree in English literature from the University of the Punjab, Lahore, Pakistan. Her area of interest is management, social security and English literature.

For instructions on how to order reprints of this article, please visit our website:

www.emeraldgrouppublishing.com/licensing/reprints.htm

Or contact us for further details: permissions@emeraldinsight.com

Reproduced with permission of copyright owner. Further reproduction prohibited without permission.