Financial Supply Chain Management, Operational Efficiency and Capital Assets: A New Insight from Kuwait.

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Abstract **-Although numerous studies have provided their theoretical and empirical contribution for supply chain, but the context of financial trends in SC are missing. This study aims to considers the factors under the title of financial supply chain and their association with the operational efficiency, capital assets of the business. To address this objective, a sample of 140 manufacturing firms, working in the region of Kuwait has been finalized over 9 years (2007-15). For operational efficiency, five measures have been considered. While capital assets are considered through fixed and financial dimensions of investment as appeared in the balance sheet. Data is collected from the online sources, reports and financial statements of selected companies. Both descriptive and regression findings are presented to empirically examine the relationship between financial dimension of supply chain, operational efficiency and capital assets. It is found that operational factors like OPM, GPM and NPM are significant associated with CL, NWC, cash, inventory and creditors account. While, investment in fixed assets has its significant and positive association with all the dimensions of financial supply chain management. Meanwhile, financial assets are assumed to the significant determinants of 2nd three indicators of supply chain. As per the findings, this study contributes in the literature in both theoretical and practical perspective. Core limitations include non-consideration of cost-based efficiency measures, ignoring financial and economic sustainability and non-application of modern analysis techniques.**

Key Words: ***Financial supply chain, operational efficiency, capital assets, Kuwait.***

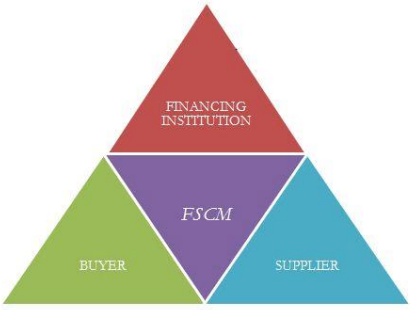
1. Introduction and Background

In the field of management science, concept of supply chain and its management is not a new for the reserachers and academic writers. However, its financial and monetary proxies have not been under significant attention [1]. Business organizations are facing various challenges either working in the domestic environment or international economies [2]. The concept of financial supply chain management or FSCM is assumed to be the core interest for various reasons in the business field [3]. First reason is that literature work is scattered in its context and very little contribution is provided towards the systematic identification and integration of FSCM with the operational efficiency of the business firms. During the time of recent financial crisis in 2007, both financial and non-financial firms are working to secure themselves from uneven financial shocks, hence to get financial stability and more operational efficiency [4]. This efficiency output can be reflected in various dimensions and financial terms of supply chain considers all those affairs which are directly or indirectly impacting on the business firm and its market repute [5]. Some studies have considered the collaboration between FSCM of business firm with its strategic suppliers. Meanwhile, collaborative relationship within and outside the business organization is very much necessary [6, 7].

Business firms have realized the fact that they cannot survive without the strategic partnership with their supplier as changing economic and environmental conditions are constantly moving. For the achievement of successful FSCM practices, it is very much obvious for the management of business to link overall business plans with its long term financial and nonfinancial objectives [8]. This paper aims to considers those components in the balance sheet of selected firms which can reflect the financial dimensions of supply chain management. Meanwhile, the concept of FSCM is under observation in various dimensions. For instance, value addition, management of liquidity position and financial performance are some factors which are influencing the business firms and financial matters of supply chain [9]. The factors of business efficiency, operational capabilities, stability and supply chain are interlinked to each other, since all these factors

have direct influence on the financial health of the business. For the significant contribution in the literature, not only FSC indicators are observed but operational efficiency of business organizations has also been considered. The reason is that operational efficiency indicates the fact that overall management working within and outside the business world should be as per the set standards and meeting with industry requirements. After reviewing the literature in the field of supply chain, reasonable gap is observed that integration of financial affairs of supply chain practices and operational capabilities of the firms are missing and needs to be addressed. Besides, overall idea of FSCM, can be clearly understood through FSCM pyramid as presented by who have focused on the concept of financing institutions providing the credit facilities to purse the supply chain process, key buyers and finally the suppliers of the business. Financing Institutions covers those programs which are providing credit facilities, handling payment process and terms. These institutions can minimize the complexity in the payment process through provision of some open accounts. Figure 1 indicates the FSCM pyramid.

The FSCM "pyramid"



Rest of the study is settled as follows. Literature section covers the review of studies based on the supply chain management, operational efficiency and capital assets. Variable portion covers the operational definitions and their measurement for the study. Research methods provides a comprehensive look for the methods being applied to empirically examine the association between the variables. Results and discussions covers the details about empirical facts and relationship between independent and dependent variables. Last portion covers the conclusions and future implications of the study.

2. Literature Review

The context of financial supply chain has been reviewed in present literature in the field of trading and manufacturing business firms. However, service sector is also observed but not a detailed context [10]. The focus of FSCM is found to be under the title of financial aspects along with conceptual framing, performance measurement of the business and for the efficiency of the cost. In his study [11], has considered the fact that financial institutions can play their significant for the overall process of supply chain, specifically in financial terms . The title of FSCM covers the investment perspective, capital used for the operational purposes, and strategic alliance of the business with its suppliers [12, 13]. The study of [3] has focused on the theoretical foundation for the financial supply chain. The key objective of their work is to understand and discuss the environment under which business managers will take the strategic decisions, related to the flow of supply chain in financial terms. They have claimed that although such decisions are the part of regular planning in the business practices, but little attention is paid by the researchers in this regard. Their study is based on the review of 40 case studies related to the field of financial supply chain. In the analysis portion, both operation management and finance has been combined while taking the two major categories of FSCM. The one is entitled under cost of transactions beings involved in supply chain management, and 2nd is based on the performance measures of the business. They have stated the fact that for the long-term business achievements, focus on financial dimensions of supply chain is very important [14-16].

Besides, the focus of literature is also observed for the financing sources, as provided by the financial institutions [17]. The task of proper management of supply chain and its financial affairs are integrated with the capital budgeting decisions, value creation and ultimately receipt of payment from the customers for the increasing cash flows. Association between the financial dimensions of supply chain and its link with the other accounts in the balance sheet provide new look for the business growth. In addition, research contribution by [18] has focused on the empirical investigation for lack of financial cooperation and its ultimate impact on the operational efficiency of supply chain. The reason is that increasing pressure in the world economy through technological advancement has pushed the companies to rely on even those suppliers who are weaker to meet the customer demands on time. Their study has focused on the

first and second tier supplier of automotive sector during the time of 2001 to 2009. Their findings explain that working capital for the first and second tier business firms is different, which leads to the lower efficiency and plant production capacity. They also suggested that business managers should avoid from the short-term attitude while dealing with the supply chain and going beyond the conventional way of financial considerations. Some other studies have focused on the components of cost efficiency and supply chain [19-21].

3. Description and measurement of Variables

Financial Supply chain

Grounded on the review of exiting literature, present study has considered the financial dimensions of supply chain as dependent variables. Detailed investigation of the financial literature indicates that balance sheet items like current assets, current liabilities, net working capital, cash, creditors and inventory account are directly or indirectly linked with the supply chain management process [22, 23]. For instance, inventory account in the balance sheet reflects the financial terms of the business with its suppliers [24, 25]. Higher balance in the inventory account explains the fact that more raw material has been purchased from the supplier. The reflection of this account on the liability side will be examined through the balance in the title of creditors accounts, which indicates how much the payment is due from the business side to its all kinds of suppliers [26]. To deal with both inventory and creditors account, cash balance in the business has a direct influence on financial supply chain management [27]. Taking these reasons, present study has considered the working capital and its elements as significant proxies to explain the idea of financial supply chain[28-30].

Operational Efficiency.

Operational efficiency refers the business capability, measured through its input being used in the production process [27]. It indicates that effectiveness of the business with which it can get the competitive advantage over its rivals. Higher operational efficiency means more earnings for the business and vice versa. As per the review of numerous studies, dealing with the operational efficiency, profitability measures are mostly cited [31]. These indicators include the gross profit margin which explains that how much earning/sales of the business are made, based on the gross profit of the business. While operating profit margin indicates the earning efficiency through operating profit, comparatively to the sales revenue [32]. The ratio of net profit margin predicts the comparison between the net income of the business as a ratio of sales over time. Besides, earnings before interest and tax to admin expense explains the comparison between various management expenditures, occurred during business operations and its comparison with the operational profit. Present study has considered all these indicators to explain the concept of operational efficiency.

$$Gross\ Efficiency - Gross\ Profit\ Margin\ (GPM) = gross\ profit/sale$$

Formula I

$$Operating\ Efficiency - Operating\ Profit\ Margin\ (OPM) = Operating\ profit/sale$$

Formula II

$$Net\ Operational\ Efficiency - Operating\ Profit\ Margin\ (OPM) = Net\ profit/sale$$ **Formula III**

$$Adminstrative\ Efficiency = Admin\ Exp./EBIT$$

Formula IV

$$Operational\ Exp.Efficiency = Operational\ Exp./EBIT$$

Formula V

Capital Assets

The title of capital assets in the business covers the long-term investment portion by the management. It consists of property, plant, equipment, building and other fixed assets which are helpful for the generation of cashflows over life time of the business [33]. Besides, financial assets like bonds shares, debentures, stocks and other securities are also known as the capital assets for the business. Investment in both fixed and financial assets reflects the business decisions for the investment and entitled under statement of changes in cashflows in the head of cashflow from investing activities [34-36]. Both fixed and financial assets reflect the growth horizon for the business and explains the horizontal expansion [36, 37]. Cash flow from such capital assets reflects both revenue and capital patterns [38]. The relationship between capital assets and financial dimensions of supply chain has been addressed in existing studies, but

not in a detailed mode. Higher investment in capital assets directly affect the key components of financial supply chain like cash available for the payment to the creditors, purchase of inventory and overall value of current assets and current liabilities [39-42]. Constructed on this theoretical association, present study has added both fixed assets and financial assets to reflect the concept of capital assets for FSCM [14, 43, 44].

4. Research Methodology & Regression Equations

This study considers both descriptive and regression analyses technique to examine the relationship between FSCM, operational efficiency, and capital assets of the business over time. To examine the association, an approach under the title of presence of fixed assets in the relationship between current assets, current liabilities and net working capital with the operational efficiency is empirically reviewed. To properly understand the association between the variables, regression equations based on the regression analyses are examined with the controlling effect of other factors which are not added in the models. After the presence of fixed assets, financial assets are also added for all the proxies of FSCM and their relationship with the operational efficiency. However, before going for the regression analysis, descriptive and correlational matrix with the tolerance diagnostics test like Variance inflation factor (VIF) is also applied. Both descriptive and empirical method of analysis has been widely accepted and applied in the field of business management and finance [45-50].

Based on the methodology of traditional regression analysis, 12 equations are developed to empirically examine the association between financial supply chain management, operational efficiency and capital assets of selected firms. Equation 1 examines the impact of operational efficiency, fixed assets and capital intensity ratio for the CA, with the controlling effect of error terms in the data set, observed for 140 firms over last 9 years.

$$(Current\ Assets - CA) = a_0 + \sum_{t=9}^{i\sim140} B1X1(Operating\ profit\ margin - OPM) + \sum_{t=9}^{i\sim140} B2X2(Gross\ profit\ margin - GPM) + \sum_{t=9}^{i\sim140} B3X3(Net\ profit\ margin - NPM) + \sum_{t=9}^{i\sim140} B4X4(EBITTOADMIN) + \sum_{t=9}^{i\sim140} B5X5(\text{OPERTATIONALEXTOEBIT}) + \sum_{t=9}^{i\sim140} B6X6(\text{Fixed Assets} - \text{FA}) + \sum_{t=9}^{i\sim140} B7X7(\text{Capital Intensity} - \text{CAPITALINT}) +$$

Equation 1

Equation 2 indicates the effect of operational efficiency and presence of fixed assets investment for the current liabilities for the whole sample of the study.

$$(Current\ Libilities - CL) = a_0 + \sum_{t=9}^{i\sim140} B1X1(Operating\ profit\ margin - OPM) + \sum_{t=9}^{i\sim140} B2X2(Gross\ profit\ margin - GPM) + \sum_{t=9}^{i\sim140} B3X3(Net\ profit\ margin - NPM) + \sum_{t=9}^{i\sim140} B4X4(EBITTOADMIN) + \sum_{t=9}^{i\sim140} B5X5(\text{OPERTATIONALEXTOEBIT}) + \sum_{t=9}^{i\sim140} B6X6(\text{Fixed Assets} - \text{FA}) + \sum_{t=9}^{i\sim140} B7X7(\text{Capital Intensity} - \text{CAPITALINT}) + \mu$$

Equation 2

Equation 3 reflects the NWC balance as key proxy of financial supply chain through operational efficiency indicators, fixed assets and capital intensity ratio.

$$(Net\ Working\ Capital - NWC) = a_0 + \sum_{t=9}^{i\sim140} B1X1(Operating\ profit\ margin - OPM) + \sum_{t=9}^{i\sim140} B2X2(Gross\ profit\ margin - GPM) \sum_{t=9}^{i\sim140} B3X3(Net\ profit\ margin - NPM) + \sum_{t=9}^{i\sim140} B4X4(EBITTOADMIN) + \sum_{t=9}^{i\sim140} B5X5(\text{OPERTATIONALEXTOEBIT}) + \sum_{t=9}^{i\sim140} B6X6(\text{Fixed Assets} - \text{FA}) + \sum_{t=9}^{i\sim140} B7X7(\text{Capital Intensity} - \text{CAPITALINT}) + \mu$$

Equation 3

Under equation 4 cash balance is assumed as key indicator of financial supply chain for both fixed assets and operational efficiency

$$(Cash) = a_0 + \sum_{t=9}^{i\sim140} B1X1(Operating\ profit\ margin - OPM) + \sum_{t=9}^{i\sim140} B2X2(Gross\ profit\ margin - GPM) + \sum_{t=9}^{i\sim140} B3X3(Net\ profit\ margin - NPM) + \sum_{t=9}^{i\sim140} B4X4(EBITTOADMIN) + \sum_{t=9}^{i\sim140} B5X5(\text{OPERTATIONALEXTOEBIT}) + \sum_{t=9}^{i\sim140} B6X6(\text{Fixed Assets} - \text{FA}) + \sum_{t=9}^{i\sim140} B7X7(\text{Capital Intensity} - \text{CAPITALINT}) + \mu$$

Equation 4

For equation 5, effect of operational efficiency with the capital asset and capital ratio is observed for inventory balance, with the controlling effect of unobserved factors.

$$(Inventory) = a_0 + \sum_{t=9}^{i\sim140} B1X1(Operating\ profit\ margin - OPM) + \sum_{t=9}^{i\sim140} B2X2(Gross\ profit\ margin - GPM) + \sum_{t=9}^{i\sim140} B3X3(Net\ profit\ margin - NPM) + \sum_{t=9}^{i\sim140} B4X4(EBITTOADMIN) + \sum_{t=9}^{i\sim140} B5X5(\text{OPERTATIONALEXTOEBIT}) + \sum_{t=9}^{i\sim140} B6X6(\text{Fixed Assets} - \text{FA}) + \sum_{t=9}^{i\sim140} B7X7(\text{Capital Intensity} - \text{CAPITALINT}) + \mu$$

Equation 5

For equation 6, effect of operational efficiency with the capital asset and capital ratio is observed for creditor's account, with the controlling effect of unobserved factors.

$$(Creditors) = a_0 + \sum_{t=9}^{i\sim140} B1X1(Operating\ profit\ margin - OPM) + \sum_{t=9}^{i\sim140} B2X2(Gross\ profit\ margin - GPM) + \sum_{t=9}^{i\sim140} B3X3(Net\ profit\ margin - NPM) + \sum_{t=9}^{i\sim140} B4X4(EBITTOADMIN) + \sum_{t=9}^{i\sim140} B5X5(\text{OPERTATIONALEXTOEBIT}) + \sum_{t=9}^{i\sim140} B6X6(\text{Fixed Assets} - \text{FA}) + \sum_{t=9}^{i\sim140} B7X7(\text{Capital Intensity} - \text{CAPITALINT}) + \mu$$

Equation 6

Equation 7 reflects the relationship between CA, operational efficiency and both indicators of capital assets for the whole sample.

$$(Current\ Assets - CA) = a_0 + \sum_{t=9}^{i\sim140} B1X1(Operating\ profit\ margin - OPM) + \sum_{t=9}^{i\sim140} B2X2(Gross\ profit\ margin - GPM) + \sum_{t=9}^{i\sim140} B3X3(Net\ profit\ margin - NPM) + \sum_{t=9}^{i\sim140} B4X4(EBITTOADMIN) + \sum_{t=9}^{i\sim140} B5X5(\text{OPERTATIONALEXTOEBIT}) + \sum_{t=9}^{i\sim140} B6X6(\text{Fixed Assets} - \text{FA}) + \sum_{t=9}^{i\sim140} B7X7(\text{Capital Intensity} - \text{CAPITALINT}) + \sum_{t=9}^{i\sim140} B8X8(\text{Financial Assets} - \text{FINASSET}) + \mu$$

Equation 7

Equation 8 studies the empirical association between CL, operational efficiency indicators, and capital assets.

$$(Current\ Libilities - CL) = a_0 + \sum_{t=9}^{i\sim140} B1X1(Operating\ profit\ margin - OPM) + \sum_{t=9}^{i\sim140} B2X2(Gross\ profit\ margin - GPM) + \sum_{t=9}^{i\sim140} B3X3(Net\ profit\ margin - NPM) + \sum_{t=9}^{i\sim140} B4X4(EBITTOADMIN) + \sum_{t=9}^{i\sim140} B5X5(\text{OPERTATIONALEXTOEBIT}) + \sum_{t=9}^{i\sim140} B6X6(\text{Fixed Assets} - \text{FA}) + \sum_{t=9}^{i\sim140} B7X7(\text{Capital Intensity} - \text{CAPITALINT}) + \sum_{t=9}^{i\sim140} B8X8(\text{Financial Assets} - \text{FINASSET}) + \mu\ \mu$$

Equation 8

Equation 9 assumed the factor of NWC for the capital assets, operational efficiency and capital intensity.

$$(Net\ Working\ Capital - NWC) = a_0 + \sum_{t=9}^{i\sim140} B1X1(Operating\ profit\ margin - OPM) + \sum_{t=9}^{i\sim140} B2X2(Gross\ profit\ margin - GPM) \sum_{t=9}^{i\sim140} B3X3(Net\ profit\ margin - NPM) + \sum_{t=9}^{i\sim140} B4X4(EBITTOADMIN) + \sum_{t=9}^{i\sim140} B5X5(\text{OPERTATIONALEXTOEBIT}) + \sum_{t=9}^{i\sim140} B6X6(\text{Fixed Assets} - \text{FA}) + \sum_{t=9}^{i\sim140} B7X7(\text{Capital Intensity} - \text{CAPITALINT}) + \sum_{t=9}^{i\sim140} B8X8(\text{Financial Assets} - \text{FINASSET}) + \mu\ \mu$$

Equation 9

Equation 10 indicates the effect of operational efficiency, capital assets and capital intensity on cash account.

$$(Cash) = a_0 + \sum_{t=9}^{i\sim140} B1X1(Operating\ profit\ margin - OPM) + \sum_{t=9}^{i\sim140} B2X2(Gross\ profit\ margin - GPM) + \sum_{t=9}^{i\sim140} B3X3(Net\ profit\ margin - NPM) + \sum_{t=9}^{i\sim140} B4X4(EBITTOADMIN) + \sum_{t=9}^{i\sim140} B5X5(\text{OPERTATIONALEXTOEBIT}) + \sum_{t=9}^{i\sim140} B6X6(\text{Fixed Assets} - \text{FA}) + \sum_{t=9}^{i\sim140} B7X7(\text{Capital Intensity} - \text{CAPITALINT}) + \sum_{t=9}^{i\sim140} B8X8(\text{Financial Assets} - \text{FINASSET}) + \mu\ \mu$$

Equation 10

Equation 11 indicates the effect of operational efficiency, capital assets and capital intensity on inventory account.

$$(Inventory) = a_0 + \sum_{t=9}^{i\sim140} B1X1(Operating\ profit\ margin - OPM) + \sum_{t=9}^{i\sim140} B2X2(Gross\ profit\ margin - GPM) + \sum_{t=9}^{i\sim140} B3X3(Net\ profit\ margin - NPM) + \sum_{t=9}^{i\sim140} B4X4(EBITTOADMIN) + \sum_{t=9}^{i\sim140} B5X5(\text{OPERTATIONALEXTOEBIT}) + \sum_{t=9}^{i\sim140} B6X6(\text{Fixed Assets} - \text{FA}) + \sum_{t=9}^{i\sim140} B7X7(\text{Capital Intensity} - \text{CAPITALINT}) + \sum_{t=9}^{i\sim140} B8X8(\text{Financial Assets} - \text{FINASSET}) + \mu\ \mu$$

Equation 11

Equation 12 specifies the effect of operational efficiency, capital assets and capital intensity on creditors' account.

$$(Creditors) = a_0 + \sum_{t=9}^{i\sim 140} B1X1(Operating\ profit\ margin - OPM) + \sum_{t=9}^{i\sim 140} B2X2(Gross\ profit\ margin - GPM) + \sum_{t=9}^{i\sim 140} B3X3(Net\ profit\ margin - NPM) + \sum_{t=9}^{i\sim 140} B4X4(EBITTOADMIN) + \sum_{t=9}^{i\sim 140} B5X5(\text{OPERTATIONALEXTOEBIT}) + \sum_{t=9}^{i\sim 140} B6X6(\text{Fixed Assets} - \text{FA}) + \sum_{t=9}^{i\sim 140} B7X7(\text{Capital Intensity} - \text{CAPITALINT}) + \sum_{t=9}^{i\sim 140} B8X8(\text{Financial Assets} - \text{FINASSET}) + \mu$$

Equation 12

5. Results and Discussions

Table 1 indicates the descriptive results for both independent and dependent variables of the study. To examine the effect of financial supply chain, major components of working capital under the title of current assets (CA), current liabilities (CL), cash, inventory, creditor and overall value of net working capital (NWC) are added. While for the operational efficiency, four indicators under the title of gross profit margin (GPM), operating profit margin (OPM) and net profit margin (NPM) and EBIT to admin expense ratio (EBITAD) are calculated and added in the model. to indicate the value of capital assets, both fixed assets (FA) and financial assets (FINA) are observed for descriptive and empirical facts. Finally, Capital intensity ratio (CAPITALINT) is added in the model to observe the fact that how much capital is needed by the company to generate single amount of cash flow in the form of revenue. Overall observation 1260 for each of the variables indicates no missing observation for 140 firms during the time span of last 9 years. For CA, mean value of 5.60 has a deviation of 1.49 from its mid-point, with the minimum trend of 3.64 and maximum of 8.34. for CL, the score for mean and standard deviation is found to be 3.20 and 2.13 respectively. For cash average score is 1.10 indicates the third lowest mean score in all the factors of financial supply chains. For the inventory log value of 1.106 for mean score explains it as a lowest average amount in overall working capital components. For the operational efficiency maximum mean value is associated with EBITtoADMIN; 4.77 and minimum is 1.59 for NPM. For fixed assets (FA), logged value has a mean score of 8.69 with the minimum value of 7.31 and for the FINA is 5.94. association between these variables is further observed through correlation analysis as presented under table 2.

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std.Dev.	Min	Max
CA	1260	5.660000	1.490	3.643	8.340
CL	1260	3.20e+07	2.132	3.412	1.278
NWC	1260	2.84e+07	1.835	1.301	7.247
CASH	1260	1.10e+07	1.753	3.520	5.390
INVENTORY	1260	1.06e+07	1.632	2.057	6.035
CREDITOR	1260	1.03e+08	4.367	1.258	2.658
OPM	1260	3.35e+08	3.230	5.521	1.713
GPM	1260	4.77e+07	1.872	3.981	1.062
NPM	1260	1.59e+07	1.905	5.782	1.172
EBITTOADMIN	1260	6.46e+07	2.236	1.062	8.783
FA	1260	8.69e+08	4.971	7.317	2.635
FINA	1260	5.94e+07	7.560	4.451	6.762
CAPITALINT	1260	4.78e+07	7.750000	2.29e+07	4.632

Pearson correlation is calculated and presented below for all the variables of the study. Positive and high correlation is found for current assets to net working capital; .687. while for the CA to CL, this association is positive and good. For CL and NWC highly

positive correlation of .959 is observed, indicating a significant relationship. For CL and creditor, higher interdepdency, significant at 10 percent significance level is observed. While for the OPM, and CL this association is high and near to the perfect correlation. In addition, net working capital is positively associated with all the variables. While the factor of cash has a negative but maximum above moderate level of relationship with both explanatory and outcome factors of the study. for creditors and FA weak and negative association is observed for all firms. However, for the OPM highest correlation is identified with the Financial assets; .635. for NPM, capital intensity ratio is positively and highly associated with the coefficient of .698, explains that higher net profit margin can be interdependent with the more earning from the capital, being invested in the business.

After the correlation analysis, VIF test is applied to check either the higher correlation between the variables can be problematic or good for the empirical results. The tolerance level for VIF can be observed through individual mean and overall mean score of the variables. Table 3 indicates VIF score, 1/VIF and mean VIF respectively. For all the variables, tolerance level explains that there is no problem of higher correlation between the variables, hence empirical analyses can be conducted based on the financial supply chain, operational efficiency and capital assets for the selected firms.

Table 3 demonstrates the findings for the current assets, current liabilities and net working capital, assumed as the key titles for financial supply chain. For the explanatory factors, operational efficiency considers operating profit margin, gross profit margin, net profit margin, operational exp. to EBIT and EBIT to admin expenses are added. Model 1 to 3 predicts the effect of operational efficiency and fixed assets. For CA, effect of OPM is -.0035 indicates that increasing operational efficiency is negatively affecting the CA of selected firms. while for CL, effect of OPM is 1.070, significant at 1 percent with lower deviation in robust coefficients. The effect of OPM in NWC is .392 indicates that increasing operational efficiency putting a positive impact on NWC for the whole sample. Through gross efficiency indicator, effect on CA, CL and NWC is found to be positive and highly significant, means that higher gross profit leads to the promotion of financial supply chain management in selected firms. However, for NPM, effect on first three indicators of supply chain is found to be negatively significant with the low error in the coefficients. For the EBITTOADMIN ratio, significant negative effect on CA and NWC, and positive significant effect on CL is found. While the factor of operational expense to EBIT has a significant positive influence on first three outcome factors of the study. This implies that increasing operational efficiency is positively associated with the financial supply chain, hence management's attention is significantly required for consistency of similar relationship. While the factor of FA has its significant and negative relationship with CA and NWC with robust coefficients of -.272 and -1.59. for the capital intensity, coefficient of -6.44 indicates a highest negative change in CL. For NWC, impact of .818 indicates a positively significant variation.

under table 4, impact of operational efficiency, capital fixed assets, and capital intensity is observed for next three measures of financial supply chain; cash, inventory, and creditor account. for OPM, impact on all three measures of financial supply chain is positively significant at 1 percent, indicates that operational efficiency causing an increase for the financial supply. For GPM, effect on cash is -.321, explains that there exists a significant but negative association between the both. For inventory and creditor accounts, higher GPM causing an increase in their balance sheet account, hence more amount of financial supply chain in the financial supply chain of selected firms. The effect of EBITTOADMIN is positive for the cash while for inventory and creditors, its effect is significantly negative, means that higher the EBIT to admin expense ratio causing a decline in inventory and creditors' balance. Through operational expenses to EBIT, significant & negative effect is observed for 2nd three indicator of financial supply chain. Meanwhile, impact of fixed assets on financial supply chain is positive for the cash & creditors, but negative for the inventory. Overall explanatory power of model four is .725 percent, explains a good variation in cash by set of variables. For inventory is 81.9 percent and for creditor is 86.3 percent respectively.

Table 5 explains the effect of operational efficiency, both financial and fixed assets and capital intensity ratio on first three measures of financial supply chain. For OPM, significantly negative effect of -.00667 is observed. While for CL and NWC, operational efficiency has a significant positive impact of 1.067 and .385 respectively. For gross efficiency through

GPM, all three indicators of financial supply chain are significantly and positive associated to it. The value of standard regression robust error is very minimum for the coefficient of OPM and GPM. For the net operational efficiency, it is observed that all three measures of financial stability are significantly but negatively related. It implies that higher NPM is causing a decline in the accounts of CA, CL and NWC, which needs to be seriously addressed by the relevant authorities.

Table 2: Pairwise correlations

VARIABLES	CA	CL	NWC	CASH	INVENTORY	CREDITOR	OPM	GPM	NPM	FA	FIN	CAPITALINT
CA	1.000											
CL	0.616	1.000										
NWC	0.687	0.959***	1.000									
CASH	0.485	0.518	0.635	1.000								
INVENTORY	0.521	0.457	0.574	-0.170	1.000							
CREDITOR	0.540**	0.905*	0.421	-0.458	0.737**	1.000						
OPM	0.429	0.936**	0.246	-0.606**	0.435**	0.421	1.000					
GPM	0.520	0.495	0.563	-0.022	0.166	0.641*	0.421	1.000				
NPM	0.283	0.757	0.189	-0.715	0.316	0.274	0.254	0.280**	1.000			
FA	0.484	0.748	0.453	0.283	-0.319	-0.139	0.165	0.230	0.370*	1.000		
FIN	0.575	0.908**	0.462	-0.496	0.132*	0.768**	0.635	0.144	0.396**	0.393**	1.000	
CAPITALINT	0.578	0.914	0.367	-0.512	0.121	0.661	0.441	0.028	0.698	0.498	0.235	1.000

Table 3: Variance inflation factor

	VIF
CAPITALINT	1.896
FA	4.673
OPM	3.995
OPERTOEBIT	5.413
NPM	6.409
EBITTOADMIN	5.666
GPM	3.895
Mean VIF	4.5638

Table 4: Financial Supply chain management component group 1: CA, CL, NWC

VARIABLES	(1) CA	(2) CL	(3) NWC
OPM	-0.00305	1.070***	0.392***
	(0.00260)	(0.00206)	(0.00518)
GPM	0.0282***	0.106***	0.163***
	(0.00155)	(0.00122)	(0.00308)
NPM	-0.0396***	-0.233***	-0.223***
	(0.00117)	(0.000921)	(0.00232)
EBITTOADMIN	-0.0514***	0.152***	-0.251***
	(0.000985)	(0.000778)	(0.00196)
OPERTOEBIT	0.0502***	0.412***	0.182***
	(0.000791)	(0.000625)	(0.00157)
FA	-0.272***	3.022***	-1.594***
	(0.0540)	(0.0426)	(0.107)
CAPITALINT	0.00170	-6.444***	0.818***
	(0.0633)	(0.0500)	(0.126)
Constant	1.153e+07***	9.814***	1.316***
	(115,874)	(91,531)	(230,584)
Observations	1,260	1,260	1,260
R-squared	0.902	.880	0.917

Note: significant levels are *** p<0.01, ** p<0.05, * p<0.1

Table 6 indicates the regression findings for the determinants of financial supply chain through operational efficiency, both fixed and financial assets of the business and capital intensity ratio.

for OPM, effect on current assets is negatively significant, while for CL and NWC coefficients of 1.067 and .385 are positively significant at 1 percent indicating a direct relationship between financial supply chain and operational efficiency. For GPM, all three measures as presented under table 6 have their significant and positive association, means that higher gross efficiency of the business leads to the higher value of financial supply chain in selected firms. However, for net profit margin, CA, CL and NWC are found to be negatively and significantly associated, means that higher net operational efficiency has its negative link with the financial supply chain. For EBITTOADMIN, impact on CA is -.0352 indicates its significant but negative influence. While Cl and NWC are positively associated with fourth factor of operational efficiency. In addition, effect of fixed assets on first three measures of supply chain have a mixed trend. While the factors of financial assets in the balance sheet of selected firms have significantly positive link with financial supply chain. This fact implies that higher value of financial assets like bonds, debenture and TFC can positively influence on financial supply chain.

Table 5: Financial Supply chain management component Group 2

VARIABLES	(4) Cash	(5) inventory	(6) Creditor
OPM	0.156***	0.139***	.490***
	(0.00230)	(0.00495)	(1.462)
GPM	-0.321***	.053***	.630***
	(0.00137)	(0.00294)	(8.65e-10)
NPM	-0.272***	0.000937	-5.18***
	(0.00103)	(0.00222)	(6.510)
EBITTOADMIN	1.062***	-0.283***	-1.87***
	(0.000872)	(0.00187)	(5.51)
OPERTOEBIT	-0.136***	-0.142***	-8.933***
	(0.000701)	(0.00151)	(4.43e-10)
FA	18.26***	-10.62***	1.006***
	(0.0478)	(0.103)	(3.02e-08)
CAPITALINT	-15.25***	10.80***	-1.06***
	(0.0560)	(0.120)	(3.548)
Constant	-1.118***	3.187***	0.520***
	(1.591)	(2.425)	(0.0648)
Observations	1,260	1,260	1,260
R-squared	0.725	0.819	0.863

Note: significant levels are *** p<0.01, ** p<0.05, * p<0.1

Table 7 indicates the impact of operational efficiency, fixed and financial assets and capital intensity ratio for the next three indicators of financial supply chain. It is found that operating profit margin is significantly & positively impacting on cash, inventory and creditors account in the balance sheet of the selected firms. for gross profit margin, cash account is negatively associated, while inventory and creditors have their significant & positive association with financial supply chain. For net profit margin, all three indicators are significantly & negatively associated. For EBITTOADMIN ratio, it is observed that cash value is significantly and positively increasing, while inventory and creditors accounts are significantly but negatively associated to it. For fixed assets, it is observed that positively impact on cash is 18.30 with the standard error of .0482. While for the inventory, coefficient of -10.71 indicates that fixed assets are significantly but negatively associated to it. However, positive and significant impact of 1.02 is recorded for creditors account.

For the financial assets, it is observed that financial supply chain accounts like cash of the business has a significant but negative link, which means that higher investment in the financial assets leads to the lowers value of cash in the business to settle the financial matters of supply chain management in selected business firms. However, for inventory and creditors account, financial assets indicate their significant impact of .0022 and 6.531. for capital intensity ratio, it is observed that cash account has a negative but significant impact of 15.29, for inventory is 10.89 and for creditors is -1.030 approximately. The value of explained variation as per the selected indicators of financial supply chain in case of cash is 79.9 percent, for inventory is .877 percent and for creditors is .624 percent.

Table 6: Financial Supply chain management component Group 2

VARIABLES	(1) CA	(2) CL	(3) NWC
OPM	-0.00667**	1.067***	0.385***
	(0.00274)	(0.00216)	(0.00545)
GPM	0.0284***	0.106***	0.163***
	(0.00152)	(0.00120)	(0.00303)
NPM	-0.0352***	-0.230***	-0.214***
	(0.00172)	(0.00136)	(0.00343)
EBITTOADMIN	-0.0497***	0.154***	-0.247***
	(0.00114)	(0.000903)	(0.00227)
OPERTOEBIT	0.0480***	0.410***	0.178***
	(0.000984)	(0.000778)	(0.00196)
FA	-0.320***	2.984***	-1.688***
	(0.0544)	(0.0430)	(0.108)
FINASSET	0.0117***	0.0922***	0.0232***
	(0.000292)	(0.000231)	(0.000581)
CAPITALINT	0.0506	-6.406***	0.916***
	(0.0633)	(0.0500)	(0.126)
Constant	1.151***	9.801***	1.312***
	(1.969)	(9.606)	(2.774)
Observations	1,260	1,260	1,260
R-squared	0.905	0.832	0.928

Note: significant levels are *** p<0.01, ** p<0.05, * p<0.1

Table 7: With the presence of financial assets and fixed assets

VARIABLES	(1) Cash	(2) inventory	(3) creditor
OPM	0.159***	-0.146***	1.000***
	(0.00242)	(0.00521)	(1.53e-09)
GPM	-0.321***	1.053***	.030***
	(0.00135)	(0.00289)	(0.110)
NPM	-0.276***	-.930***	-4.93***
	(0.153)	(0.028)	(2.63)
EBITTOADMIN	1.060***	-0.280***	-1.772***
	(0.00101)	(0.00217)	(6.393)
OPERTOEBIT	-0.134***	-0.146***	-1.008***
	(0.000872)	(0.00187)	(5.120)
FA	18.30***	-10.71***	1.026***
	(0.0482)	(0.104)	(3.508)
FINASSET	-0.00103***	0.00222***	6.5310***
	(0.000258)	(0.000555)	(1.6310)

CAPITALINT	-15.29***	10.89***	-1.0306***
	(0.0561)	(0.121)	(3.5408)
Constant	-1.18***	3.182***	0.510***
	(102,675)	(220,606)	(0.0649)
Observations	1,260	1,260	1,260
R-squared	0.799	0.877	.624

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

6. Conclusion and Future Directions.

For the performance management, consideration of financial dimensions of supply chain plays their vital role. Present study aims to consider various items, appearing in the balance sheet of the firms which have their direct or indirect link with the supply chain. For this purpose, current assets, current liabilities, net working capital, cash account, creditors and inventory to reflect the financial affairs of supply chain practices. For the performance and efficiency measurement, various proxies are presented in existing literature of finance and business management. To analyze the impact of operational efficiency, factors like gross profit margin, operating profit margin, net profit margin, earnings before interest and tax to admin expense, and operational expenses to EBIT ratio are added in the model. For capital assets, two indicators under fixed and financial assets are added to check their significant association with financial supply chain. While the ratio of capital intensity is added to examine the amount of capital required to generate the revenue for the business during a specific time. Two folded data analysis technique is applied based on the consideration of both fixed and financial assets. A sample of 140 manufacturing firms during the time of last 9 year is observed for both descriptive and regression analysis. Descriptive findings indicate an overall trend of the data set for the regression facts. While correlation findings explain a mixed trend of association between the variables. VIF expresses the tolerance level of the problem of multicollinearity. In the presence of fixed assets, it is observed that operational efficiency is significantly associated to CL and NWC, while gross operational efficiency has a significant but positive linkage with CA, CL and NWC. For NPM, all first three factors of financial supply chain have their significant but negative influence. While for EBITTOADMIN, significantly negative relationship with CA and NWC is recorded and positively significant for CL is observed. For FA, it is observed that higher investment in long term assets leads to the decline in the value of current assets, while increasing the value of current liabilities. Therefore, overall significant but negative influence on net working capital.

Under 2nd regression findings for the cash, inventory and credit accounts, based on the presence of fixed assets investment, operational efficiency has a positive influence. While GPM has a significant & positive influence for inventory and creditors but negative for the cash account. Meanwhile, net profit margin has its significant relationship with cash and creditors. For the fixed assets, it is observed that higher investment in the fixed assets leads to the more amount of cash in the business, while lowering of inventory but more amount of creditor's balance in the firms account. Addition of financial assets in the regression equations has created some meaningful facts. It is observed that gross profit margin has their significant and positive influence on first three indicator of financial supply chain, while net profit margin has a negative influence under the consideration of full sample. For OPREBIT, CA, CL and NWC are positively associated. However, with the addition of financial assets, fixed assets have their significant but negative influence on CA and NWC. While the factor of FINASSET explains that increasing value of investment in these assets can lead to more amount of CA, CL and finally NWC. Regression facts for the last three measures of financial supply chain explains that OPM has a significant impact on inventory and creditors. While for the NPM, significant and negative impact is recorded on cash, inventory and creditors account. With the presence of financial assets account, it is found that cash account will be declined after the investment in such assets. However, both inventory and creditors are found to be positively associated with FINASSET.

Based on the above findings, study is providing some meaningful contribution in the present body of literature. At first, it is observed that very little attention is paid towards the financial indicators of supply chain in the region of Kuwait, which is covered through present study. In addition, operational efficiency is assumed to the significant factor which can impact on financial dimensions of supply chain. By focusing on various indicators of operational efficiency, this study contributes towards exploring the relationship between the both. At third, investment decisions for the fixed and financial assets can put their pressure on financial supply chain which is not addressed in present body of literature. Managing the components of financial supply chain is not an independent decision as it is linked with both operational efficiency and assets investment planning as well. For better and strategic decision, integration between the selected factors of the study is very much important as it is found to be the missing part in the literature. Due to very limited focus on the integration of financial dimensions of supply china, operational efficiency, this study assumed to be among the very first contribution. However, it also assumes various limitations as well. At first, secondary measures of financial supply chain are observed in the literature and similar pattern is adopted. While primary measures should also be considered in coming research to cope with this gap. At second, operational efficiency is assumed to be a better indicator if measure through cost-based factors like cost of goods sold or cost of raw material which is directly associated with the supply chain process. At third, contemporary literature focus is on the operational significance of supply chain, financial performance and economic sustainability, which is ignored in present study. Future research considers these limitations for the better outcomes and more generalizability of the empirical findings. Besides, application of some advance analysis techniques like structural models are also missing in present study which needs to be addressed in coming time. Besides, as per the practical implication, this study covers the following points. At first it provides the new look for the financial supply chain, operational efficiency and capital assets. Management of both manufacturing and trading concerns can focus on the association between these factors specifically in financial affairs. Besides, this study can be viewed as a significant document for those who are going to conduct their research in the field of supply chain, finance and business management as well.

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