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Significance of supply chain finance: Insights from Saudi Arabia

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A B S T R A C T

The study examines the effect of the supply chain finance (SCF) on the corporate financial performance measured in terms of Return on Assets (ROA), Tobin's Q, and Gross Operating Profit (GOP) in the material sector of Saudi Arabia. The study selects a sample of 42 companies from the material sector listed on Tadawul starting in 2008 and ending 2019. A panel regression in terms of pooled OLS, fixed and random effects, and panel GMM is estimated to report the empirical results. The results report a negative and significant effect between the financial performance variables and supply chain finance, specifically with ROA with pooled OLS and fixed and random effects models. The results of panel GMM also show a negative and significant effect between all the financial performance variables and financing supply chain. The results are useful to academicians and the managers in the materials, inventory, and sales sections, and supply chain managers to integrate finance and SCM to achieve corporate benefits.

1. Introduction

A business network between manufacturers, vendors, and dealers to supply goods to consumers is termed as a supply chain (Chow & Heaver, 1999; Janvier-James, 2012). A corporate supply chain is a network of relationships that are internal and external in nature. In another way, a supply chain is a life cycle that processes flow of physical goods, information and finance to satisfy the customers by supplying required goods and services (Ayers, 2001). Further, supply chain is a combination and coordination of flows of goods from production to distribution linked with information flow. Moreover, the Supply Chain Management (SCM henceforth) enhances customer value through optimizing supply chain costs (Little, 1999). The notion behind supply chain efficiency is to save costs and provide efficient service to the customers, and on the other hand increase firm's competitiveness in the global market (Langley et al., 2008). The corporate companies achieve SCM efficiency through reduction in production costs, improving quality of product, and help in increasing the firm's financial performance (Wahdan & Emam, 2017; Arifin et al., 2019; Bui & Doan, 2020). There is a strategic effect of a firm's supply chain decisions on capital structure, cost behavior, profitability, and ultimately financial performance (Gomm, 2010). Therefore, it can be said that the SCM plays a significant role in increasing the firm's global competitiveness that makes the firm grow efficiently and effectively. There is a shift from the traditional form of supply chain management to a more customer value centric function. In this regard, the past researchers (Carter et al., 2005; Atkinson, 2008, Gomm, 2010) suggested the use of a finance function to explain the relationship between the supply chain performance and financial performance indicators. The corporate companies in the past left the financing of SCM to the departments of accounting and finance (Sargent, 2006). Generally, it was assumed that the different areas that fall under SCM collaboration are raw material procurement, production, supply, Research and Development, etc. but the concept of collaborating finance to SCM was given little consideration. The area of

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supply chain finance consists of tangible and intangible assets of supply chain, working capital finance, cash management, inventory management, optimizing financial resources through IT, etc. (Gomm, 2010). Therefore, optimizing corporate finance to increase cash flow and decrease cost of capital under supply chain is termed as Supply Chain Finance (SCF henceforth). Further, the SCM managers and logisticians should consider the corporate activities from the financial side and its implications. They need to know certain aspects of finance integrated with SCM, such as the financial decisions undertaken in a corporate, internal and external challenge of corporate finance related to SCM, type of financial elements used in supply chain, understand the functions of operation and finance and their integration (Hoffman, 2005). Thus, SCF concentrates more on utilization of financial resources in different departments of a firm, rather than a mere collaboration between departments or companies. In conclusion, SCF focuses on the integration of objects, different types of flows, processes, different types of assets, supply chain personnel (Timme & Williams-Timme, 2000). Therefore, the study of supply chain management has drawn the researchers' attention largely. Further, the past research of (Flynn et al., 2010; Bui, 2020; Bui & Doan, 2020) examined the relationship between the SCF and Corporate financial performance. Moreover, the studies examining the effect of financing supply chains on financial performance in Saudi Arabian firms does not exist. Thus, the current study fills the gap by examining the effect of SCF on financial performance of the material sector in Saudi Arabia.

The manufacturing sector of Saudi Arabia is one of the fastest growing sectors globally with an average growth rate of 7.5 percent per annum and contributes 10 percent to the Kingdom's GDP. The factors behind the growth of this sector are support from the government, R&D facilities, infrastructure provision, and flexible regulations. The government of Saudi Arabia has established SIDF (Saudi Industrial Development Fund) to provide financial support to the manufacturing sector and plans to invest USD 70 billion under the Vision 2030 national transformation program. This sector operates under the socio-economic model of the KSA government and is trying to acquire a market-based model to compete globally. Nevertheless, the challenges faced by this sector, it has opportunities of growth in terms of government help, large domestic investments, and foreign direct investments (Mordor Intelligence Report, 2021-2026). The companies in the manufacturing sector depend more on supply chains. A strong SCF program might help manufacturers to depend on their own finances in times of uncertainty and difficulty. Since the SCF is an integration of different flows and processes, it helps companies in the manufacturing sector in increasing their cash flows by extending payment terms between producer and supplier and on the other hand providing options to suppliers to receive early payments on their bills.

Considering the above discussion, it becomes significant to examine the impact of supply chain management on the corporate financial performance of Saudi Arabian firms. The results of the current study might be interesting and provide helpful presumptions to the Saudi Arabian manufacturing sector in terms of supply chain management.

2. Literature Review

Dong and Xu (2002) studied the effect of vendor-managed inventory (VMI) on the supply chain, which leads to buyers and suppliers' profits. They found that VMI reduces the supply chain costs and contributes to buyer and suppliers' profits in the short term, but with profit variation under some cost conditions. They found VMI to be one of the strategies of the effective supply chain. In another study by Mangiaracina et al. (2012) developed a simulation model to understand the effect of VMI on supply chain costs, and suggested a "one manufacturer-multiple sellers" model to assess the benefits of VMI effectively. Further, Darwish and Odah (2010) established an agreement between different vendors and retailers, by developing a similar type of model of "one vendor-multiple retailers" for VMI. They reported that this model explains capacity drawbacks of supply chains. Similarly, Borade and Bansod (2010) studied the practices of VMI in smaller and larger Indian companies. They reported that the practices of VMI vary between SMEs and large companies. They found customer service and income growth as the core objectives of VMI; competition among firms and supply chain spread motivate companies to adopt VMI. Further, the success of VMI in terms of buyer perception is associated with supplier-buyer relationship, IT quality, information sharing, etc. (Claassen, 2008).

Farris II and Hutchison (2002) studied the cash-to-cash (C2C) measure relating to supply chain management. They observed that the C2C technique is two-way bound by having attachment with production function and sales function. They suggested that the manager of supply chain should understand C2C from both supply chain and accounting point of view. A similar kind of study by Randall and Farris II (2009) suggested that the firms could increase their performance through SCM view, i.e. adopting C2C and SCF approaches, rather than following the traditional approaches. Similarly, Hofmann (2005) and Hofmann and Kotzab (2010) examined the management of working capital under supply chain approach. They considered shareholder value added (SVA) as the supply chain performance measure. They found the cash-to-cash cycle (C2C) approach as a powerful technique of managing and controlling inventory and payment systems within the supply chain, and collaborative management of C2C is an effective method of working with the partners of the supply chain and providing finance to them.

More and Basu (2013) studied the challenges faced by supply chain finance and developed a model to understand these challenges. They found delayed cash flows, lack of IT in payment systems, lack of SCF knowledge and training. They suggested the companies adopt a collaborative method of SCF to increase the firms' financial performance. The significance of supply chain finance came into exposure when the world witnessed a financial crisis due to decline in bank loans, and was

looking for a better optimization of working capital. The SCF is classified in terms of financial, information, technology, operations, relationship, etc. The benefits of SCF can be differentiated into financial and non-financial (Marak and Pillai, 2019; Shi and Yu, 2013). Further, Mathis and Cavinto (2010) are of the opinion that the process of supply chain consists of finance. Therefore, there should be an integration between the SCM managers and finance managers to eliminate financial challenges and bring in profit maximization by minimizing costs. Moreover, Blome et al. (2013) categorized the SCF into pre-shipment (also called as pre-invoice) and post-shipment (also called as post-invoice) where the former improves the SCM working capital of vendors, while the later boost the SCM working capital of buyers. An integration between finance and SCM was found to be necessary to enjoy cost reductions that lead to profit maximization. (Virolainen et al. 2019) reported a similar result. In another way, the financial leverage is associated with a firm's short-term credit, which is used to optimize working capital. Therefore, the SCM finance has an integration with financial leverage to assess the firms' financial performance (Bui, 2020). Further, there should be an integration mechanism between the SCM and SCM finance by evaluating the financial, operational and innovation processes that determine liquidity and working capital. The banks could play an important role to integrate both. The banks are helpful to both physical and financial SCM in terms of coordination, information visibility and sharing, collaboration, etc. (Camerinelli, 2008; Silvestro and Lustrato, 2014; Blackman et al. 2013).

Similarly, the integration of supply chain with financial services is achieved by studying the flow of information between the two. The efficiency of information flow could be improved through intelligence in terms of capital, information and material (Fairchild, 2005). Since, the cost of supply chain is related to management control systems, and these systems are internal and external to the company, a close relationship between SCM and management control systems (under management accounting) is necessary to achieve desired benefits (Ramos, 2004). The innovations have more impact on supply chain finance, hence an integration between the two brings in more efficiencies in product information flow and financial information flow leading to reduction in costs (Wuttke et al. 2013). The innovation in firms and SCM are measured through providing value to customers by improving the investor's actual rate of return. This could be possible through customer value added (CVA), segment analysis, cost analysis, etc. in which CVA plays an important role in achieving profit maximization (Lambert and Burduroglu, 2000; Gomm, 2010). The visibility of SCM affects the supply chain costs. The firm's strong relations with the suppliers make them invest more and improve SCM visibility. It was evidenced that, the higher the vertical integration, the higher will be SCM visibility, which in turn increases the supply chain costs (Caridi et al. 2010). A study by (Zhang et al. 2019) reports no effective association between SCF and efficiency in firm performance and inventory management, rather the SCF plays a significant role in reducing the possibilities of firms' bankruptcy. On the other hand, the SCF solutions improve cash conversion cycles, reduce SCF inefficiencies through bringing greater visibility in all the processes of supply chain, hence making companies reduce cost and maximize profits (Evans and Lamoureux, 2011).

The study has reviewed past researchers on topics of supply chain, such as vendor-managed inventory (VMI), cash-to-cash measure of supply chain, integration of supply chain management with different processes, and financing supply chain. The studies were carried out in different countries with different models adopted. Further, no study was found examining the concept of supply chain financing in Saudi Arabian context. Thus, the current study finds a gap in the existing literature, and thereby examines the effect of SCF on financial performance of companies in the manufacturing sector of Saudi Arabia.

3. Data and Methodology

The current study examines the effect of supply chain finance on the corporate financial performance of Saudi Arabian companies under the material sector listed on Tadawul. The study sample consists of 42 companies from the material sector during the period 2008 to 2019. Table 1A in the appendix reports the details of studied companies regarding their specialization, Global Industry Classification Standard (GICS) codes, and market capitalization. The study uses secondary data to study the effect of the supply chain finance on the corporate financial performance of Saudi Arabian Companies extracted from the annual reports available on Tadawul.

3.1 Dependent and Independent Variables

The study considers financial performance proxies, such as Return on Assets (ROA) measured as net income scaled by total assets, Tobin's Q (Q Ratio) measured as total market value scaled by total asset value, and Gross Operating Profit (GROP) measured as gross profit minus operating expenses scaled by sales as dependent variables. The cash conversion cycle (CCC), which is the SCF measurement, and an explanatory variable is calculated using Days Sales Outstanding (DSO), Days Sales in Inventory (DSI), and Days Payables Outstanding (DPO). Further, company size measured as log of total assets, GDP growth, and inflation are considered as control variables.

$$CCC = DSO + DSI - DPO$$

3.2 Research Hypothesis

Past research has hypothesized different relationships between the SCF and financial performance. The current study presents the following hypotheses.

H_0: There exists no significant effect of supply chain finance on corporate financial performance (explained in terms of ROA, Tobin's Q, and GROP).

H_1: There exists a significant effect of supply chain finance on corporate financial performance (explained in terms of ROA, Tobin's Q, and GROP).

3.3 Empirical Model

The study examines the effect of SCF on corporate financial performance of Saudi Arabian companies by employing panel regression models, such as pooled regression (pooled OLS), panel fixed effects (FE model), panel random effects (RE model), and Generalized Method of Moments model (GMM model). Further, to test the model's robustness, the study conducts diagnostic tests, such as the normality test, heteroscedasticity test, and multicollinearity test, etc. to test the robustness of the model. The estimated panel regression models are as follows:

1. Pooled Regression (Pooled OLS) estimate

$$y_{i,t} = \alpha + \beta X_{i,t} + \varepsilon_{i,t}$$

where i = number of cross-section companies; t = time.

2. Fixed Effects Model (FE)

$$y_{i,t} = \alpha_i + \beta X_{i,t} + \varepsilon_{i,t}$$

where i = number of cross-section companies; t = time.

3. Random Effects Model (RE)

$$y_{i,t} = \alpha + \beta X_{i,t} + \mu_i + \varepsilon_{i,t}$$

Where i = number of cross-section companies; t = time; $\varepsilon_{i,t}$ = residual value of i and t; μ_i = residual with random characteristics.

4. Generalized Method of Moments Model (Panel GMM)

$$y_{i,t} = \alpha + \beta X_{i,t} + \psi y_{i,t-1} + \varepsilon_{i,t}$$

where i = number of cross-section companies; t = time period; $\varepsilon_{i,t}$ = residual value of i and t; $y_{i,t-1}$ = lagged dependent variable.

y (dependent variable) is the financial performance measurement measured in terms of ROA, Tobin's Q and GROP, $\alpha$is the constant, β is the coefficient of independent and control variables and ψ is the coefficient of lagged dependent variable. Hausman test is used to choose between fixed effects and random effects model. The study employs adjusted R^2 and F-statistic to test the model fitness.

4. Empirical Results

This section reports the descriptive statistics, correlation analysis and model estimation results in terms of pooled OLS, panel fixed effects and random effects and panel GMM. The model estimation results are reported in three different models where ROA is the dependent variable in model 1, Tobin's Q is the dependent variable in model 2, and GOP is the dependent variable in model 3. Table 1 reports the results of descriptive statistics.

Table 1
Results of descriptive statistics

Variable	Obs	Mean	Standard Deviation	Minimum	Maximum
ROA	504	0.07212	0.0877	-0.4763	0.4398
Tobin's Q	504	0.60352	0.2489	0.0001	1.4186
GOP	504	0.16553	0.4794	-8.4116	0.9396
SCF	504	1.85656	1.39512	-1.5348	8.2172
SIZE	504	6.4919	0.6526	5.1381	8.5315
GDP Growth	504	6.4211	13.656	-17.448	27.078
Inflation	504	-0.355	3.0635	-4.81	5.7

The results show that the average of financial performance (FP) variables varies between 0.07 and 0.17. The negative sign of FP variables indicates losses experienced by some sample companies. Further, the mean of the supply chain finance (SCF) variable is 1.85, and ranges between -1.53 and 8.21. This shows that the sample companies of Saudi Arabia have shorter cash conversion cycles. The mean of firm size is 6.49, GDP growth is 6.42, and that of inflation is -0.35. There is fluctuation in GDP growth and inflation as evidenced through their standard deviation (13.65 and 3.06), since these are the macroeconomic

variables. Table 2 reports the correlation analysis of dependent, independent and control variables. The results show that the SCF variable, which is the main explanatory variable, is negatively correlated with all the financial performance variables.

Table 2
Results of correlation analysis

Variable	ROA	Tobin's Q	GOP	SCF	SIZE	GDP Growth	Inflation
ROA	1.000						
Tobin's Q	0.3808	1.000					
GOP	0.3732	0.2789	1.000				
SCF	-0.0903	0.1519	0.0422	1.000			
SIZE	-0.0825	-0.2480	0.0524	-0.1793	1.000		
GDP Growth	0.0680	-0.0407	-0.0077	-0.0689	-0.0153	1.000	
Inflation	0.0364	0.0027	-0.0476	-0.0091	-0.0139	0.5623	1.000

Table 3 reports the pooled OLS results in three models with different financial performance variables. The results of model 1 with ROA as a dependent variable shows a negative and significant relationship with the supply chain finance variable, while it the result is contrary in model 2, where the relationship of Tobin's Q with SCF is positive and significant, and the results of model 3 even though positive shows an insignificant relationship with SCF. The association of firm size is negative in model 1 and 2, while it is positive in model 3. The GDP growth and inflation variables are insignificant in all the models. The R^2 ranges from 0.01 to 0.07 in all the models, and the F-statistic ranges from 1.06 to 10.18. All the three models are very weak in explaining the financial performance variation.

Table 3
Results of Pooled OLS

Model 1: ROA				
Variable	α	β	t-statistic	p-value
CONSTANT	0.1691		4.14	0.000
SCF		-0.000066	-2.31	0.021
SIZE		-0.013478	-2.23	0.026
GDP Growth		0.00377	1.09	0.275
Inflation		0.0000316	0.02	0.983
R^2	0.013			
F-statistic	2.77(0.0268)			
Model 2: Tobin's Q				
Variable	α	β	t-statistic	p-value
CONSTANT	1.1434		10.14	0.000
SCF		0.0001916	2.45	0.015
SIZE		-0.08742	-5.24	0.000
GDP Growth		-0.000988	-1.04	0.300
Inflation		0.002500	0.59	0.553
R2	0.075			
F-statistic	10.18(0.000)			
Model 3: GOP				
Variable	α	β	t-statistic	p-value
CONSTANT	-0.1749		-0.78	0.437
SCF		0.0001891	1.21	0.227
SIZE		0.04543	1.36	0.173
GDP Growth		0.00118	0.62	0.534
Inflation		-0.01012	-1.21	0.228
R2	0.008			
F-statistic	1.06(0.3773)			

Table 4 reports the pane results with fixed and random effects in three models with different financial performance variables. The results of model 1 with ROA as a dependent variable shows a negative and significant relationship with the supply chain finance variable in both the effects. The results of model 2 and model 3 show an insignificant relationship of SCF with Tobin's Q and GOP. The association of firm size is negative in model 1 and 2, while it is positive and insignificant in model 3. The GDP growth and inflation variables are insignificant in all the models. The R^2 ranges from 0.01 to 0.06 in all the models. The Hausman test result shows that the random effects model is preferred over the fixed effects for model 1 and 3, while fixed effects is preferred for model 2. All the three models are very weak in explaining the financial performance variation.

Table 5 reports the panel GMM results in three models with different financial performance variables. The results show that the SCF variable is negative and significant with all the financial performance variables in all the three models. The association of firm size is positive in model 1 and 3, while it is negative in model 2. The results of GDP growth is similar to that of firm size, while the inflation is negative, significant with ROA and GOP, positive and significant with Tobin's Q. variables are insignificant in all the models. The wald chi 2 (5) is highly significant in all the three models.

Table 4
Results of Fixed Effects and Random Effects Model

Model 1: ROA				
Variable	Fixed Effects Model		Random Effects Model	
	β	t-statistic (p-value)	β	t-statistic (p-value)
CONSTANT	0.4747	4.04 (0.000)	0.3136	3.91 (0.000)
SCF	-0.000115	-4.36 (0.000)	-0.0001163	-4.58 (0.000)
SIZE	-0.059104	-3.25 (0.001)	-0.03426	-2.80 (0.005)
GDP Growth	0.0003062	1.33 (0.184)	0.0003178	1.38 (0.168)
Inflation	0.0000532	0.05 (0.958)	0.0000967	0.10 (0.924)
R2	0.02		0.02	
Prob>F	10.02 (0.000)			
Wald chi 2(4)			35.42 (0.000)	
F test	16.40 (0.000)			
Hausman test	Chi 2(4) = 4.86, Prob>chi2 = 0.3021			
Model 2: Tobin's Q				
	β	t-statistic (p-value)	β	t-statistic (p-value)
CONSTANT	2.6205	8.79 (0.000)	1.91266	8.77 (0.000)
SCF	0.000015	0.23 (0.819)	0.000046	0.01 (0.994)
SIZE	-0.30973	-6.71 (0.000)	-0.020031	-6.01 (0.000)
GDP Growth	-0.00127	-2.18 (0.030)	-0.00123	-2.08 (0.037)
Inflation	0.00247	0.96 (0.336)	0.002689	1.03 (0.301)
R2	0.06		0.06	
Prob>F	12.37 (0.000)			
F test	21.47 (0.000)			
Wald chi 2(4)			40.01 (0.000)	
Hausman test	Chi 2(4) = 17.73, Prob>chi2 = 0.001			
Model 3: GOP				
Variable	β	t-statistic (p-value)	β	t-statistic (p-value)
CONSTANT	0.9775	1.13 (0.261)	0.0954	0.27 (0.791)
SCF	-0.00028	-1.45 (0.149)	-0.00012	-0.69 (0.490)
SIZE	-0.11837	-0.88 (0.379)	0.01276	0.23 (0.815)
GDP Growth	0.00065	0.38 (0.703)	0.000871	0.51 (0.610)
Inflation	-0.009475	-1.26 (0.207)	-0.00956	-1.27 (0.203)
R2	0.003		0.001	
Prob>F	1.27 (0.2791)			
F test	4.13 (0.000)			
Wald chi 2(4)			2.30 (0.6801)	
Hausman test	Chi 2(4) = 7.52, Prob>chi2 = 0.1110			

Table 5
Results of Panel GMM

Model 1: ROA				
Variable	α	β	z-statistic	p-value
CONSTANT	-0.083		-1.63	0.103
SCF		-0.000062	-9.43	0.000
SIZE		0.017872	2.23	0.026
GDP Growth		0.000410	10.59	0.000
Inflation		-0.001809	-12.80	0.000
Wald chi 2(5)		33526.68		
, Prob>chi2		0.000		
Model 2: Tobin's Q				
Variable	α	β	z-statistic	p-value
CONSTANT	2.7352		34.53	0.000
SCF		-0.000098	-13.15	0.000
SIZE		-0.337454	-25.79	0.000
GDP Growth		-0.000533	-7.50	0.000
Inflation		0.005273	17.88	0.000
Wald chi 2(5)	1221.40			
, Prob>chi2	0.000			
Model 3: GOP				
Variable	α	β	z-statistic	p-value
CONSTANT	-0.6022		-14.14	0.000
SCF		-0.0004129	-30.70	0.000
SIZE		0.119784	19.91	0.000
GDP Growth		0.0008645	12.94	0.000
Inflation		-0.004445	-25.02	0.000
Wald chi 2(5)	0.00008			
, Prob>chi2	0.000			

5. Result Discussion

The study has estimated a panel regression with pooled OLS, fixed and random effects model and panel GMM model to examine the effect of financing supply chain on the financial performance of companies in Saudi Arabia. Further, the results of panel GMM explains in a better manner and confirms the relationship between the two important study variables, i.e. financial performance variables (ROA, Tobin's Q and GOP) and financing supply chain (SCF) compared to the pooled OLS and fixed effects and random effects models. Hence, the study follows the results of panel GMM to a greater extent due to the advantage of the model over the other models. Further, the results indicate that the companies under the material sector of Saudi Arabia follow a better strategy of supply chain finance by shortening the cash conversion cycle, which is evidenced from the results. The shorter cash conversion cycle leads to increase in working capital, which in turn leads to better firm performance. The result of firm size shows that larger firms tend to be more profitable compared to the smaller ones. The results of the current study are in line with the previous studies of Gul et al. (2013), Samiloglu and Akgun (2016), and Tsagem et al. (2017), who reported a negative association between cash conversion cycle, which is the SCF variable. The study also supports the results of Zhang et al. (2019) and Bui (2020), Doan and Bui (2020), who reported a negative and significant impact of SCF on corporate financial performance. Therefore, the reported results reject H_0 and confirm H_1.

6. Conclusion

The relationship of a corporate supply chain network is internal and external in nature. A firm increases its financial performance through SCM efficiency in terms of cost reduction and product quality. Further, the growth in firm performance is achieved with the integration of different processes under the supply chain. The current study examined the impact of financing supply chains on the corporate financial performance of companies under the material sector of Saudi Arabia. The material sector is one of the significant sectors under the Saudi Arabian manufacturing industry. The study has chosen a sample of 42 companies under the material sector listed on Tadawul. The study has considered Return on Assets (ROA), Tobin's Q and Gross Operating Profit (GOP) as financial performance proxies; cash conversion cycle (CCC) as supply chain finance (SCF) proxy. Further, the study has estimated panel regression models, such as pooled OLS, panel fixed effects and random effects model, and panel GMM model and reported the results. The results report a negative and significant effect between the financial performance variables and supply chain finance, specifically with ROA with pooled OLS and fixed and random effects models. Further, the association of SCF with other financial performance variables, such as Tobin's Q and GOP does not confirm the hypothesis. The results of panel GMM also show a negative and significant effect between all the financial performance variables and financing supply chain. The reported results are useful to academicians and the managers in the materials, inventory, and sales sections in managing optimum cash conversion cycle, and supply chain managers to integrate finance and SCM in order to enjoy cost reductions leading to profit maximization. The study has limitations, such as it is limited to one sector under manufacturing industry, using year-end data to calculate the supply chain finance. The future research should consider the retrospective effect of supply chain finance and financial performance variables.

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Appendix

Table 1A
Companies in the Kingdom Saudi Arabia with their Specialization, GICS code and Market Capitalization

S.No.	Name of the Company	Specialization	GICS Code	Market Capitalization (in Million Saudi Riyal)
1	Saudi Basic Industries Corporation	Materials	2010	319,800
2	Saudi Arabian Mining Company	Materials	1211	63,252.33
3	SABIC Agri Nutrients Company	Materials	2020	46,366.30
4	Yanbu National Petro Company	Materials	2290	40,106.25
5	Saudi Kayan Petro Company	Materials	2350	22,260
6	National Petrochemical Company	Materials	2002	18,576
7	Advanced Petrochemical Company	Materials	2330	14,676.67
8	Sahara International Petro Company	Materials	2310	13.933.27
9	Saudi Industrial Investment Group	Materials	2250	12,735
10	Southern Province Cement Company	Materials	3050	11,928
11	Saudi Cement Company	Materials	3030	9,700.20
12	Qassim Cement Company	Materials	3040	7,740
13	Yanbu Cement Company	Materials	3060	7,245
14	Yamama Cement Company	Materials	3020	6,135.75
15	Arabian Cement Company	Materials	3010	4,220
16	City Cement Company	Materials	3003	3,724
17	Eastern Province Cement Company	Materials	3080	3,637.80
18	Alujain Holding Corporation	Materials	2170	3,556.88
19	Najran Cement Company	Materials	3002	3,396.60
20	Northern Region Cement Company	Materials	3004	3,203.20
21	Al Yamamah Steel Inds Company	Materials	1304	1,747.52
22	Hail Cement Company	Materials	3001	1,644.72
23	Ummulqura Cement Company	Materials	3005	1,644.50
24	Tabuk Cement Company	Materials	3090	1,630.80
25	Methanol Chemicals Company	Materials	2001	1,594.33
26	Aljouf Cement Company	Materials	3091	1,590.16
27	Saudi Steel Pipe Company	Materials	1320	1,405.05
28	The National Company for Glass	Materials	2150	1,350.55
29	Zamil Industrial Investment Co.	Materials	2240	1,327.20
30	Takween Adv. Industries Company	Materials	1201	1,318.60
31	Zahrat Al Waha Trading Company	Materials	3007	1,311
32	United Wire Factories Company	Materials	1301	1,265.36
33	Saudi Paper Manufacturing Co.	Materials	2300	1,148.16
34	Basic Chemical Industries Company	Materials	1210	1,078
35	National Metal Manufacturing Co.	Materials	2220	1,069.66
36	Middle East Paper Company	Materials	1202	1,024
37	Al Kathiri Holding Company	Materials	3008	958.24
38	National Gypsum Company	Materials	2090	942.08
39	Arabian Pipes Company	Materials	2200	878.40
40	Nama Chemicals Company	Materials	2210	876.12
41	Filling & Packing Manufacturing Co.	Materials	2180	745.20
42	Saudi Basic Industries Corporation	Materials	2010	319,800