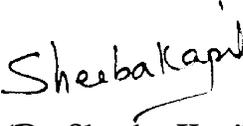


FROM THE EDITOR'S DESK

The global economy is expected to expand 4 per cent in 2021. This is under the assumption that COVID-19 vaccine rollout would cover basic population by year end. However, the economic recovery is expected to be slow according to World Bank Report, *Global Economic Prospects*, January 2021. The US GDP is expected to expand 3 to 3.5 per cent in 2021, after an estimated 3.6 per cent contraction in 2020. India's economy, South Asia's largest, is expected to grow around 10 per cent in the fiscal year 2021-22. However, the pandemic is yet to controlled, and vaccination of whole population is a big challenge. Further mutation and subsequent wave may jeopardize the healthcare systems across world and economies. Yet we hope that vaccine will be a success and India will be zero-covid country by year end.


(Dr. Sheeba Kapil)

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Foreign Trade Finance and its Impact on International Trade

A Systematic Literature Review

Zakiya Begum* and Naseeb Ahmad**

Global Financial crisis of 2007-08 was the most severe and the deepest economic slump since World War II (Shelburne, 2010) whereby the world trade experienced a higher downfall than the fall in production. As a consequence of the collapse of the world's major financial institution, the financial market dried up. Trade finance market was entangled with various issues like high financing cost, stringent capital norms, high demand for collateral securities and, shortage of liquidity at banks, and reduced maturity period of foreign trade finance products. Due to which the trade financing gap had widened. While around 80-90 per cent of International trade is depend on trade finance (WTO). The objective of this paper is to systematically present a review of the existing studies that have undertaken to reveal the impact of foreign trade financing shocks during 2008 financial crisis on world trade deterioration. We followed the methodology formulated by Tranfield, Deneyar and Smart (2003) for conducting a systematic literature review. With the help of snowball and direct database search techniques, we identified 34 papers after the period of 2008 for the study.

Keywords: Financial crisis 2008, Foreign trade finance, Bank-intermediated trade finance, Export credit guarantees and insurance, World trade collapse, Credit crunch 2008, and Banking Crisis 2008.

Introduction

INTERNATIONAL trade accelerates the economic growth and development of the country. Moreover, it increases the competition among nations that results in providing better services and a quality product at low cost, attracting more foreign exchange, full deployment of resources and diffusion of knowledge and technology. The success of

international trade depends on a sufficient flow of trade finance. Many studies (Abor *et al.*, 2014; Greenaway *et al.*, 2005; Kumarsamy and Singh, 2018; Jaud *et al.*, 2014; Muuls, 2015) confirmed that financial development and finance both are the significant determinants for firms' entry and export performance. Further, Bellone *et al.* (2010) say "Better access to external financial resources increases the probability to start exporting and also shortens the time before firms decide to serve foreign customers".

The dream of going global can be possible when the firms are access to sufficient finance. Exporting firms bear several risks

and high entry costs. For entering successfully into an international market, firms are required to make customized products and services matching the foreign regulations and taste and also provide them at a competitive price. In addition to this, firms are also required to make heavy investments in up-front fixed costs that are incurred on marketing research, product development, advertising, acquiring new technology, packaging, and channel of distribution. Further, "shipping longer distances also increase the risk of damage that adds to insurance cost" (Demir, 2014). Credit constraints reduce the opportunities for firms to enter into the foreign market especially in

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industries that largely use external finance.

As a consequences of 2008 financial crisis, financial market collapsed which leads a disruption in the growth of international trade. This is the most severe and the deepest economic slump since World War II whereby the world trade experienced a higher downfall than the fall in production. With the collapse of big financial institutions, the trade finance market (inter-firm and bank-intermediated) dried up. Firms dealing in international trade were not able to access trade finance because of high financing cost or high-risk premium, shortage of funds at the bank, and stringent credit regulations. Banks were reluctant to extend credit to avoid the chances of counterparty and country risks. If the banks extended credit to firms, they were demanding high collateral securities, guarantees, and insurance and reducing the maturity period of trade finance products to avoid their own risk. This has made the economist and policy-maker think carefully whether limited access to trade finance was the main reason for a great trade collapse or not.

The aim of this research is to present a systematic literature review that establishes a relationship between the shortage of foreign trade finance and a trade collapsed during the financial crisis of 2008. To the best of my knowledge, no such systematic review-based study has yet been done exclusively on this topic. Such a review would be of great worth as it presents the synthesized knowledge on the topic and shows

the area for future research. This paper is arranged as follows. Section 2 describe trade finance and its importance. Section 3 highlights the economic condition during the 2008 financial crisis. Section 4 summarizes the literature that investigates the primary reasons driving the collapse in world trade. Section 5 presents the literature that outlines the factors channelizing trade finance shocks. Section 6 review the literature to analyze whether limited access to trade finance caused a great trade collapse or not. Sections 7 and 8, present the discussion and conclusion of reviewed papers respectively.

Research Methodology

A systematic literature review is a scientific approach that identifies and synthesises the existing literature to outline the answer to the given problem. This approach reduces the likelihood of bias within a review and ensures the inclusion of complete literature on the selected subject. Several authors suggested different steps to conduct a systematic literature review. However, we applied the following methodological steps formulated by Tranfield *et al.* (2003):



In the first stage (planning the review), we identified the need for the review and developed the review criteria that are presented in the introduction section. In the next stage, we identified the research paper/articles that helped in conducting the review. We

applied the snowballing technique and direct database search technique for extracting literature. Financial crisis 2008, foreign trade finance, world trade collapse, bank-intermediated trade finance, export credit guarantees and insurance, credit crunch, Basel Norms and banking crisis 2008 were used as a “search string/ keywords” to extract literature from research database: ABI/ Inform (Pro-Quest), Scopus, SSRN, ISI web of knowledge, EBSCO Business Source Elite, Elsevier, Wiley Online Library and JSTOR. In the third stage, we summarized the paper findings that are shown in Sections 4, 5 and 6.

A total of 34 papers published after 2008 were selected for the review and discussion. These papers are arranged into three categories:

- The first category contains papers focusing on major factors causing world trade collapse.
- The second category contains the papers that highlighted the factors which channelized the credit shocks and,
- The final category exclusively includes the papers that empirically define the relationship between trade finance crisis and a great reduction in world trade .

Trade Finance: A Lifeline of International Trade

Firms generally finance their trade transactions through internal sources (retained earnings) and external sources. According to WTO, “around 80 to 90 per cent of international trade relies on trade

finance". Trade finance refers to the financial tools/products that are used by firms to facilitate international/domestic trade. Credit extended by exporters and importers to each other under open account and cash-in-advance payment terms is known as "inter-firm trade credit". Under *open account transactions*, exporters extend credit to importers by the way of shipping the goods before payment is due whereas in *cash-in-advance* importer provides credit to exporters by giving advance payment before shipment. Open account transactions are largely used by the importer as it gives the advantage of cash flow and cost to them, but the risk of non-payment makes open account transactions riskier for exporters. Opposite to this, cash in advance transactions imposes two problems on importers - the risk of non-performance of contract and working capital burden.

On the other hand, a wide range of products such as working capital loans, buyer's credit, letter of credit, export credit insurance and guarantees, factoring and forfeiting, etc. provided by financial institutions and banks are referred to Bank-intermediated finance. Exporter/importer can mitigate the risk of non-payment/non-performance through export credit insurance and guarantees. When exporter do trade under open account, working capital finance is required for the purchase of raw material, labour, and other services to execute the export order. Such a finance is provided by commercial banks at the subsidized rate of interest. Further, banks also help in the execution of

the export sale, transfer of documents and payment transactions. That is way, the term trade finance generally imply for bank-intermediated trade finance (CGFS, 2014).

Economic Conditions during Financial Crisis

A dramatic increase in financial shocks provoked the growth of world output (real GDP) to reduce to 2.8 per cent in 2008 from 5.4 per cent a year earlier and further in 2009 negative growth rate was experienced (Figure 1).

The advanced economy felt the sharp contraction in GDP growth from 2.8 per cent in 2007 to .05 per cent and G7 economies (i.e. UK, Canada, Germany, the US, Japan, Italy and France) registered the highest negative growth of -0.3 per cent in 2008 and -3.8 per cent in 2009. While, developing and emerging nations, kept themselves away from the worst effect of crisis spread by the developed economies and accounted for slow

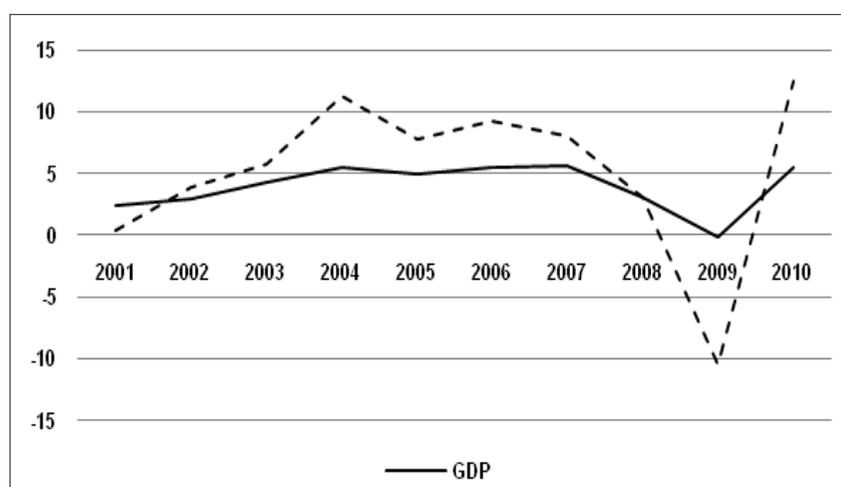
GDP growth of 5.8 per cent in 2008 and 3 per cent in 2009 while it was 8.6 per cent in 2007.

Gradually and slowly the growth rate improved after the second quarter of 2009 and developing and emerging economies accounted for a higher growth rate of 7.4 per cent in 2010, whereas advanced economy accounted for a low growth rate of 10 per cent in 2010. Even the five-year average growth rate for 2010-14 of advanced economies was very low as compared to the emerging and developing economies (Table 1).

Effect of Financial Crisis on World Trade

The most significant striking feature of global financial crisis is world trade deterioration. During the peak (Q4, 2008 to Q1, 2009) of the financial crisis, the global trade declined very sharply, steeply and in a highly synchronized fashion across the globe. The world trade declined to 2.9 per cent in 2008

FIGURE 1
WORLD GDP AND TRADE (PERCENTAGE CHANGE)



Source: World Economic Outlook Database (October 2014) IMF.

TABLE 1
SUMMARY OF WORLD OUTPUT/GDP GROWTH
(PERCENTAGE CHANGE)

Country Group Name	Annual Average		2005	2006	2007	2008	2009	2010
	2003-07	2010-14						
World	5.1	3.9	4.6	5.3	5.4	2.8	-0.6	5.1
Advanced economies	2.8	1.8	2.6	3.02	2.8	0.05	-3.5	3.0
Major advanced economies (G7)	2.9	1.8	2.5	2.9	2.1	-0.3	-3.8	2.8
European Union	3.5	0.9	2.2	3.7	3.3	0.7	-4.3	2.0
Developing and emerging nations	7.7	5.7	7.2	8.1	8.6	5.8	3	7.4
Commonwealth of Independent States	8.1	3.2	6.9	8.9	9	5.3	-6.4	4.6
Emerging and developing Asia	9.5	7.6	9.3	10.1	11.2	7.2	7.5	9.6
Emerging and developing Europe	5.9	3.4	5.9	6.5	5.5	3.1	-3	4.7

Source: World Economic Outlook Database (October 2014), IMF.

TABLE 2
SUMMARY OF WORLD TRADE OF GOODS AND SERVICES (%)

Country Group Name	Annual Average		2005	2006	2007	2008	2009	2010
	2003-07	2010-14						
World	8.3	5.8	7.6	9.2	8.1	2.9	-10.4	12.7
Advanced economies	7.3	5.3	6.1	8.7	7.4	2.2	-11.8	12.3
Major advanced economies (G7)	6.4	5.2	5.6	9.0	6.1	1.6	-13.3	12.6
Emerging and developing economies	11.1	6.7	11.6	10.5	9.7	4.4	-7.7	13.6
Commonwealth of Independent States	10.2	3.9	6.7	9.1	8.4	4.6	-14.1	7.5
Emerging and developing Asia	15.5	9.9	17.2	17.3	15.0	6.1	-7.6	22.2
Emerging and developing Europe	11.8	6.7	10.3	12.2	11.1	5.9	-7.9	10.7

Source: IMF, *World Economic Outlook Database*, October 2014.

from 8.1 per cent a year earlier, even this growth was low of the last five-year average growth (2003-07). Further, in 2009 the world trade experienced a negative growth rate of 10.4 per cent that shows a large fall in trade activity than world GDP (Table 2). The crisis severely affected the trade growth of advanced and transition economies as compared to developing economies. According to the World Bank Survey; 2009, approximately 67 per cent of firms in developing countries claim that reduction in exports is largely due to the loss of new orders and a fall in finance from buyers.

Effect of the Financial Crisis on Trade Finance

The success of world trade can't be imagined without trade finance. As a consequences of financial crisis, the financial market dried up due to which every size of firms dealing in international trade suffered in accessing trade finance (inter-firm and bank-intermediated). In spite of being a more secure and liquidated form of financing option than any other banking product, banks were reluctant to extend the trade finance. Banks used to minimize or avoid their own risks by demanding large guarantees and insurance, reducing the maturity period of trade finance products, and requiring high collateral securities from the customers. The main effect of the crisis can be seen in terms of increased pricing and fall in the value/volume of foreign trade finances as well.

TABLE 3
BANK-INTERMEDIATED TRADE FINANCE AND
MERCHANDISE EXPORTS

Groups of Countries	2008Q4 vs. 2007Q4		Jan. 2009 vs. Oct. 2008		2009Q2 vs. 2008Q4	
	Goods Exports	Trade Finance	Goods Exports	Trade Finance	Goods Exports	Trade Finance
Industrial Countries	-12.4	2.4	-31.0	-9.2	-13.5	-9.1
Sub-Saharan Africa	-11.2	1.4	-43.2	-8.1	-13.2	-3.0
Emerging Europe	-14.9	4.3	-33.0	-11.1	-11.8	-10.4
Southeast Europe/Central Asia	-8.1	-4.3	-54.5	-13.2	-30.6	-7.8
Emerging Asia incl. China and India	-0.4	9.1	-29.0	-9.7	-18.0	0.0
Developing Asia	0.4	4.2	-8.8	-9.1	0.8	-3.8
Middle East and the Maghreb	1.0	2.2	-20.4	-5.3	1.4	-5.3
Latin America	-10.4	4.8	-37.4	-9.5	-10.4	-13.7
Overall	-10.3	3.4	-32.2	-	-14.7	-7.5

Source: Adapted from Asmundson, Dorsey, Khachatryan, Niculcea, and Saito (2011), p. 16.

Paucity of distinguished (as includes both domestic and cross-border trade transactions) and historic data on trade finance makes it difficult to portray the exact reduction trade finance supply. Yet, the prominent step was taken by the pioneer organizations to conduct the various surveys (ICC, 2009; ICC, 2010; IMF-BAFT, 2009; IMF-BAFT 2010; World Bank 2009) to collect field data on trade finance to determine the significant effects of the crisis. Banks participated in IMF-BAFT and ICC surveys indicate that fall in demand is a primary factor for reduction in trade finance followed by the less availability of trade finance instruments in their institutions and stringent credit criteria.

Asmundson *et al.* (2011) reports “the value of bank-

intermediated trade finance was increased by 3.4 per cent in the first quarter of 2008 as compared to the same quarter of 2007”. This increase in trade finance may be attributed to increased perceptions of default; firms have shifted from open account/advance payment transactions to trade finance provided by banks/financial institutions. Moreover, in the peak of crisis (Jan. 2009 vs. Oct. 2008) the fall in the trade finance went up substantially across all-region, but the

reduction in the value of merchandise trade was higher for the same period. Further, merchandise trade shows lesser decline in 2nd quarter of 2009 and same in the case of trade finance. Across the product group, the value of the L/C fell sharply (Table 4). Banks limited their supply of trade finance for some specific countries and sectors. Weak emerging countries like Pakistan, Bangladesh, Vietnam, and Malaysia, etc. suffered badly (ICC Survey, 2009 and 2010).

TABLE 4
PRODUCT LINE (PERCENTAGE CHANGE IN VALUE)

Time	L/C	Export Credit Insurance	Short-term Export Working Capital
Oct. '07 vs. Oct. '08	-8	2	7
Oct. '08 vs. Jan. '09	-11	-4	-3

Source: Adapted from IMF/BAFT-IFSA Trade Finance Surveys (2009).

Banks also increased the prices of trade finance products for eliminating default risk and fulfilling the higher capital requirements. Yet the firms were ready to pay high costs to banks for availing these products due to payment default risk. Therefore, some increments in trade finance could be seen in the last quarter of 2008. According to ICC Survey (2010), firms experienced a large number of rejections even at small discrepancies due to increased scrutiny of documents. The demand for confirmed L/C increased from unconfirmed L/C from the customers to secure their payment but increased perceptions of risk and pressurizes the banks to tighten the liquidity.

Major Causes of International Trade Deterioration

The 2008 global financial crisis has gained tremendous attention from academia, economists and policy-makers to determine the causes of the world trade deterioration. During this period the global trade experienced an 8 times larger reduction in trade than the reduction in world output over this period (Cheung & Guichard, 2009). Some authors have different views regarding the large fall in world trade relative to the fall in GDP. They have highlighted that reduction in world demand, international supply chain, protection policy, international exchange rate policy, and credit/trade finance crunch have caused the great trade collapse. However, there is

no consensus regarding the factors that have negatively impacted world trade during the crisis period. Every finding is controversial in its view, yet we, summarize some of the causal factors on the basis of available literature:

- (i) *Fall/changes in world demand:* During the crisis period the sudden and severe postponement in demand for products especially of consumer durable and capital goods caused a sharp fall in world trade. Some studies (e.g. Behrens, Gregory, & Giordano, 2010; Bricongne, Fontagne, Gaulier, Taglioni & Vicard, 2012; Cheung & Guichard, 2009; Eaton, Kortum, Neiman, & Romalis, 2016; Wang, 2010;) empirically and theoretically confirms that world demand is the primary driver for the collapse of world trade. Bricongne *et al.* (2012), found a small impact of credit constraints and the global value chain on trade. Cheung and Guichard (2009) tell credit rationing along with world demand is responsible for trade decline via trade finance constraints. Eaton *et al.* (2016) cite that changes in the composition of demand causes trade decline.
- (ii) *Trade protection measures:* As soon as the world trade was experienced the negative shocks of the financial crisis 2008, governments of some of the countries had started to adopt tariff and non-tariff policies to protect their domestic trade. Bown (2009) and Kee *et al.* (2013) measured

the adverse effect of protectionist policy on trade. However, general consensus suggests that protection policy was not a major factor for a reduction in world trade.

- (iii) *Shortages of finance:* During the crisis, the global capital market was disturbed that adversely affected the supply of finance to international trade. As the global capital market froze, financial institutions (Banks) were forced not only to reduce the supply of finance but also charge high financing costs. Chor and Manova (2012); Amiti and Weinstein (2011); Ahn, Amiti, and Weinstein (2011); Iacovone and Zavacka (2009); and Paravisini, Rappoport, Schnabl, and Wolfenzon (2015), etc. support the view that credit shocks are responsible for a significant decline in world trade.
- (iv) *Supply chain effect (vertical production linkage):* In the era of globalization, most of the businesses are taking advantage of the supply chain to minimize the production cost. Bems, Johnson, and Yi (2012) and Levchenko, Lewis, and Tesar, (2010) believe that a highly integrated supply chain caused an abrupt fall in world trade. However, Benassy-Quere *et al.*, 2009 do not support this argument. Further Bems *et al.* (2012) confirm that shocks to credit supply also affected trade volume but protection measures played no important role.

Factors Channelizing Credit Shocks in the Trade Finance Market

Reduced world demand, increased protectionist measures, vertical production linkage and shortages of credit are the factors that caused fall in world trade. However, it is also important to know about the drivers that make financial crises so severe due to which financial shocks abruptly affect international trade. Available literature reports that banking sector health (availability and cost of funds), bank and firm relationship, external financial dependence of firms and stringent Basel norms, and AML/KYC regulations shortfall in trade finance instruments, etc. are major determinants that channelized the financial shocks in international trade.

- (i) *Banking sector health:* Banks' health can be measured in terms of availability of credit. Banks that suffered badly from liquidity shocks during the financial crisis 2008 were failed to provide finance (Paravasini *et al.*, 2015).
- (ii) *Reduced inter-bank lending and high cost of finance:* After the bankruptcy of Lehman Brother, interbank lending market squeezed and caused to increase in the interbank borrowing rate which imposes a big challenge for banks to raise funds. The high cost of inter-bank lending made banks incapable to provide low cost and sufficient credit to firms dealing in international trade (Amiti and Weinstein, 2011; Chor and Manova, 2012). Banks that are highly rely on

interbank financing curtail their credit supply during the financial crisis (Iyer *et al.*, 2013). In the same way, low returns also motivated banks to reduce credit supply especially for cross-boarder loans (Hale *et al.*, 2016). Further, ICC (2009-10); IMF/BAFT (2009-10) and World Bank survey (2009) reported that high financing cost and greater counterparty risk made access to trade finance more vulnerable.

- (iii) *Bank and firm relationship:* Bank-firm relationship is a prominent factor that decides the supply of finance even in a period of crisis (Vovchak, 2017). In the same way, Bentolila *et al.* (2013) also support this view. Iyer *et al.* (2014) determined that the economic crisis affects the formation of a new relationship between client and bank. So, during the period of crisis inter-bank liquidity crunch intensively reduce the bank lending to the firms that are especially small in size and having a low relationship with the bank.
- (iv) *External financial dependence:* The research of Aisen, Alvarez, Sagner, Turen (2013); Bricogne *et al.* (2012); and Chor and Manova (2012); confirm that sectors/firms that use external finance (bank finance and intra-firm finance) more intensively to finance their trade were more severely suffered from the crisis. Bricogne *et al.* (2010) define that credit-constrained is a significant factor that reduces exports by 20 per cent of French firms that are largely

rely on external finance. Aisen *et al.* (2013) determine that larger exporting firms having external financial dependence experienced negative export growth than smaller firms during the crisis by using Chilean export firm data.

- (v) *Regulatory factors:* Stringent Basel norms, and AML/KYC regulations, intense scrutiny of documents reduced the supply of foreign trade finance during the crisis period (ICC, 2009; ICC, 2010; IMF-BAFT, 2009, IMF-BAFT, 2010; World Bank 2009).

Role of Trade Finance in World Trade Deterioration

A large proportion of international trade is financed through foreign trade finance instruments. However, as a result of the banking crisis, the trade finance market dried and trade finance became expensive and less available for international trade (Chor and Manova, 2012). In spite of being a less risky instrument, a sharp fall was seen in trade finance volume in financial crisis (ICC, 2009; ICC, 2010; IMF-BAFT, 2009, IMF-BAFT, 2010; Ahn *et al.*, 2011). This has made the economist think carefully about the role played by trade finance during the financial crisis to get the world trade worst. Very scant empirical literature is available that discuss the role played by trade finance in world trade slump. Among them, some authors strongly and moderately support this view and some oppose this. Let us discuss the following studies that are in favour:

Hwang and Im (2017) analyze the effect of trade finance shocks on

export trade by using the bank-intermediated trade finance data on trade loans and documentary bills as a direct proxy of trade finance in Korea. Their research found around 10-14 per cent changes in export transactions and SMEs was suffered badly than larger firms. Likewise, by using trade finance data of US Banks Niepmann and Schmidt-Eisenlohr (2014), determined that reduction in trade finance lending during financial crisis has a significant negative effect on US exports and this effect is more prominent in very poor and small countries where less number of US Banks are active. It estimates that on an average exports decreased by 1.5 per cent due to shock of 1 SD in the country's supply of L/C and it got more than double during the crisis period. Ahn and Sarmiento (2019) in their study investigates the effect of bank liquidity shocks on the supply of L/C to import transactions in Colombia during 2008 financial crisis. The study determined the significant effect of bank liquidity crisis on import transactions.

Some of the research use bank health and export price movement as an indirect proxy to trade finance to measure the adverse effect trade finance shortage on world trade. Amiti and Weinstein (2011) determine that decay in the health of the banks that provide trade finance to Japanese exporters caused a major deterioration in the export sales than their domestic sales during the period of the financial crisis. Ahn *et al.* (2011) explain the adverse effect of trade finance on US export through price movements and determined "import and export prices of goods shipped by sea,

which are likely to be affected most by trade finance contractions, rose disproportionately more than those shipped by air or land". This price movement ultimately affect US export. Likewise, Aisen *et al.* (2012) use Chilean firm-level data as indirect proxies to determine the effect of credit contraction on the intensive and extensive margin of exports in the aftermath of a financial crisis. The results reveals export credit as a significant factor causing export contraction (especially intensive margin) and the contraction in export is heterogeneous across the firm size. Larger exporters experienced the contraction in the intensive margin (no of unit exported), while smaller exporters suffered from lower entry and higher exit during a period of financial crisis.

However, CGFS (2014) on the basis of national data collected from CGFS member countries, an econometric analysis conducted by the Group determined that decline in trade finance may cause 1/5th reduction in world trade volumes. Similarly, Kohler and Saville (2011) through cost of trade finance as an indirect proxy to evaluate the impact of trade finance on export decline of South Africa during the crisis conclude that financial crisis was responsible for increasing the cost of financing, however, it doesn't mean that trade finance was the major factor, other factor also played the equal role. Van der Veer (2015) also confirms that private credit insurance's significantly reduce world trade during the period of crisis. Reduced supply of credit insurance are responsible for 5-9 per cent fall in world trade and 10-20 per cent fall in European export.

Contrary to the above views, some of the research do not support that trade finance was responsible for abrupt fall in world trade. Levechenko *et al.* (2010) in his study hypothesized that trade was collapsed due to the transmission of shocks through vertical production linkage, compositional effects, and a shortfall in credit supply. They use firm-level data and conclude that there is no significant contribution of trade credit to decline the trade. However compositional effects (sectors suffered from a larger reduction in domestic production contributed more to trade decline) and vertical linkage are found an important cause of the reduction. Prete and Fedrico (2014) investigated how a reduction in credit supply (trade finance vs. ordinary loans) affects the trade of Italy in the aftermath of the Lehman Brothers crisis. They report the fact that credit shocks experienced by exporters were mainly because of shortages in ordinary loans not by the constraints in trade finance. Trade finance, a more secure form of credit instrument did not affect trade reduction. First-time Auboin & Engemann (2012) used macro-level data on insured trade credit as a direct proxy of trade finance and reveals the positive and substantial effect of trade finance on trade. However, this effect remains unaltered during the non-crisis and crisis period. Likewise, Song (2014) also confirms the views of previous studies and used country-level aggregate data on trade finance and firm-level data of Korea. The result of aggregate data shows that drying up of trade finance play no role in world trade collapsed.

Discussion

Based on the objective of my research paper, we reviewed around 34 research paper published during 2008-2018 and their systematic research review provides some important and useful insights which are given below:

- (i) The empirical literature on trade finance is limited due to the paucity of authentic trade finance data. Officially, no aggregate data (working capital finance, term loan, guarantees, factoring and export credit) is available so that the exact picture of world trade reduction can be portrayed due to falling in foreign trade financing during and aftermath of the financial crisis.
- (ii) Only 13 studies out of 34 selected studies, exclusively related to trade finance shortage and world trade decline. All studies except Auboin and Engemann (2012) are based on micro-level data (firm-level, sector-level, and country-level). Apart from this, Amity and Weinstein (2011); Ahn *et al.* (2011); Aisen *et al.* (2012); Kohler and Saville (2011) & Van der Veer (2015) used indirect proxies of trade finance. Such type of study that use indirect proxy and micro-level data on trade finance may give ambiguous or inconclusive results.
- (iii) Out of above 13 studies, 4 studies are not in favour of the view.
- (iv) Generally, most of the studies are based on developed countries. Very few studies

(e.g. Kohler and Saville, 2011; Ahn and Sarmiento, 2019) discuss the role of foreign trade finance with reference to developing countries and economies in transition, while these countries suffered from the huge short-fall in trade financing supply during and after the recent financial crisis.

Conclusion

The significance of trade finance to promote international trade cannot be underestimated. The strong financial system offering sufficient and customized trade finance products is the backbone of international business. After the financial market collapsed in 2008, world trade was drastically declined as the consequences of fall in demand, drying up of trade finance, protectionism policy, exchange rate policy, etc. While trade finance products are highly secured and collateralized, yet sharp fall was seen in trade finance. The fall in trade finance attracts the attention of policy-makers, economists, academicians and leaders of the world economy to investigate whether trade finance played any significant role to decline the world trade or not.

After a systematic review of the literature concerning this issue, we determine that some empirical literature blames trade finance reduction as a prominent factor in world trade slump, while others oppose this view and failed to establish the strong causal relationship. On the basis of existing literature, we can conclude that the short-fall in trade finance

was not the only major causing factor that reduced trade during the financial crisis, other factors might be responsible. Because this view cannot be generalized as the studies undertaken on this issue are suffered from the following limitations: (a) Studies are few in number, (b) Most of the studies are micro-level study (firm or sector or country-specific), (c) Due to paucity trade finance data, most of the studies based on indirect proxies, (d) In this matter, very few studies have undertaken with reference to developing countries which had experienced the higher shortfall in trade finance supply.

This is the best advantage of a systematic literature review that opens the way for further research and highlights the area where more research is required. The area of trade finance with reference to a great trade collapsed is underexplored as very few literature is available. So, more macro-level studies using aggregate trade finance data should be conducted. Further, more studies must be undertaken for developing nations as they face major shortfall in trade finance.

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Determinants of Agriculture Production: A Statistical Examination of MSP, AUC and Productivity of Selected Crops in India

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Main aim of this article was to examine the relationship between MSP/SMP, area under cultivation, productivity and overall production of selected crops in India. It also examined impact of MSP/SMP, area under cultivation, productivity on overall production of *Rice, Wheat, Pulses, Cotton and Sugarcane*. In this study required data were collected from 1990-91 to 2019-20, and analyzed according to the objectives of the present study. The results indicate that area under cultivation and productivity were most significant predictor and MSP/SMP were not significant predictor of production in case of Rice, Pulses, Cotton and Sugarcane. However, MSP, area under cultivation and productivity were only found significant in wheat production in India.

Keywords: MSP, SMP, Area under Cultivation, Productivity, Agricultural Production.

Introduction

AGRICULTURE sector is contributing significant role in Indian economy; about 56 per cent of population are depends upon agriculture and most of rural peoples getting employment from agriculture and allied sector. Therefore, the Government of India and state government providing support to agriculture sector through Minimum Support Price (MSP) for selected crops, Statutory Minimum Prices (SMP) for sugarcane, agricultural finance, subsidized inputs, technology, irrigation facilities, marketing and

storage facilities, electricity, etc. However, research literature shows that MSP/SMP, area under cultivation (AUC), productivity are major determinates of agricultural production. Therefore, the present study was conducted to examine that, how they affects on overall agricultural production in India.

Objectives

The specific objectives of the present study are as under:

1. To examine impact and importance of MSP/SMP in determination of overall production of rice, wheat, pulses, cotton and sugarcane in India.
2. To recognize the impact of area under cultivation (AUC) and productivity of rice, wheat, pulses, cotton and sugarcane on overall production of these crops.

Literature Review

The government have attempting continually for development through veracious packages and policy of market intervention via MSP and SMP of selected crops. At present the Government of India has implementing MSP policy as tool for intervene in agriculture produce markets and regulate agro-market in India. The minimum support prices (MSP) covers 23 commodities i.e. 7 cereals, 4 pulses, 8 oilseeds, copra, raw cotton, raw jute and tobacco; Statutory Minimum Prices (SMP) for sugarcane. However, the first attempt based on New Economic Policy (NEP) was initiated in 1990 with the Draft Agricultural Policy Resolution (1990) focusing on increased output, efficiency in resource management and technologies, etc. While till MSP and SMP is important issue in

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agriculture in India. Acharya, (2001); Ranade (1980) and Kamat and Kamat (2007), mentioned that, MSP is now viewed as a form of market intervention on the part of the State and also as one of the supportive measures to the agricultural producers. In India there is very positive impact on wheat and paddy production detected. However, Sinha (2000) mentioned that mismatch of agriculture education, research and resource management in agriculture have adversely affected on agricultural production in India. According to Reddy (2004), the lack of an assured market price is one factor in the poor performance of pulses than foodgrains in India. Market price is always greater than the MSP announced by the government for pulses. Iqbal and Merwe (2010) mentioned that, production of wheat and rice were increased due to rise in MSP by the Government. All available literature clears that, there were positive relationship between MSP and production of related crops up to some extent.

However, some researchers posited that agriculture inputs are important factors in the determination of overall agriculture production than MSP or SMP (Sarma, 1975). Patil and Sirohi, (1987) posited that the facilities of tube-well irrigation and mechanical power helped the farmers in raising the cropping intensity of their farms. Singh (2001) concluded that cropping intensity was mainly dependent on annual water availability in the specific region and availability of the farm power. Verma (2006) concluded that farm mechani-

zation enhances the production and productivity of different crops due to timeliness of operations, better quality of operations and precision in the application of the inputs. Kamlakar (2006) concluded that the productivity growth and shift in cropping pattern were major factors that accounted for the growth of crop output in the Maharashtra State. Sahu & Rajasekhar (2002) mentioned that credit facilities plays important role in agricultural production. Different studies also indicated that MSP is not only determinates of cropping pattern and production of agriculture commodities. Some of the studies focused that, productivity, irrigation, power available, mechanization are important detriments of agricultural production.

Hypothesis

The present study was conducted to test followings hypothesis:

H¹: MSP is good determinant of overall production of rice, wheat, pulses, cotton and sugarcane in India.

H²: Area under cultivation is good determinant of overall

production of rice, wheat, pulses, cotton and sugarcane in India.

H³: Productivity of is good determinant of overall production of rice, wheat, pulses, cotton and sugarcane in India.

Methodology and Scope

All required data were collected through secondary data sources and collected data analyzed using SPSS 19.0 versions. According to the need of this study regression test were performed to examination of correlation and predictive ability of the dependent variables used in this study. For the hypothesis testing results of regression test were used. In this study, author has covered only selected five crops (i.e. rice, wheat, pulses, cotton and sugarcane) and all results were depends up on time series data of the selected crops from 1990-91 to 2019-20.

Results of Regression Analysis

Table 1 indicates that R values (simple correlation) with dependent variables were ranging from .990 to .999; it shows good

TABLE 1
MODEL SUMMARY

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Rice	.999 ^a	.999	.999	.49315
Wheat	.999 ^a	.999	.998	.52372
Pulses	.990 ^a	.980	.978	.17966
Cotton	.998 ^a	.995	.995	.39111
Sugarcane	.999 ^a	.998	.998	2.31824

a. Predictors: (Constant), Productivity, AUC, MSP.

relationship between predictors and dependent variables. R Square indicates the prediction power of independent variables for dependent variable. Close value of R Square to 1 indicates strong predictive ability of the independent variables. Table 1 indicates that R Square values of the selected crops ranging from .980 to .999 it indicates that productivity, area under cultivation and MSP can predict the overall production of selected crops almost 98 to 99 per cent correctly.

ANOVA Results

ANOVA indicates that the predicting variables are significant or not significant for predicting dependent variable. Table 2 shows that all results of the ANOVA test

were found significant because it indicates that F values relating to Rice, Wheat, Pulses, Cotton and Sugarcane were significant at .000 levels.

Predictors of Agriculture Production

In the regression analysis, lower value of significance (<.050) indicates greater and strong predictive power of the predictors. To understand best predictors of overall production, author has used coefficients of the predictors of respected crops. Table 3 indicates that:

1. MSP was not significant (t = 1.843, P = 0.77) in the determination of production of rice, however, AUC and productivity are good

predictors of rice production in India.

2. In case of wheat production MSP, AUC and productivity are significant factors and good determinants of wheat production in India.
3. MSP was not significant (t = 0.165, P = 0.870) in the determination of production of pulses, however, AUC and productivity are good predictors of pulses production in India.
4. MSP was not significant (t = 1.044, P = 0.307) in the determination of production of cotton, however, AUC and productivity are good predictors of cotton production in India.
5. MSP was not significant (t = -.393, P = 0.698) in the

TABLE 2
ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
Rice	Regression	5922.574	3	1974.191	8117.579	.000 ^a
	Residual	6.323	26	.243		
	Total	5928.897	29			
Wheat	Regression	5213.361	3	1737.787	6335.737	.000 ^a
	Residual	7.131	26	.274		
	Total	5220.493	29			
Pulses	Regression	38.129	3	12.710	393.749	.000 ^a
	Residual	.775	24	.032		
	Total	38.903	27			
Cotton	Regression	763.659	3	254.553	1483.167	.000 ^a
	Residual	3.947	23	.172		
	Total	767.606	26			
Sugarcane	Regression	82687.395	3	27562.465	5128.608	.000 ^a
	Residual	139.731	26	5.374		
	Total	82827.126	29			

Predictors: (Constant), Productivity, MSP, Area Under Cultivation. b. Dependent Variable: Production.

determination of production of cotton, however, AUC and productivity are good predictors of cotton production in India.

Policy Implications

According to the assumption of the present study the government's efforts should concentrate on followings:

Policy for Rice, Pulses, Cotton and Sugarcane Production in India:

Empirical evidences (Table 3) shows that SMP were not positively affects on production of rice, pulses, cotton and sugarcane (t value of rice t = 1.843 sig. .077; pulses t = .165 sig. .870, cotton t = -1.044 sig. .307 and sugarcane t = -.393 sig. .698). Therefore, the government should not concentrate on MSP/SMP of these crops. However, the government should concentrate their efforts for how to increase area under cultivation and productivity of

these crops in India. Here, MSP of the crops and its relation with production may be debatable issue however, we can't disrespect the facts. Therefore, the government should concentrate their efforts on irrigation, agriculture finance, marketing facilities, agro processing, HYPVs, technology and other inputs.

Policy for wheat production in India: Empirical evidences shows that MSP, AUC and productivity

TABLE 3
COEFFICIENTS^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Results about Hypothesis
		B	Std. Error	Beta			
Rice	(Constant)	-74.269	3.020		-24.594	.000	
	MSP	.002	.001	.025	1.843	.077	<i>Not Supported</i>
	AUC	1.835	.093	.226	19.792	.000	Supported
	Productivity	.040	.001	.786	43.137	.000	Supported
Pulses*	(Constant)	-12.463	.853		-14.606	.000	
	MSP	1.654	.000	.007	.165	.870	<i>Not Supported</i>
	AUC	.569	.037	.485	15.353	.000	Supported
	Productivity	.022	.001	.801	18.831	.000	Supported
Cotton**	(Constant)	-12.946	1.006		-12.87	.000	
	MSP	.000	.000	-.029	-1.044	.307	<i>Not Supported</i>
	AUC	1.496	.151	.259	9.937	.000	Supported
	Productivity	.053	.001	.838	40.027	.000	Supported
Sugarcane	(Constant)	-230.316	6.665		-34.556	.000	
	SMP	-.011	.028	-.006	-.393	.698	<i>Not Supported</i>
	AUC	65.654	1.454	.759	45.149	.000	Supported
	Productivity	.004	.000	.311	27.094	.000	Supported
Wheat	(Constant)	-53.663	2.776		-19.333	.000	
	MSP	.003	.001	.065	3.723	.001	<i>Supported</i>
	AUC	2.316	.140	.320	16.568	.000	Supported
	Productivity	.023	.001	.645	38.409	.000	Supported

a. Dependent Variable: Production.

of wheat were significant factor ($t = 3.723$ sig. .001; $t = 16.568$ sig. .000 and $t = 38.409$ sig. .000) in case of overall wheat production in India. Therefore, the government should focus their policy for increase AUC and productivity of wheat including its MSP in India.

Limitations

The present study covered only three variables of the agriculture production function i.e. MSP/SMP, area under cultivation (AUC) and productivity because the main intension of this study was to examine the importance of MSP/SMP, AUC and productivity in the determination of overall production of crops under study. However, it is note that there are some other important factors also exists which have significantly affects on productivity and production of crops i.e. type of seeds, irrigation facilities, finance, fertilizers, pesticides, rainfall, technology, etc.

Conclusion

The present study reveals that MSP and SMP were not only one of the significant determinants of agriculture production in India. However, area under cultivation and productivity of the crops were more important factors in India. Therefore, the government should focus their policy on how to increase area under crops and productivity of those crops which indented to increase overall production.

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Exports Statistics between India - United Arab Emirates during Corona Plight

Saima Farhat*

Foreign trade is an integral element of economic growth irrespective of economic condition of the trading countries. India is an important market for UAE's exports and similarly UAE is one of the major destination for Indian agricultural and non agricultural goods. At present UAE is India's third largest trading partner. As UAE is an important market for India from the last few decades but sudden attack of Corona Virus has slow down the economy at global level. In this article author has tried to compare the export intensity of India with UAE before Corona crisis and during 2020. Due to unavailability of proper data for calculating the index for 2020 author has used recent data regarding exports of India to UAE.

Keywords: Export intensity, Corona virus, India-UAE trade.

UNITED ARAB EMIRATE (UAE) is the third largest global trade partner of India from the past few years. Prior to the hit of Corona crisis, India-UAE trade has been moving towards smooth path with the better trade figures. During 2017-18, India's total trade to UAE accounted at 9.27 per cent of the total exports of India. In 2018-19 it reached to 9.12 per cent and 9.20 per cent in 2019-20. But as far as 2020-21 is concerned trade has fell down to 5.5 per cent. Hence, it is crystal clear to observe offset of foreign trade due to Corona crisis on India's trade with UAE. Not only India-UAE trade but global trade has been severely affected by the latest global virus attack. In this study author has tried to find out export intensity of Indian goods to UAE.

Export Intensity is an index which is a numerator value while calculating trade intensity through trade intensity index i.e Trade

Intensity = $\frac{\text{Export Intensity}}{\text{Import Intensity}}$. Data for calculating export intensity has been taken place from ITC.

Export intensity reflects that how much intense exports exist between any two countries. If the value of the Index is greater than one, it indicates country A has more exports with country B than the country B has with rest of the world. If the value of the index is lower than one it suggests that country A and B have weak exports strength as compared to country B has with rest of the world. In this study export intensity has been calculated for the year 2017, 2018 and 2019. Data for the year 2020 is not available to calculate the same index. Idea of the study is to examine how much exports of India have declined due to Corona crisis. Table 1 indicating values of export intensity of India for United Arab Emirates for the year 2017, 2018 and 2019. As it is clear from the table all the values for the three consecutive years are greater than unity. Therefore, India's exports to UAE are intense than the exports of

UAE to the world. Due to insufficient data, we could not calculate export intensity for 2020. But we have extracted data from (Ministry of commerce and Industries) for major commodities in order to make a clear picture of downfall of India's exports particularly to UAE due global Corona virus hit.

Figure 1 has been derived from the values of export intensity, figure shows a declining trend or negative trend in export intensity of India for UAE. It is clear that during 2020 the figures went significantly down and if data would be available the graph line would have been more steeper at the end.

Export volume of Meat from India to UAE has been declined

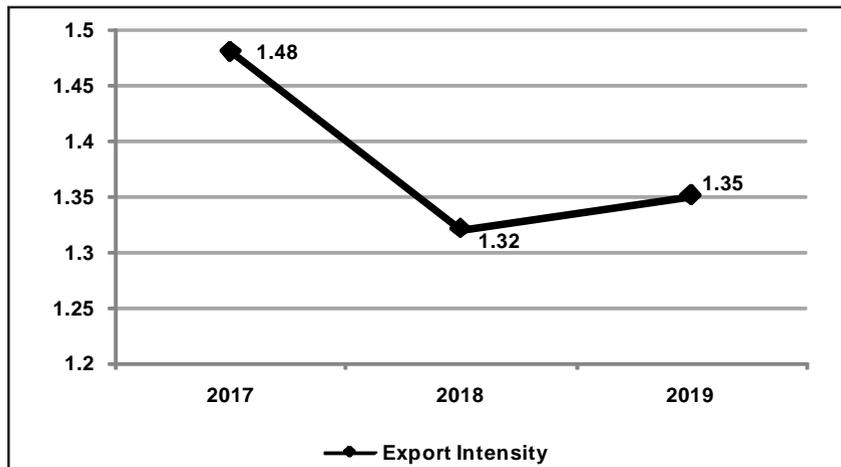
TABLE 1
EXPORT INTENSITY OF INDIA FOR UAE

Year	Export Intensity Values
2017	1.48
2018	1.32
2019	1.35

Source: Author's own calculation.

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FIGURE 1
EXPORT INTENSITY OF INDIA FOR UAE



from US\$149 million (2019-20) to US\$78.14 million (2020-21). Vegetables, is another important agriculture export item from India to UAE, and an acute fall has been observed in 2019-20 in this item. It was US\$117 million and in 2020-21 it became US\$93 million. Fruits and nuts also contracted to US\$121 million 2020-21 from US\$247 million in 2019-20. Value of tea coffee spices fell down to US\$131 million in 2020-21 from US\$140 million in 2019-2020. Cereals is another significant item of agriculture export basket of India to UAE, Export of cereals reduced from US\$351 million to US\$262 million. It is noticeable that volume of decline in non agriculture exports is much higher than agriculture goods. It is clear from the data that is extracted from Ministry of Commerce and Industries. Volume of oil and petroleum products has shrunk to US\$1,707 million in 2020-2021 from US\$5,732 million in 2019-20. It is such huge decline which is affected by Corona crisis. Moreover, supply of knitted clothing accessories also affected

by the attack of Corona virus. It fell down to US\$589 million from US\$1,030 million in 2019-20. Its exports have declined to 50 per cent in 2020. Export of Non- Knitted clothing accessories also attacked by Pandemic, it was accounted at US\$655 million in 2019-20 fell down to US\$399 million in 2020-21. Gems & Jewellery is the most important commodity of Indian exports basket to UAE, its exports has also been fell down from US\$9,433 million to US\$1,226 million. Besides that, export volume of electrical machineries experienced an acute fall from US\$2,694 million to US\$780 million. Figure defines that electrical machinery's exports have declined severely. Amount of export of ships and boats has also immensely declined from US\$1,307 million to US\$366 million. It is worthy to highlight total exports of India to UAE for 2019-20 accounted at US\$28,853 million and exports in 2020-21 to the same country accounted at US\$9,673 million only. It is visible to observe the drastic fall in the values of exports in the major commodities from

India to UAE particularly during 2020. After examining the data for the major export commodities to UAE from India, there has been a serious and extreme fall experienced in 2020 due to restriction on exports of India. Gems & Jewellery, Ships and Boats, Oil and Petroleum faced a big backward push. Besides that Knitted and non knitted clothing items also sunk much below. Now, India is trying to regain its growth path. For this, the government is taking measures. Recently, India has declared to produce containers for enhancing its export and to cope up with delays in exports (*The Hindu*, 23 February). At the end of 2020, India has started to export its agriculture, horticulture produce to 100 countries. It is fulfilling 32 per cent of need of rice at global level. Besides that India has also signed an agreement on defence and trade with Mauritius with an investment of US\$100 million (*The Hindu*, 22 February). Certain more steps can be taken place in this regard. Although, policy-makers cannot turned up the situation overnight. But it is expected to be on the same track soon with better trade figures.

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Effects of Working Capital Management on Company Value

A Literature Survey

*Niti Nandini Chatnani** and *Roshan***

The purpose of this paper is to review the literature published in the past on working capital management (WCM) and company value. The paper highlights the major gaps in the existing studies on working capital management and company value. A key word search method of the research works on WCM has been performed using Google Scholar, JSTORE, Science Direct and Emerald insight. Articles with key words related with working capital management and company value are considered for the detailed analysis. The prominence of research is assessed by studying different themes on working capital management. The main contribution of this paper is to find research gaps to provide guidelines for future research. However, there are very limited research on the relationship between working capital management and company value.

Keywords: Working capital management; profitability; company value; financial performance; working capital financing; financing policies.

Introduction

According to Seth, Chadha, Ruparel, Arora and Sharma (2020) manufacturing companies contribute towards capital formation and promote economic growth. Considering the Indian manufacturing sector, it is regarded as the lifeline and backbone for promoting economic development in the country. The manufacturing sector recorded a compound annual growth rate (CAGR) of 5 per cent during the financial year 2016-2020 and generated US\$397.14 billion as Gross Value Added (GVA) in the year 2020. The manufacturing units that belonged to the basic metal

sector recorded a growth of 10.8 per cent, while tobacco products manufacturing units recorded a growth of 2.9 per cent. The other sectors such as the intermediate goods industry and food products manufacturing units recorded a growth of 8.8 and 2.7 per cent respectively. The major manufacturing companies that contribute towards the growth of the Indian economy are Aditya Birla Group, Larsen & Toubro, Bombay Dyeing, Hindustan Lever Network, Haldia Petrochemicals Ltd., Apollo Tyres, Jindal Steel, Videocon Group, Ranbaxy, and Asian Paints, etc.

The manufacturing industries face issues related to capital and fund management which creates issues in generating optimized returns. Poor working capital management has also been identified as the main reason for

the failure of most firms. Therefore, the manufacturing companies must focus on implementing working capital management aspects as it directly associated with shareholder wealth maximization and enhancing the profitability and liquidity of businesses. Working capital management (WCM) is an integral part of the corporate finance theory that deals with the finance and investment decisions of the company. However, studies related to WCM and the company have been limited and did not receive much attention from the empirical researchers. Therefore, the current research focuses on analyzing facts related to the concept of working capital and accentuates the effects of working capital management on company value. The current research also outlines the evidence from Indian manufacturing companies and identifies the research gap.

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Comprehending the Concept of Working Capital

The working capital management (WCM) is defined as a strategic process of generating cash and maintaining the cash conversion cycle of the company. It plays a vital role in acquiring the firm's ultimate goal of shareholder wealth maximization by enhancing both the liquidity and profit earning capacities of the company. The working capital includes two main financial aspects of the company which are assets and liabilities. The current assets are mostly funded by the owners and if there is any remaining part, it is managed by the current liabilities. Thus, it can be said that WCM is directly associated with the current assets, liabilities, and liquidity of the company which is essential for running the business smoothly.

Raheman and Nasr (2007) examined that the maintaining of WCM in manufacturing firm is essential as it accounts for more than half of the overall possessions. On the other hand, the significance of WCM rises in distribution and trading businesses as it occupies over half of the entire possessions. It directly impacts the liquidity and profit earning capacities of the company which enhances its working in the competitive markets. An inappropriate WCM practices lead to bankruptcy even when the company exhibits positive profitability characteristics. It is because when the current assets of the company are more in comparison to work

operations, there is a reduction in the return on investment. On the other hand, the companies that have low levels of current assets may also suffer from operating issues owing to a shortage of funds. As a result, under excessive and scarce current assets conditions, the company suffer from operational issues and could not run the business smoothly. Therefore, the business units and corporate must maintain a high level of working capital so that there is an optimization of the organizational value.

Afza and Nazir (2007) analyzed that working capital investments create trade-off associations between risks and profit earning capacity of the company. It highly impacts the value of the firm and reduces the risks related to insolvency. Eljelly (2004) analyzed that maintaining liquidity in daily operations is essential for meeting the obligations and smooth running of the company. If there is any discrepancy in the maintaining of the balance between the current assets and current liability, it creates issues in maintaining the financial position of the company. Therefore, WCM must be included in the business process so that there is précised decision-making in the choice of amount and composition of the current asset as well as the financing of these assets. Moreover, working capital is directly associated with the financial health and operational success of the firm as it allows the business to adapt to the dynamic business conditions.

Luo, M.M., Lee, J.J., and Hwang, Y. (2009) analyzed the components of the WCM and found that it includes four vital parts which are cash and cash equivalents, inventory, debtors/accounts receivables, and creditors/accounts payable. While focusing on the cash and cash equivalents, it includes determining the most favourable size of the company's liquid balance. The different assets such as short-term investments, equities, and securities that are possessed by the company are included in the estimation of liquid balance. It helps in exercising control over the collection and payout of the cash. As a result, the determination of cash and cash equivalents help in maintaining liquidity and minimum cash requirement in the banking accounts. It improves the credit rating of the company, reduces the cost associated with interest, and eliminates the risks of insolvency.

Zariyawati, M.A, Annuar, M.N., and Abdul Rahim A.S. (2009) analyzed that management of inventories includes three major elements that are managing resources of raw material, work in progress (WIP), and finished products. If the heavy stock is maintained by the company, it increases the burden on cash resources, whereas, insufficient stocking or poor inventory leads to a reduction in sales and delays in delivery of end products to customers. Therefore, management of inventory is an important aspect to be taken into account while carrying out wealth capital management so that the business operations are carried out

smoothly. Raheman and Nasr (2007) examined that to ensure better inventory control, it is essential to regularly review the piling and usage of stocks. The stock management also includes keeping a check on the security procedure and outsourcing some parts of manufacturing so that there are better stocking and production.

Uyar (2009) analyzed that management of receivables is an important component of WCM that highly contribute towards current assets. The investments in receivables include certain costs such as opportunity cost and time value that impact the profitability and company value. It also includes a high risk of bad debts that impacts the valuation and sustainability of the company. Therefore, the fund manager must focus on managing receivables so that sound investment decision is taken in debtors. To manage control over receivables, précised credit practices must be implemented within the company. It will also help in ensuring security and accuracy to the maintaining of the accounts receivable records.

Tahir, M. and Anuar, M.B.A. (2016) ascertained that management of accounts payable is an important WCM aspect that is associated with cash management and positioning of the company. The management of the account payable is essential at is directly associated with cash outflows and purchasing functions. If both aspects are not managed well, issues related to liquidity may arise in the company. Therefore, to ensure

WCM, the firm must centralize financial function and streamline the vendor capacity. The defining of alternative and short-term financing costs will also help in managing accounts payable and implementing WCM.

WCM is impacted by several factors such as length of the operating cycle, nature of the business, scale of operation, and business cycle formation. While focusing on the operating cycle, it is the duration of time that is consumed while producing a product. The length of the operating cycle is estimated from the point when the raw material is acquired tile the product is made ready for final sale purposes. The consideration of working capital forms an essential part of the operating cycle by ensuring its smooth running proves. If the operating cycle duration is more, it requires more working capital and *vice versa*. Considering the nature of the company, the manufacturing units and wholesalers require more working capital as compared to retailers. Manufacturing units require more capital to convert raw material into finished products and wholesalers require more working capital to maintain large stocks. If a company is having a large scale of operation, it requires more working capital, and if a company is having a small scale of operations it requires less working capital. The boom and depression in the market impact the business cycle. If there is a boom in the market, there is an increase in the demand for the product and production

process. Under such conditions, more working capital is required to meet the increasing production requirements. On the other hand, in the case of depression in the market, there is a reduction in the demand for products and production processes. As a result, there is no requirement to maintain large inventories to meet the production requirements which reduce the amount of working capital utilization.

Arunkumar O.N. and Ramanan T.R. (2013) examined that the working capital is fluctuated by different factors such as technology & production cycle, the credit allowed, credit availability, and operating efficacy. Considering the technology & production cycle, it is directly associated with the working capital. For example, if the company is labour-oriented, there is a requirement for more working capital as more capital is required to maintain cash flow to make payments to the labour. On the other hand, in the case of a technology-based company, less working capital is required to maintain the cash flow as technology is related to fixed capital requirements and therefore, involves less operating costs. While focusing on the production cycle, if the production cycle is long, more working capital is required to accomplish the task in comparison to the small production cycle. The credit policy is related to the time taken for performing the sale proceeds. It is impacted by different aspects such as industry norms,

creditworthiness, and client association. When the company adopts a liberal credit policy, there is a requirement for more working capital. On the other hand, if the firm adopts a strict credit policy, there is a requirement of less working capital. The operating efficacy also determines the fluctuations in the working capital. If there is a high degree of operating efficacy, there is less requirement of working capital. On the contrary, if there is low operating efficacy, there is more requirement of working capital.

Thus, it can be said that different factors such as operating cycle, nature of the business, the scale of operation fluctuation, the credit allowed, credit availability, and operating efficacy impact the working capital fluctuation in the company. The implementation of working capital management facilitates company operations, enhances the firm's earning, and augments profitability levels. WCM also promotes inventory management, accounts payables, and accounts receivables that reduce the cost of capital of the company. Working capital is associated with maintaining the liquidity, efficacy, and overall workings of the firm. It helps in commencing different company activities such as debt management, gathering revenue, and managing payments to the suppliers. Thus, it can be said that working capital is an accounting strategy that highly focuses on establishing a balance between current liabilities and assets. It helps in meeting business obligations and boosting company earnings.

Accentuating on Effects of Working Capital Management on Company Value

According to Soenen (1993) working capital management includes different approaches such as Conservative Approach, Aggressive Approach, Matching Approach, Zero Working Capital Approach, and Working Capital Policies for the management of company's financial working. A conservative approach is associated with working capital management in stable environments. It includes evaluating current assets against the sales so that there is a determination of deficient or surplus current assets. If there is a surplus current asset, variations could be introduced in the procurement time, sales, and production plans without any disruptions. It also includes maintaining high working capital levels with the help of long-term funds such as securities and share capital. The provision of sufficient working capital will help in smoothing the operational activities without any stoppages in terms of raw materials or consumables. It facilitates sufficient stocking that helps to meet market fluctuations and eliminating risks of insolvency. It is estimated by taking the sum of fixed assets, total permanent current assets, and part of temporary current assets in terms of long-term funds and part of temporary current asset in case of short-term funds. The use of this approach helped in reducing business risk and ensuring a continuous flow of company operations.

Vaidya (2011) analyzed that the aggressive approach is included the working capital management to meet the current liabilities of the company without considering any buffer in the working capital. Under this approach, the core working capital is administered with the help of long-term capital. On the other hand, seasonal variations are administrated with the help of short-term borrowings. The implementation of an aggressive approach helps in minimizing investments related to net borrowings and reduces the cost of funding in working capital. However, the major limitation with the approach is that it requires frequent financing that increases the risks of vulnerability and sudden shocks. The financing strategy included in this approach includes summing up fixed assets and part of permanent current assets for long-term funds and summing up part of permanent current assets and total temporary current assets for short-term funds.

Padachi (2006) examined that matching approach is one of the most common working capital management approaches in which a balance sheet is maintained to create a balance between assets and financing instruments. The main purpose of implementing this approach is to create a balance by ascertaining that current and fixed assets meet long-term fund requirements. It includes creating a balance between seasonal variations finance and short-term debt to meet the short-term fund requirements. Once the long-term and short-term fund requirements

of the company are met, it helps in correcting the mismatches in the financial activities. It includes a financing strategy in which long-term funds are met by putting together fixed assets and total permanent current assets and short-term funds are met through total temporary current assets. The matching approach also includes managing the operating cycle and inventory management to establish a balance between long-term and short-term funds. For example, in an efficient WCM, there is a compressing of the operating cycle as it is directly associated with receivables and inventory period. On the other hand, the just-in-time inventory management practices help in reducing costs related to overstocking and reducing receivables credit period.

Velnampy, T. and Niresh, J.A. (2012) examined that zero working capital approach has been recently included in the working capital management process in which the current liabilities is equal to current assets at all times. Under this approach, excessive investment is avoided in the segment of a current asset, and the firm is supposed to balance current liability by making minimum or just-in-right investments. For example, if the current ratio estimation is recorded to be 1 and the quick ratio estimation is also recorded to be 1, under such conditions, there is a rise in the risks of high liquidity. However, when the current assets are performing and can be resized at any moment, the fear related to liabilities reduces. Under such conditions, the company saves in

terms of opportunity cost by increasing investment in the current assets. It includes saving costs related to inventory and interests as opportunity cost savings are directly associated with improving bank cash credit limits. Thus, by implementing a zero working capital approach the financial activities of the firm are disciplined. It also helps in managing activities related to current assets and liabilities and reduces the tendency to divert funds or over-borrow. In this approach, financial management is balanced by equating total current assets and total current liabilities. As a result, due to the adoption of the zero working capital approach, there is the smooth and uninterrupted working of the firm so that there is an improvement in the quality of current assets at all times.

Mekonnen, Mulualem (2011) examined that working capital policies are necessary to be determined and implemented so that there is maintaining adequate WCM within the firm. It includes implementing three types of policies such as restricted policy, relaxed policy, and moderate policy. While focusing on restricted policy, it includes a rigid evaluation of the working capital as per the company requirements and then sticking to the estimated value for the conduction of work. In this policy, deviations from the estimations are not permitted and do not consider the occurrence of any unexpected event. On the other hand, in relaxed policy, fluctuations are allowed in the funds by including funds for contingencies and unexpected

events. In the case of moderate policy, the working capital level is measure by considering restricted and relaxed policy considerations. Most of the companies adopt a moderate policy as it helps in eliminating risks and increasing profitability levels by increasing investments in current assets as per need.

According to Gill, A., Biger, N., and Mathur, N. (2010) net trade cycle could also be used as an appropriate measure to ascertain the working capital and return on assets (ROA) in the firms in the United States. As per the study analysis, it was found that there was a negative association between the period of the net trade cycle and return on investment. The other aspects such as industry type and level of competition are also to be taken into account while determining the working capital for the industrial working purpose. A study was conducted by Makori, D.M. and Jagongo, A. (2013) to analyze the impact of working capital management on the firms located in the United States during the period 1982 to 2011. The study included nonlinear regression and linear regression and found that in most of the US firms optimal level of the working capital policy was implemented. By implementing the working capital policy, the firms could optimize their efficacy by augmenting or reducing investment levels. It helps in establishing a balance between current liabilities and current assets, improving stock performance, and operational efficacy. As a result, by

implementing efficient WCM, there is the attainment of superior performance by redeploying underutilized corporate resources to higher-valued use, such as the funding of cash acquisitions.

Maheshwari, M. (2014) examined that WCM facilitates company workings and allows the fund managers to make decisions regarding future growth and reducing financing costs. It also includes improving pay back short-term financing by optimizing the working capital utilization. However, a major issue that is faced by the fund managers is that the value of working capital cannot be reduced without making compromises in the future growth and sales. A certain buffer amount of working capital is required for maintaining customer credit and inventory. It helps to satisfy consumer needs and creates a balance between risk and efficiency. A study was conducted by Banos-Caballero, S., Garc ~ ía-Teruel, P.J. and Mart ́nez-Solano, P. (2010) by taking French companies into account and found that the investors of the French companies were worried as there was an increase in the cash in the units but the value of the firms was less as compared to the US companies. The investors of French companies were highly concerned related to the investment or even an extra Euro in the company as it decreased the value of the company in the competitive market. However, it was ascertained that the operating working capital highly depended on the financial

structure of a company which impacted its valuation and performance.

Bernard, A.B. and Jensen, J.B. (2004) analyzed facts related to the association between WCM and performance of a company by taking non-financial United Kingdom companies into account. As per the study analysis, it was found that there was a U-shaped relationship between the performance of the company and working capital. Due to a U-shaped relationship, an optimal level in a company can only be acquired by balancing costs and benefits. It would help the firm to gain maximum firm value by improving overall performance during difficult times. Chadha, S. and Seth, H. (2020) analyzed that high investments in working capital may lead to adverse implications and destruct the value of the firm in front of the shareholders. The main reason behind it is that any investment in the company in terms of working capital requires financing which is associated with opportunity costs. As a result, the firms that are having high working capital values hold more risks of bankruptcy and an increase in expenses in terms of interests. Thus, it can be said that the maintenance of high values of working capital is not beneficial for the company as it hampers firm performance and company value.

Shin and Soenen (1998) conducted a study to examine the association between working capital and company value by using net-trade cycle (NTC) for assessment. The study also

included the use of correlation and regression analysis to determine the working capital intensity and industry workings. As per the analysis of 58,985 firms, it was found that there was a negative relationship between the net-trade cycle and the profit earning levels of the firm. It was also found that the low levels of NTC were related to high risks in the stock returns and a reduction in the NTC levels could bring significant improvements in the shareholder's value. Lyroudi and Lazaridis (2000) conducted a study to examine the facts related to working capital management and company value in the food industry in Greece. The study included the cash conversion cycle as a measure to determine the liquidity of the firm. The associations between the current and quick ratios were also determined with the help of component variables. The implications of the cash conversion cycle in terms of profitability, indebtedness, and firm size were analyzed and found that there was a positive association between the liquidity and cash conversion cycle. It was also found that a positive association was established between current and quick ratios concerning the cash conversion cycle.

Wang (2002) performed a study to examine the association between the operating performance, company value, and liquidity management in firms located in Taiwan and Japan. As per the analysis, it was found that there was a negative association between cash conversion cycle and return on assets in Taiwan and

Japanese companies. It was also ascertained that there was a negative relationship between cash conversion cycle and return on equity in Taiwan and Japanese firms. The study provided that low levels of cash conversion cycle contributed towards better operating performance. It also revealed that aggressiveness in liquidity management was associated with an increase in the company value even though there were differences in the financial system of the company.

Deloof (2003) conducted a study by considering 1,009 large Belgian non-financial firms into consideration. The study included inventory policy and credit policy as important measures to determine the association between working capital and company value. The facts related to working capital were analyzed by taking several days accounts receivable and cash conversion cycle into account. The other factors such as inventory management and account payable aspects were also considered while analyzing working capital. As per the analysis, it was found that there was a negative association between the number of days accounts receivable and operating income. It was also found that there was a negative association between accounts payable and operating income of the company. A similar finding was also observed in the case of inventory management which was negatively associated with operating income. Thus, it can be said that the fund managers can create value for the firm and shareholders by decreasing the high stocking of inventories and

the number of days accounts receivable to low levels.

Lazaridis and Tryfonidis (2006) conducted a study to examine the relationship between working capital management and firm value in 131 companies that were listed in the Athens Stock Exchange (ASE). The facts related to the cash conversion cycle and profit earning capacities of the firms were also included in the study. As per the analysis, it was found that there was a statistical association between the gross operating profit and profit earning abilities of the firm. A similar finding was also recorded with the cash conversion cycle which was found to be positively associated with the profit earning capacities of the firm. It was also found that the gross operating profits had a direct relationship with several days' accounts payables and it tends to decrease with an increasing number of days accounts payables. It helps the managers to generate profits for the company by making correct use of the cash conversion cycle and maintaining other components such as inventory management, account receivables, and account payables at an optimized level.

Teruel, P. and Solan, P. (2005) conducted a study to determine facts related to working capital and company value in small and medium firms (SMEs) that were operating in Spain. The study included the use of panel data regression methodology and found that the value of the firm can be created by reducing the stocking levels in the inventory and lowering the number of

outstanding days in the accounts. The study revealed that the major concern of the SMEs is to maintain working capital as it is responsible for carrying out operational activities. The managers in SMEs can create value for the company by reducing the levels of cash conversion cycle to a minimum.

Teruel, P.J.G. and Solano P.M. (2007) analyzed the impact of working capital management and company value in the companies that were listed in the Istanbul Stock exchange (ISE). The study included the use of multiple regression models and found that there was a negative association between the accounts receivables period and profit earning abilities of the firm. A similar association was also found between inventory periods which were found to be negatively associated with the company value. The study also revealed that there was a negative relationship between leverage and the value of the company. On the other hand, a positive association was found between growth and company value as it increased the profit earning capacity of the company.

Padachi (2006) conducted a study to examine the association between working capital management and company value by taking 58 manufacturing units located in Mauritius into account. The study also analyzed the impact of working capital on the performance of the company by making use of regression analysis. As per the study assessments, it was found that investment in inventory was negatively

associated with the company value and profitability levels. A negative association was also found between receivables and profitability as an increase in receivables resulted in low profitability levels. However, positive implications were recorded in the paper and printing industry concerning working capital and profitability. Thus, it can be said that working capital management is associated with company value in both positive and negative terms depending upon the structure, capacity, inventory position, and receivables of the company.

Outlining the Evidence from Indian Manufacturing Companies

According to Sharma and Kumar (2011) financial decisions in the Indian manufacturing industry are taken by considering the financial issues faced by the firms and analyzing which actions could help in eliminating the problems. While making financial decisions, the major issues that are faced by the fund manager are associated with working capital management. While focusing on working capital management, it is the difference between current assets and current liabilities. The current asset is the readily convertible cash and current liabilities are associated with cash that will be required by the firm in the future. Goel and Sharma (2015) examined that the working capital in each company is different and depends upon the different characteristics such as inventory, debtors, creditors, and other aspects of the company. The study included 1,200 firms that

were working in the Indian manufacturing sector and analyzed the facts related to the impact of working capital management on the company value and profitability. As per the study analysis, it was found that WCM levels in the Indian manufacturing sector showed statistically significant variation from 2004 to 2013. A significant improvement was recorded in the working capital efficacy during 2004-2007 because of the global financial crisis. On the other hand, the efficacy of working capital remained low during 2008-2010 which further improved in the later years.

The study examined that the WCM was highly impacted by exogenous factors such as technology and saving rates. It was found that there was a positive association between net fixed asset and WCM and a negative association was recorded between debt ratio and efficacy of the firm. The study examined that there was a positive relationship between profitability and WCM as with the increase in the working capital there was an increase in the profit-earning capacity of the firm. A similar association was found between sales growth and age of the firms concerning working capital management as with the increase in the working capital, an increase was recorded in the sales and sustainability of the manufacturing firms.

A study was conducted by Seth, Chadha, Ruparel, Arora and Sharma (2020) by including Indian manufacturing firms that were dealing in exporting activities. The study included 563

Indian manufacturing firms that were listed in the Bombay Stock Exchange and examined the association between working capital management and company value. As per the analysis, it was found that there was an appositive association between the positive relationship with the Size of the firm, Firms' growth, and Interest rate. On the other hand, the cash conversion cycle (CCC) showed a negative association with Net fixed asset ratio, Size of the firm, Asset turnover ratio, Total assets growth rate, Productivity, and Export. It was found that the Leverage, Firms' age and the Gross domestic product did not show any significant association towards CCC. The study specified that an improved working capital model is essential for the growth and advancement of the company. The main reason behind it is that it helps in reducing the cash conversion cycle levels and creating new avenues for working capital management. Additionally, the outcomes of the research were also useful to the stakeholders like investors, capital managers, fund managers, financial consultants, and debt holders as they could monitor and exercise control over the company workings.

Baker, Kumar and Singh (2019) conducted a study by including 269 Indian small and medium enterprises (SMEs) into account. The study examined the practices and policies that were adopted by the SMEs in India concerning working capital management. As per the analysis, it was found that

most of the SMEs in India adopted an informal approach towards the management of working capital. The manufacturing firms mainly tried to match the financial sources with the maturity of assets. The manufacturing units were depended on internal and external funding to carry out company functionaries. The internal funding supported the activities related to retained earnings and the external funding supported the functionary related to the line of credit. It helped in meeting the working capital requirement of the company. The measures such as net working capital and cash conversion cycle were considered to be important factors for evaluating the value metrics and exercising control over working capital. It was found that the working of micro, small, and medium-sized enterprises (MSMEs) was different from that of SMEs. MSMEs also had different working capital management needs, practices, and implementations in comparison to SMEs.

Bhatia & Srivastava (2016) conducted a study to examine the working capital management in Indian companies especially that worked as small and medium enterprises. The study included Feasible Generalized Least Square (FGLS) regression models to analyze the facts related to WCM in Indian small and medium scale enterprises over the period spanning from 2010 to 2017. As per the analysis, it was found that there was a negative association between account receivables and working capital management. On the other hand,

a positive association was recorded between inventories and profit earning abilities of the SMEs. A similar association was also recorded between account payables concerning the profit earning ability of the SMEs. Thus, it can be said that fund managers in SMEs can increase the profit earning capabilities of the firm by changing credit sales into cash. The main reason behind it is that the conversion of credit into cash will increase the days of accounts payable and facilitate inventory management activities. It was also found that there was a negative association between Account receivable, and working capital and a positive association between Account Payables and Return on assets. The study concluded that in the case of Indian SMEs, the efficacy of the firms can be improved by maintaining an accurate inventory level for which appropriate inventory management is required.

Bhatia and Srivastava (2016) conducted a study by considering 2,327 non-financial firms that were enlisted in the Bombay Stock Exchange (BSE) of India for the period from 2002 to 2014. The study included regression analysis to analyze the facts related to the association between working capital and the performance of the firm, especially in the emerging market. As per the analysis, it was found that the cash conversion cycle (CCC) laid a significant impact on the company value and efficacy of the firm. In the context of Indian firms, a negative association was found between

the cash conversion cycle and financial efficacy as there was a reduction in profit earning levels of the firm with a reduction in the cash conversion cycle. Thus, it can be said that managers of the Indian firms must bring improvement in the inventory turnover and extend credit period with suppliers so that improvements could be brought in the working capital pipelines of the company. Therefore, it becomes vitally important for the firms in India to manage working capital efficiently and release the fund that may be unnecessarily tied up in working capital to fund the long term projects and the expansion of their operations.

Research Gap

Most of the studies have focused on the profitability that is short-term performance measure but limited researches are available on the long-term performance measure i.e. company value. Limited studies have found the optimum level of WCM and there is no consensus between measurements of optimum value to suggest which measure is best to find out the best optimum level of WC. According to EY reports, there are lots of cash tied up in working capital. However, there is no research available in India at present who studied the same problem, to conclude what we can do for this excess cash tied as working capital. Rather than using Net Working Capital (NWC) as an independent variable, excess NWC is not used, although using this; unnecessary part of the working capital can be

captured. There is no literature available according to the researcher's knowledge, examine the peer effect on a company's investment decision in working capital. So far the existing literature has examined the impact of WC on firm performance but the impact of NWC on corporate investment has not been investigated for Indian firms. There is no study available that discusses the optimal level of each component of working capital separately; accounts receivable accounts payables, and inventory.

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An Indian Insight to Identify the Responsibility of Regulatory Authorities in Managing E-Waste

*Kapil Mohan Garg**

Near to three-decade post Basel Convention (BC), many countries are occupied towards Waste Electrical and Electronic Equipment (WEEE). The agreement on the regulation of Transboundary activities of hazardous wastes and their disposal is the most complete worldwide ecological treaty on perilous and other wastes. There is a noticeable modification in discerning and approach to WEEE (Puja Sawhney *et al.* 2008) but information and intelligence collected in last two decades also shows that e-waste strategies should serve numerous and wider social goals. Progresses in slicing and parting know-hows have led to the understanding that dismantling e-waste may not fetch the anticipated control over the problem. It may also depend on many other factors like role of various stake holder like people dealing with e-waste recycling or consumption, users and generators of waste and regulatory authorities. India is among the top five e-waste producing countries in the world with estimated annual production of 2 million tons (Baldé, C.P., 2017). Unfortunately, the majority of e-waste is recycled in the unregulated informal sector and results in significant risk for toxic exposures to the recyclers (Perkins *et al.*, 2014). Such situations demand prominent intervention of regulatory authorities. Thus, it becomes important to study and identify the role and importance of regulatory authorities, which is the fundamental motive of this study.

Keywords: e-waste, WEEE, Indian e-waste Management, Indian Regulatory authority, e-waste Management.

Introduction

ELECTRONIC products have made our life easy by saving time and being efficient. Most of our household work is done with help of electronic appliances. Communication systems have been revolutionalized by wireless and mobile phones technology. Entertainment products like television and music system have added enjoyment to our life. Similarly, there are numerous electronic bits and pieces

which were once thought to be luxury, have presently become our needs.

From villages to cities, all of them are using electronic products either in one form or the other. There are places in India where people may not have standard access to electricity but they still have battery operated electronic products. Increase in use of these products resulted in augmentation in their production which results in generation of more desecrated products termed as electronic waste or e-waste. Management of electronic waste is a much more formidable challenge in

developing countries on account of lack of proper infrastructure, poor legislation and awareness among citizens. Also at stake are the livelihoods of a large number of urban poor involved in processing and recycling of e-waste. India today generates a huge quantity of electronic waste - rough estimate suggest 150,000 tones annually (siliconindia, 2005) - handled across many cities in India, exposing poor workers to environment and occupational health risks (Chatterjee and Kumar, 2009).

The global market for electrical and electronic equipment

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continues to expand. Consequently, the waste stream of obsolete electrical and electronic products, commonly called “e-waste”, is also vast and growing, and according to the statistical data of the German Federal Environment Agency, about 1.6 million tons of new EEE was brought onto the market and 750,000 tonnes of waste was collected in 2006 (Federal Environment Agency, Electrical and Electronic Equipment Act – ElektroG: Federal Ministry for Environment and Federal Environment Agency, Press Release No. 19/2008, 28 March 2008 (<http://www.umweltbundesamt.de/uba-info-presse-e/2008/pdf/pe08-019.pdf>) with estimates of 20 times or more per year being generated worldwide. But according to Khaiwal and Suman (2019), Chandigarh generates about 4100/ t of e-waste as compared to 20–25/ mt. globally and this figure is quite alarming and huge as compared to estimation of 2006 above. Many of the products contain numerous hazardous chemicals and materials which poses a threat to the environment and to human health. In some countries and regions, regulations have been introduced with the aim of restricting the use of hazardous substances in these products and the management of e-waste at the products end of life. However, no such regulations exist in many countries where products are manufactured, used and disposed of. Furthermore, even where they apply, regulations do not fully address the management of e-waste or do not control all the hazardous chemicals and

materials that are used in newly manufactured electronic products (Ilankoon, 2018). Even in the EU (European Union), where some of the most stringent regulations apply, most of the generated e-waste is unaccounted for e-waste is transported internationally from many countries to destinations where informal recycling and disposal take place, often in small workshops with little or no regulation. As a result, impacts have already been reported in many Asian countries like China. China has also become a major destination for foreign e-waste (C. Hicks *et al.* 2005). The Basel Convention Regional Centre for the Asia Pacific estimates that approximately 33 million tones of illegal e-waste were imported into Asia, with a majority of that finding its way into China; while Tsinghua University estimates that total illegal imports of e-waste to be around 1.5 million tonnes per annum (M. Eugster *et al.* 2007). According to Parajuly *et al.* (2019) it will be a thought-provoking exercise for all the stake holders including regulatory authority to conceptualize future scenarios based on trends and regulatory initiatives.

This study is focused to identify whether organizations are aware about the e-waste or not and how effectively they manage their e-waste in better way. The questionnaire for the survey was designed after considering the objectives of the projects. The data collected have some weakness and strength as the sample size is too small so whatever we conclude is on the basis of the data collected.

E-waste

“Electronic waste” may be defined as all secondary computers, entertainment device electronics, mobile phones, and other items such as television sets and refrigerators, whether sold, donated, or discarded by their original owners or users. This definition includes used electronics which are destined for reuse, resale, salvage, recycling, or disposal. Others define the re-usables (working and repairable electronics) and secondary scrap (copper, steel, plastic, etc.) to be “commodities”, and reserve the term “waste” for residue or material which was represented as working or repairable but which is dumped, disposed or discarded by the buyer rather than recycled, including residue from reuse and recycling operations. Because loads of surplus electronics are frequently commingled (good, recyclable, and non-recyclable), several public policy advocates apply the term “e-waste” broadly to all surplus electronics. The United States Environmental Protection Agency (EPA) includes discarded CRT monitors in its category of “hazardous household waste” (Aspen Publishers, Inc 2006). E-waste comprises of wastes generated from used electronic devices and household appliances which are not fit for their original intended use and are destined for recovery, recycling or disposal. Computers, televisions, VCRs, fax machines are common electronic products. Such electronic products are made up of a variety of components, some of which contain toxic substances that have an adverse impact on human

health and the environment, if not handled and disposed of properly.

Indian Scenario

There is an estimate that the total obsolete computers originating from government offices, business houses, industries and household is of the order of 2 million nos. Manufactures and assemblers in a single calendar year, estimated to produce around 1200 tons of electronic scrap. (Parthasarathy, 2005). The consumer finds it convenient to buy a new computer rather than upgrade the old one due to the changing configuration, technology, expensive spares and labour and the attractive offers of the manufacturers. Due to the lack of governmental legislations on e-waste, standards for disposal, proper mechanism for handling these toxic hi-tech products, mostly end up in landfills or partly recycled in a unhygienic conditions and partly thrown into waste streams. Computer waste is generated from the individual households; the government, public and private sectors; computer retailers; manufacturers; foreign embassies; secondary markets of old PCs. Of these, the biggest sources of PC scrap are developed countries that export huge computer waste in the form of reusable components.

Electronic waste or e-waste is one of the rapidly growing environmental problems of the world. In India, the electronic waste management assumes greater significance not only due to the generation of our own waste

but also dumping of e-waste particularly computer waste from the developed countries. With extensively using computers and electronic equipments and people dumping old electronic goods for new ones, the amount of e-waste generated has been steadily increasing. Unorganized recycling and backyard scrap-trading is close to 100 per cent of total e-waste processing activity. About 25,000 workers are employed at scrapyards in Delhi alone where more than 10,000 to 20,000 tonnes of e-waste is handled every year. Computers account for 25 per cent of it and in the absence of proper disposal, they find their way to scrap dealers (Bibhu Ranjan Mishra, 2006). India as a developing country needs simpler, low cost technology keeping in view of maximum resource recovery in environmental friendly methodologies.

Sources of E-waste in India

The main generators of electrical and electronic waste in India are government institutions and the public and private sector consumers. The contribution from individual households, currently relatively small, is also likely to grow alarmingly in future. Manufacturers of components and assemblers are another important source of e-waste generation in the country. However, it is extremely difficult to capture the exact quantity of waste generation by this group. The import of e-waste, which is illegal, is another major source and preliminary estimates do point that the quantity being brought in is very significant. This

takes place both in a legal as well as quasi-legal way, since e-waste is either misclassified as 'metal scrap' or imported as second hand or 'end-of-life' goods, which soon become waste.

Trends of E-waste

The EEE sector provides an example of how product-related legislation and standards that are designed to address national or local environmental concerns in major markets can have significant implications for processes and production methods in other countries. The following important general trends of the EEE sector can be identified:

- Trans-boundary movement of used electrical appliances like refrigerators, personal computers and associated hardware, used electronic equipment and used mobile telephones, is forecast to continue to increase significantly. While offering some economic benefits, massive import of e-wastes coupled with the same wastes being generated locally is placing a heavy health and environmental burden, in particular to developing countries.
- While growing volumes of waste from EEE and associated adverse environmental and health problems can be significant in many countries, policy responses have been diverse. Particularly, the choice between government regulations and controls versus reliance on private-sector initiatives to achieve environmental objectives.

- Environmental policies are increasingly based on the principle of producer responsibility, in particular in dealing with end-of-life environmental impacts.
- The EEE sector illustrates the growing interest of regulators in innovation and product design to develop products that are environmentally-friendly at all stages of their life cycle. This raises questions about:
 - The respective roles of Government and private-sector initiatives;
 - The planning and design cycle of IT hardware industry;
 - The need to take into account differing conditions and needs of developing countries; and
 - Thus the resulting enhanced need for consultation and coordination of key environmental policies.

Trade issues do not figure prominently in national discussions and consultations on policies concerning WEEE, except for concerns about:

- (a) The functioning of the EU internal market;
- (b) Exports of WEEE to developing countries from developed countries, including used products and donations which may turn into e-waste within next 2-3 months of shipment, leaves developing countries to handle the disposal aspect; and
- (c) Voluntary standards on energy efficiency of EEE.

E-waste Management Methods

There are primarily four methods to manage e-waste. These methods can't give the guarantee of reducing e-waste by 100 per cent but somehow can condense it and save the environment. These four methods are repair, reuse, reduce and recycle. Repair is the most common method and is another way to look at reusing is to repair a broken item. This option can breathe new life into the item and could provide several more years of service (Ikhlayel, 2018). Reuse is another popular method where instead of throwing unwanted items away, they can be put to reuse by donation to someone who needs it. Also there are organizations that repair such items and then sell it for a profit for their cause. You'll probably make a little pocket change and everything that is sold will be reused by someone who will better utilization of it. It can help both that is, saving the environment and reduction of e-waste. Reduce is another where are many ways to reduce the amount of e-waste like reducing the use of disposable products where possible. Items designed to be used again and again are usually much better for the environment. Also, items like electrical cable or battery produces complicated multi-material wastes with different proportions of metals, plastics and glass (Esenduran *et al.*, 2019). These can be polluting if they are not adequately treated before final disposal. Material recovery from this equipment is relatively complex but can prove worthwhile when they contain precious and

scare metals. Harmful products which can affect the environment should be separated from the waste stream before the final disposal and those products should be disposed off separately so their harmful chemicals do not mix with the atmosphere.

Recycle is considered to be most friendly and economical but before going for recycling of product we must think twice can we use the product means reuse before going for recycling the product because recycling of product require investment (Zeng and Li, 2016). Today the electronic waste recycling business is, in all areas of the developed world, a large and rapidly consolidating business. Electronic waste processing systems have matured in recent years, following increased regulatory, public, and commercial scrutiny, and a commensurate increase in entrepreneurial interest. Part of this evolution has involved greater diversion of electronic waste from energy-intensive downcycling processes (e.g., conventional recycling), where equipment is reverted to a raw material form. The environmental and social benefits of reuse include diminished demand for new products and virgin raw materials (with their own environmental issues). One of the major challenges is recycling the printed circuit boards from the electronic wastes. The circuit boards contain such precious metals as gold, silver, platinum, etc. and such base metals as copper, iron, aluminum, etc. Conventional method employed is mechanical shredding and separation but the recycling efficiency is low.

Objectives of the Study

- To identify the awareness among the organizations towards the e-waste.
- To ascertain the Role of Government & legal instrument for managing e-waste in India.
- To classify different methods of e-waste management - reuse, repair, reduce and recycle.

Research Design and Methodology

To meet out the above sited objective a questionnaire based survey was designed to gather information in National Capital Region (NCR) of India. The questionnaire design was influence with the study of Jain and Garg (2011). The said study was covering major parts of Northern India while present study is focused towards NCR to capture spatial effects. Total 200 firms were targeted while 152 received usable. The questionnaire was tested as pilot test study in two parts of NCR namely NOIDA and Greater NOIDA. Rest of the responses was either not received or incomplete.

Nominal and ordinal nature of data and prerequisite to identify the characteristics among various parameters of nonparametric attribute signifying to choose chi-square - a test of goodness of fit establishes whether or not an observed frequency distribution is differ from an estimated frequency distribution.

Best known out of several χ^2 tests is Pearson's chi-square and

is used to assess two types of comparison: tests of goodness of fit and tests of independence. Test for fit of a distribution is based on discrete uniform distribution - a simple application is to test the hypothesis that in general population, values occurs with equal probability called theoretical or expected frequencies to test the generalized null hypotheses that the observed distribution follows the expected (there is no preference among observed frequencies).

Test of independence is based on contingency table also known as cross tabulation is often used to record and analyze the dependence between two or more nonparametric variables. In this case, an observation consists of the value of two outcomes and is allocated to one cell of a two dimensional arrays of cell according to the value recorded to test the null hypothesis that the row variable is independent of the column variable.

Data Analysis

The study is identifying the awareness, need of policy framework, and management of the e-waste with reference to cost, time and environmental impacts.

For the term awareness and policy framework, two separate questions have been framed to identify the choice. For the information regarding identification of the methods of Management of e-waste four categories based on 4R principle (Jain and Garg, 2011) namely repair, reduce, reuse, and recycle was given to the respondents to opt best practiced with the consideration of cost, time and environment.

The survey results to assess the awareness of e-waste and need for regulatory framework are given in Table 1. It shows that 80.26 per cent respondents were aware of the term e-waste and 91.45 per cent respondents gave the consent that government should have e-waste management policy. Contrary 8.55 per cent of aware people denied the requirement of policy framework from the government. Table concluded that the high requirement of legal frame work from the government of India in protection of socio-economic responsibilities and impacts.

Table 2 provides the cross tabulation data on awareness and management of e-waste shows that 75 per cent respondents prefer the repair option while only 3.29 per

TABLE 1

Outcomes		Need for Regulation		Summary (Awareness)	
		No	Yes	Total	% of Total
Awareness	No	4	26	30	19.94
	Yes	9	113	122	80.26
Summary (Regulation)	Total	13	139	152	100
	% of Total	8.55	91.45	100	

Source: Survey.

TABLE 2

Outcomes		E-waste Management by				Summary (Awareness)	
		Repair	Reduce	Reuse	Recycle	Total	% of Total
E-waste Awareness	No	25	4	0	1	30	19.74
	Yes	89	20	5	8	122	80.26
Summary (Management)	Total	114	24	5	9	152	100
	% of Total	75	15.78	3.29	5.93	100	

Source: Survey.

TABLE 3

Outcomes		E-waste Management by				Summary (Type)	
		Repair	Reduce	Reuse	Recycle	Total	% of Total
E-waste Regulation	No	12	1	0	0	13	8.55
	Yes	102	23	5	9	139	91.45
Summary (Management)	Total	114	24	5	9	152	100
	% of Total	75	15.78	3.29	5.93	100	

Source: Survey.

cent are in favour of reuse. The interesting fact is that 83.33 per cent unaware respondents choose the popular option showing the common attitude of cost reduction. Table further inferred that reduce is the second most preferred option followed by the recycle.

Requirement of regulatory framework and management of e-waste related facts given in Table 3 in the form of cross frequency. Information based on survey shows that 73.38 per cent firms are in favour of the management of e-waste through repair and want that government should have the regulatory framework. While only 6.47 per cent respondents opt the option of recycle and shows the regulatory need. Main finding based on Table 3 is that the regulatory or legal framework is required mainly for the use of e-waste after the repair rather the regulation of recycle procedure and guidelines.

Chi square test of goodness of fit (Table 4) is further supporting the dominant nature of outcomes received. The p-value (asymptotic value of significance) which is zero up to three digits after decimal indicating very high level of significance and infer to rejecting the null hypothesis of similarity of outcomes or in other words opinions are significantly different than others for all three options namely awareness, regulation and management of e-waste.

Test of independence based on chi-square test outcome is given in Table 5 showing the inter-dependency between variable of

concern. Test statistics shows that evidence of association of attributes between awareness and regulation are not present since the p-value is greater than the required level of significance, which shows that the opinion given by the various firms related to awareness and regulatory framework are independent. Similarly awareness

TABLE 4

Chi Square	Value	p-value
Awareness	55.684	0.000
Regulation	104.447	0.000
Management	207.947	0.000

Source: Survey.

TABLE 5

Chi Square	Awareness	Regulation	Management
Awareness	-	1.092 (0.296)	2.141 (0.544)
Regulation	1.092 (0.296)	-	2.467 (0.481)
Management	2.141 (0.544)	2.467 (0.481)	-

Source: Survey.

and management, and regulation and management also reported the high p-values are again supporting the null hypothesis. Since the survey was designed to acquire the facts from the firms related to e-waste and its management so it was essential to record the unbiased and independent opinions, which was approved by the test based on contingency table.

Conclusion

Awareness among all stakeholders of society is very critical for any effective change. E-waste, being a very emerging issue involving large number of stakeholders, needs concerted and sustained effort to create proper environment through education and awareness to make the change be progressive and meaningful. The role of state and producers are paramount and critical in this regard. The Regulatory Authorities will be required to take all initiatives and measures to educate the community at large and all other stakeholders make responsible. The producers will also need to play their part in educating the consumers regarding the e-waste management system, product constituents, and handling precautions, etc.

The 4R principle advocated that the repair is the most preferred option for the reduction of e-waste or no waste, while reducing and recycling the waste destined for disposal and the burden on the environment. The strategy for reduction in e-waste generation applies to different levels in the e-waste value chain, which can be achieved by maximization of the

use and reuse of electrical and electronic equipment, thereby delaying e-waste generation through repair; encouraging authorized refurbishment of used electrical and electronic equipment to extend the life of the equipment. Obsolete equipment, where ever suitable and usable, may be considered and given as donation to nonprofit/charitable institutions.

The development of supply chain of e-waste, comprising a collection system shall facilitate collection and segregation of e-waste and channelize such waste for the repair to reduce the need for new buying, reuse by the needful or finally recyclers to maximize the economic values and minimize environmental loss.

Recommendation

Awareness and education: Awareness among all stakeholders is very critical for any change to be effective and meet its desired objective. E-waste, being a very complex issue involving large number of stakeholders, will need concerted and sustained effort in creating the right kind of environment through education and awareness to make the change be progressive and meaningful. The role of state and producers are paramount and critical in this regard.

The Regulatory authorities will be required to take all initiatives and measures to educate the community at large and all other stakeholders of responsibilities and roles of each sector. The producers will also need to play their part in educating the consumers regarding

the e-waste management system, product constituents, handling precautions, responsibility of the producers in changed situation. These can be done collectively or individually through proper labelling in the products and other effective tools.

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A Study on Impact of Capital Structure on Profitability of Indian Companies

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Previously many scholars have concluded that overall capital structure is instrumental in guiding firm's subsequent growth, sustainability and profitability. Financial crisis has aroused lot of interest of researchers to explore the implications of debt in the financial world of the economy. Firms listed on the stock exchange for the years have been successful in gathering the interest of the investors seeking various financial information. Many previous researches have given an indication of presence of the casual relationship between firm's capital structure and its profitability but literature is still lacked by the empirical examination of the same. In this research paper, an attempt is made to analyze the presence of relationship between capital composition and profitability of large companies of India. This study is based on 50 Nifty fifty companies for the period over five years i.e. 2014-2015 to 2018-2019. We have applied correlation and regression in order to study the relationship. Findings of our paper suggests that financial performance of firms is significantly affected by their capital structure and their relationship is negative in nature.

Keywords: Capital Structure, Financial Performance, NSE Nifty 50 index, CFP.

Introduction

SINCE long, many researchers have showed their keen interest in the financial affairs of the companies. Due to financial crisis on stock markets all around the globe, arouse concerns for excessive firm's leverage and its impact on capital profitability. Theoretically, myriad models are discussing how capital structure of the firms designate tax savings, bankruptcy costs, transaction costs, adverse selection, agency cost, etc. as the presiding strand affecting a firm's choice of debt and also its impact on financial performance. In general practice, many firms

have pursued different goals differently but the core objective is to minimized the cost. As debt equity ratio, reflects the ability of shareholder equity to cover all outstanding debts in the event of a business downturn, letting the creditors as well as an investor to be more specific in financing cost of capital over the total cost for the companies listed on stock exchange.

Similarly, to know the expected returns on their risk bearing activities, investors and traders in the stock market are interested to know the relative impact of debt on a firm's performance. On the basis of the ranking and historical prices of stocks listed on stock markets, investors or traders can easily examine the daily performance of the shares in order to decide on the investment of their funds in relation to high performing firms.

In the wake of liberalization and globalization, expansion of investment opportunities as well as financing options have increased the burden of utility on capital market. Even if any of the company wants to expand its capital, multifarious sources can be merged from different form. Also, firms can use either debt or equity capital to finance their assets but combination of both i.e. debt and equity is considered to be ideal options for the company. Nevertheless, one of the most bewilder issues facing by financial managers is to cope up with the relationship between Capital Structure (CS), which is the mix of debt and equity financing, and stock prices, where debt is advantageous (relative to equity) if debt equity ratio ($der > 1$), otherwise it is harmful.

Variations in Capital Structure can be explained by pecking order

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theory (Myers, 1984) Even, where external equity can be seen as most expensive and also dangerous in terms of potential loss of control of the enterprise by the original owner-managers. The information advantage of the corporate managers will be minimized by issuing debt. When there is undervaluation of shares of the company, an optimistic manager, prefer debt over equity issue. With the requirement of increasing external financing within the company, the firm will overlook pecking order, where debts become more riskier, perhaps where convertible securities or preferred stock and finally equity become a last recourse (Myers and Majluf, 1984). New concept of capital structures began to arise with the study of Modigliani and Miller (1958), where (mm) pointed out the conditions, where such theories can be irrelevant in context of CS. Since then, many economists have followed the path and tried to find out the appropriate steps to undergo where this research stands and where it is going. Some researchers may include Taggart (1977), Masulis (1983), Miller (1988), Ravid (1988) and Allen (1991) and comments on Miller (1977) by Bhattacharya (1979), Modigliani (1982), Ross (1977), Stiglitz (1974) and Masulis (1980). Allen (1991) focuses on security design, and Ravid (1988) concentrates on interactions between CS and product market.

This study proceeds with Section II which talk about various previous literature after this section. Section III and Section IV talks about objectives and hypothesis framed for the study in

the light of literature review. Section V gives brief view of the research methodology adopted and the sample used in the study. Section VI presents the results of the study followed by conclusion and suggestions in section VII.

Review of Litterature

The study of Berger, A.N. (2002) reflects that higher profit efficiency is associated with higher leverage base or lower equity capital proportion, thus goes well with the agency cost hypothesis. Although when a company has a very high leverage, the above-mentioned relationship may be reversed due to presence of high outside debt cost. Ownership structure is the premise for profit efficiency, and this is consistent with the agency cost argument. As per Hung's (2002) research findings, there is a positive relation between capital gearing and assets, while capital gearing and profit margin bear a negative association. Pandey (2002) revealed the presence of flat U-shaped (saucer) relationship graph between profitability and capital structure, accommodating external financing cost, agency cost and tax benefit arising due to interest deduction. Along with this, his research study indicated towards a fact that capital structure is positively influenced by tangibility and size while it is negatively affected by growth and risk. Asteriou *et al.* (2002) revealed that capital structure is significantly affected by profitability (net and gross both), total assets and assets utilization growth. Research study by Bhaduri (2002) further pointed towards the effect of cash flow, product factors,

growth, size and industry features in attaining optimal capital structure. Mauritian capital market as a provider of long-term funds for a business proved to be significant from the results of the exogenous variables, namely growth, profitability, age and risk, making results consistent with those of earlier studies along with the trade off theory (Rony *et al.*, 2003).

Sarkar and Zapatero (2003) suggested that in a such competitive atmosphere, profitability is decreasing with the speed of reversion in profitability, which has been proved by the speed of time-series applications. Strebulaev (2003) contended that even though a direct relational be expected between profitability and the optimal leverage ratio but still there is some negative relationship between the same owing to transaction costs, firms do not constantly rebalance their leverage ratios perhaps they allow to move within a range surrounding the optimal leverage ratios. Mesquita and Lara (2003) affirms that optimum proportion of debt and equity not only influence the worth of the firm but also its return rates structure, where such findings indicate that the return rates shows a direct correlation with short-term debt and equity, and negative correlation with long-term debt. Azhagaiah and Premgeetha (2004) suggested that adequate disposal of debt can lay out the preferred financial flexibility of companies with the agenda for growth. This non-debt tax shield with growth rate are statistically significant, which means that these variables are the major determinants of the capital structure of Indian Companies.

Chen and Zhao (2004) suggested that dynamic tax considerations can be considered as most unlikely reason for the inverse relation of profitability with leverage. Deesomsak (2004) focused that capital structure is also influenced by the environment within which it operates along with mapping the strategies influencing firm's CS decision. Loof (2004) suggested an idea that if the firm choose unique combination of asset, the thinner the market is for such assets. Hence, one may expect that uniqueness be inversely related to leverage.

As per Voulgoaris *et al.* (2004) SMEs and LSEs, both groups have profitability as their primary and important factor. While LSEs' debt structure mandates the presence of efficient asset management, whereas credibility of SMEs is affected by current assets' efficiency, large amount of fixed assets and sales growth. Song's (2005) research on Swedish firms pointed towards massive differences that exist in the factors that determine short-term debt and long-term debt, also stated that mostly all factors affecting capital structure as per existing capital structure theories were found significant for firms operating in Sweden. A positive relation between return on equity and proportion of short-term debt to total assets was proved significant in a study by Joshua (2005).

Harrington (2005) supported the theories of capitalization, where profitability is considered as a vital determinant of leverage and concluded that the results of manufacturing firms have a slower mean rate in reversion of

profitability in comparison to the firms operating in a more competitive environment. Huang and Song (2006) surveyed in other countries also, such as Chinese firms, where they concluded that leverage accelerated with firm size and fixed assets, and diminish with profitability, nondebt tax shield, growth opportunity, managerial shareholdings correlate with industries, and found that the ownership or institutional ownership has no significant impact on CS. Tang (2007) found that non-current assets, growth expectations, and the nexus between these two variables are the decisive factor of long-term debt of the lodging industry. Although many studies have been endeavoured in the sphere of capital structure and profitability but very few analyzes has been done to find the impact of capital composition on Profitability.

Objectives

The objective of this study is to measure the impact of capital structure on the profitability of the selected companies. In other words, to identify and analyze the relationship between profitability and capital structure.

Hypothesis

H_0 : There is significant association between the capital structure and profitability of selected top Indian companies.

H_a : There is no significant association between the capital structure and profitability of selected top Indian companies.

Data Base and Research Methodology

Data used in the study is derived from secondary sources. Annual financial statement of the companies is used to form the required data set as annual financial statements are considered the most reliable source of information about the companies. The time period of the study is from assessment year 2014-15 to assessment year 2018-19, i.e. total of 5 years. This study is based on 50 companies forming part of the nifty fifty index. Nifty fifty index is widely used index and covers the Companies across various industries.

For the purpose of measuring capital structure debt-equity ratio is used and for measuring profitability - Return on assets is used. Data for both the variables is collected form annual financial reports of companies available on their websites. Capital structure in this study is used as an independent variable and financial profitability is used as dependent variable.

The Statistical Techniques used for analysis are Pearson's Coefcient of Correlation (to analyze the relationship between CS and Profitability), Regression Analysis (ordinary least squares) to analyze the unique impact of CS on Profitability in addition to descriptive statistics such as Mean, Standard Deviation, and Ratio.

Sample

This study is based on the NSE Nifty fifty index company. This Index is considered as one of major

index reflecting the state of Indian economy. The sample companies are across various industries in order to predict the overall movement of Indian companies. Distribution of companies across

various sectors is given in Figure 1.

Results and Analysis

The results of the study are reported in following section.

First, we talk about descriptive statistics. After that correlation and regression results are analyzed.

Descriptive Statistics

As we can see from Table 1 average ROA among the sample is 11.68 per cent among the sample and the average Debt/equity ratio is 0.4966 indicating that approximately Indian firms are characterized by equal funding of both debt and equity. The maximum and minimum values for debt/equity ratio indicate that there is high level of variability of the debt/equity composition among the Indian companies.

Correlation and Regression Analysis

Table 2 represents the correlation matrix and Table 3 reports regression analysis results. As it can be seen from Table 2 that correlation between ROA and Debt Equity ratio is -0.347. It indicates that relationship between debt equity ratio and ROA is negative. In other words, an increase of debt in capital structure leads to fall in profitability. However, this negative correlation is weak. From Table 2 we can conclude that since our value of p is less than 0.05, the negative impact of debt equity ratio on ROA is significant. This leads to the acceptance of our null hypothesis that there is a significant association between the capital structure and profitability of selected top Indian companies. Our result is consistent with prior studies.

FIGURE 1

DISTRIBUTION OF SAMPLE COMPANIES ACROSS VARIOUS INDUSTRIES

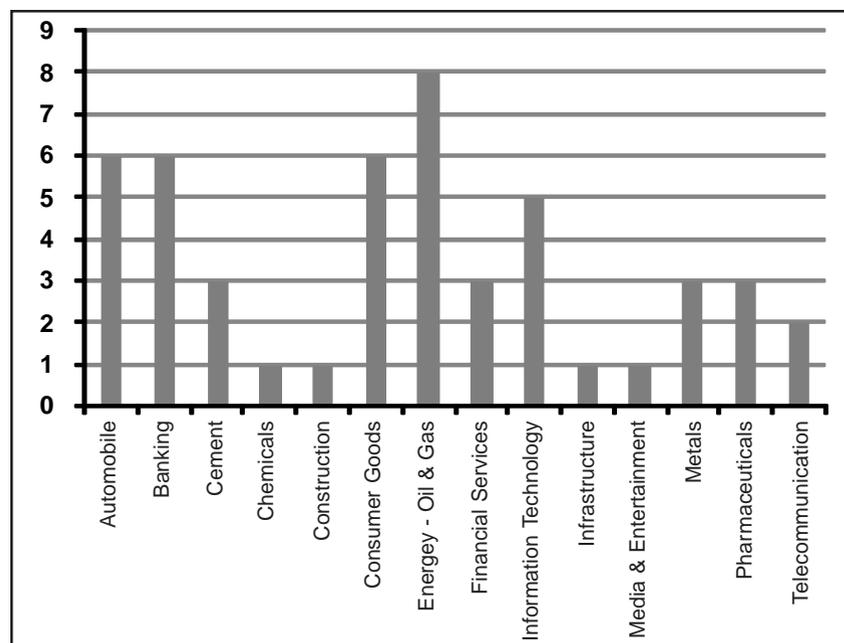


TABLE 1

DESCRIPTIVE STATISTICS

Particulars	ROA	Debt-equity Ratio
Mean	11.68202	0.496667
Median	8.460000	0.110000
Maximum	77.61000	4.990000
Minimum	-20.44000	0.000000
Std. Dev.	11.94074	0.984702
Skewness	2.173251	3.162608
Kurtosis	11.22816	12.92525

TABLE 2

CORRELATION MATRIX

	ROA	Debt-equity
ROA	1	-0.347
Debt-equity	-0.347	1

TABLE 3
RESULTS OF REGRESSION ANALYSIS

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Debt-equity	-4.207992	0.710795	-5.920123	0.0000
C	13.77198	0.782700	17.59548	0.0000
R-squared	0.120420	Mean dependent var		11.68202
Adjusted R-squared	0.116984	S.D. dependent var		11.94074
S.E. of regression	11.22059	Akaike info criterion		7.681099
Sum squared resid	32230.80	Schwarz criterion		7.708641
Log likelihood	-988.8618	Hannan-Quinn criter.		7.692174
F-statistic	35.04785	Durbin-Watson stat		0.203044
Prob (F-statistic)	0.000000			

Conclusion

Our study examines the effect of capital structure i.e. debt equity mix ratio of capital structure on firm's economic performance. The results report negative correlation between capital structure and financial performance of the firm. In other words, there is negative and significant impact of debt on firm's profitability. With an increase in debt firms profitably reduces. Thus, firms should keep a check on an increase in the debt portion of their capital structure as this will not only adversely impact the firm's performance but also leads to an increase in risk (financial leverage) and expose the firm towards control issues. Thus, our study suggests to the management to follow optimal capital structure which includes debt but not high proportion or 100 per cent of debt. It will reduce the risk of bankruptcy of the firm.

However, this study suffered from following limitations: *Firstly*, in this study we have used only one proxy for measurement of capital structure and corporate performance. More variable can be used

for the measurement of both. *Secondly*, database of larger no. of companies might give better results. *Thirdly* we can find the impact of capital structure on firm's financial performance by sector and then compare the results to know the real picture of the relationship.

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