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RESEARCH ARTICLE

Multinational working capital management a study on Toyota Motor Corporation

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Abstract

The purpose of the study is to explore the influence of three factors on working capital management—fixation of current assets level—level of investment for each type of current asset components—sourcing of finance at competitive rate. A further study is made on MNCs effectiveness in managing working capital besides to weigh how they re-position profits, cash flows and capital within to maximize profitability. Present globalised and integrated economy, facilitate MNCs to internationalise business by acquiring intangible assets besides optimising resources. MNCs all these activities invite challenges in continuing global presence. In spite of all odds, MNCs generate, capture value by applying unique business models besides combining with or buying foreign business and play a major force in driving globalisation of world economy. The study is descriptive and based on secondary data, sourced from the annual reports of Toyota Motor Corporation. Statistical techniques like coefficient of correlation, correlation matrix and least squares method, are used for analysis and past six years performances are critically analyzed to justify research questions. The message of the paper is to have now a well-designed global fund transfer policy, economy friendly tax regime and modest regulations in lessening MNCs challenges.

KEYWORDS

effectiveness in managing working capital, fixation of current assets level, global fund transfer policy, globalised and integrated economy, major force in driving globalisation

1 | INTRODUCTION

Globalization aims for developments but the present pace of integration of national economies and markets, have increased over expectation in the recent years. Present globalized and integrated economy endowed free movement of capital and labor, shift of manufacturing bases from high-cost to low-cost locations, gradual removal of trade barriers, and technological and telecommunication developments which in turn, motivated Multinational Corporations (MNCs) to internationalize business, to acquire intangible assets and to optimize resources

globally. The ever-increasing importance of intensifying, shielding and misusing intellectual property and managing risks, also have had an important impact on the way cross-border activities took place. Haller (2016) expressed globalization as everybody's welfare, a condition for a stronger presence of multinational corporation in the world circuit of goods, services, capital, technology and human resources, played a key role in the processes of liberalization, regionalization and globalization besides representing a large proportion of global GDP. Globalization refers not just to increase ratio of trade to GDP in the world economy, but also to increase ratio of foreign

investment to global output (Jeffery, 1999). Globalization has presently resulted in a passage from country-specific operating systems to global models based on matrix management organizations (other than traditional hierarchy) and interconnected supply chains that unified several functions at a regional or global level.

MNC's investments to host country, have majorly been contributing in moving forward to globalization of world economy. Due to the advancement of globalization, MNC's role in undertaking world-wide business, has become more complex and dynamic as till today they have to endure varied and complex situations in establishing set-ups in host countries, however, multiple approaches are being adopted to overcome the situations. Higher wariness have been observed due to increase in global financial flows through offshore financial centres and, further frustrations seem to have grown up as liberalization and pro-market policies have smoothened the mobility of financial capital (Grilli & Milesi-Ferretti, 1995). In spite of all odds, MNCs withstand diverse culture, varied production facilities, inconsistent currency movements, diverge inflation rate, stringent exchange control regulations and complex tax regime, in establishing and continuing global presence and in creating subsidiaries, associates in multiple locations for conducting commercial operations with ultimate goal to establish strategic control over host country operations. Bartlett and Ghoshal (1986, 1988, 1989, 1998) and Nohria and Ghoshal (1997), documented that subsidiaries are essential for many strategic activities that produce and renew MNCs' contacts and competences generated out of innovations. MNCs secure inputs globally, source capital at competitive rate, convert those inputs to finished/semi-finished products with labor, equipment's and market them globally to generate and to capture value through host-country operations by judiciously applying their working capital management policies besides combining with or buying existing foreign business (Channon & Jalland, 1978). Cash flow forecasting is a major concern in managing working capital as inputs for this tasks are not strictly financial rather majorly impacted by marketing (credit granting) or production (inventory) decisions. It is widely recognized that unforeseen events mostly alter management's anticipated cash flows which are primarily the cause of working capital crises. The intensified volatility in major currencies, have severely been messed-up the stability of MNCs foreign income streams, as a result, frequent exchange rate fluctuations and country specific pooling restrictions, came out as one of the greatest hindrances in firm's valuation and for free movements of funds, which are also the major concerns in managing working capital. Managing working capital finance is one of the crucial activities of any corporation

and is met partly from promoter's contribution, then through accounts payables to suppliers and rest loans against bank credit lines. In-house banks, out-come of un-repatriated capital, is also one of the key sources to MNCs in funding working capital. Due to disparate and often contradictory tendencies of treating working capital and long term financial planning independently or incorporating the former under the latter, have actually been created modest development in understanding the working capital management process. Although financial theory lacks in hypothesizing any reasons why short-run financial management objectives should be distinct from the long-run objectives, review of literature indicated non-existence of consensus concerning the primary objective of working capital management. In light of this contradictory trend, one of the goal of the paper is to study managements' consciousness on the objective of working capital management processes, to establish supreme holistic importance in understanding the complexities, rather than treating as an isolated task.

In next section, an outline of the literature is planned to heighten how earlier study hypothesized MNCs various aspects of working capital management and in what way, the literatures are different from earlier study. Next section conveyed on the theory and hypothesis development, thereafter, a comprehensive summary on the research processes carried out covering methodologies, objectives, scopes and techniques. As rationalization of global production and operations, have been created large volume of intercompany fund flows, the following section contributed on how "Toyota Motor Corporation" (Toyota), a well-established MNC, managed its considerable amount of multi-currency inflows and outflows to fit into its working capital requirement. At the end, the paper validated how the opportunities, generated out of multi-currency inflows and outflows, benefitted Toyota in minimizing short term borrowing costs by utilizing Bank's day light limit facilities.

2 | LITERATURE REVIEW

Working capital is the measure of a firm's liquidity and is factored into firm's valuations. A major portion of management time is employed in managing working capital, but a few research interest in studying the working capital management process found in the literature. Working capital management decision occurred frequently which are routine in nature and reversible over time. Thus their individual impact is insignificant, accordingly dynamic analyses are usually not deemed worthwhile. In the present integrated global financial system, to advance understanding with respect to Multinational Corporation's

working capital management strategy, scholars occasionally employed the theoretical paradigm which conceptualized MNC's multiple operational activities as the determining factor. MNCs possessed sophisticated technological and managerial capabilities that domestic incumbents lacked (Cantwell, 2009). When domestic corporate managers are continuously involved in the working capital decision-making process, they have very limited knowledge in managing working capital for global operations. In order to fill this gap in working capital literature, a study based on global management perceptions, carried out (Gentry, Mehta, Bhattacharyya, Cobbaut, & Louisscaringella, 1979). Considering the present integrated global financial systems, the paper directly narrated to literature on MNCs working capital management process with a reference study on "Toyota Motor Corporation", one of the largest global auto multinational corporation.

Fourcans and Hindelang (1974) presented that MNCs faced uncertainty day by day and for which the working capital management became complex, therefore the corporates must ponder trade-offs between liquidity and profitability of its current assets. They also highlighted that significant additional dimensionality added to the problem when foreign exchange rates, foreign tax methodologies, fresh sources of funds from overseas money markets besides multi-faceted social, economic, and political factors, overlaid on the framework. They developed a simulation model to assist MNCs in managing working capital which also included subsidiaries operations. Mr. John C. Edmunds (1983) contended that financial executives of multinational companies, compelled to take decision on working capital, capital budgeting and capital structure at a time under one package although the decisions are required to take independently. He also suggested that financial executives must restrict their analysis to start with capital budgeting then capital structure and at the end to frame working capital policy. Cooper (1984) expressed that working capital management is more complex for MNCs than corporates engaged only in domestic operations. He narrated that as MNCs are operated in diverse economic and political climates besides various tax jurisdictions, they have to face multiple complexity in conducting global business. He also highlighted how foreign exchange risks impacted on MNC's profitability, net cash flows and on the working capital management. Siddarth and Das (1994) reported that the major reason for slow progress of an organization is due to shortage and/or wrong way of managing working capital. He further explained that managing working capital efficiently, is the vital factor for success and survival, both for profitability and liquidity (Rajesh, 2017). Deloof (2003) found that long cash conversion cycle invited larger

investment in working capital, might upturn profitability due to incurring higher sales but on the other hand, profitability might also decrease, if the working capital investment costs increased faster than the outcomes of holding more inventories and/or granting more trade credit to customers. Benders and Morita (2004) commented that "Toyota Production System (TPS)" was accepted globally as the best auto manufacturing system which had been contributed largely in managing working capital. They also highlighted that Toyota has a mission to modify the system continuously which in turn encouraged MNCs to frame manufacturing processes in managing working capital. Satish (2007) elucidated that if only one of the working capital components made any dramatic differences, invited meticulous management of all the components of working capital and even also a portion of the deferred liabilities. Swati (2012) studied on the adequacy and efficacy of working capital management for automobile industry and commented that MNCs always approached to aggressive working capital management. Lotta, Miia, Sari, Florian, and Timo (2012) revealed that working capital management created competitive advantages and considered as the main contributor in MNCs value chain process where inventory played the key role. Mr. Nilufer (2012) expressed that tax differentials due to host countries transfer pricing schemes, represented as strategic tools for working capital management. He highlighted that varied transfer price also acted as a new form of tax arbitrage for enhancing firm's value. Nicolai, Mudambi, and Murtinu (2018) narrated that policymakers possessed all time concern over the taxation system on multinational corporations and also argued to rethink current tax policies due to increasing mobility that resulted MNCs improved ability to fine slice the value chain besides dispersing it geographically. They, in their paper, also highlighted that the rise of modern MNCs commanded thoughtful change on structuring the current international tax policies to streamline the global tax regime and to control tax evasion. Kalaivani and Jothi (2017) mentioned that working capital management, dependent on the merits of financial ratios, played a major role for MNCs overall success. Daisuke Tsuruta (2019) observed that the use of excess working capital had increased following the collapse of Lehman Brothers in 2008 and the adjustment speed displayed comparatively slower during the crisis period. He also noticed that carrying excessive working capital worsened firm performance.

In light of the emphasis on MNC's working capital management, review of literature focused specifically on host country market imperfections, macroeconomic conditions, and government policies that is, traditional complexities that had been faced by MNC's in managing

working capital. The paper contributed to the literature in two significant ways,

First, how MNCs are benefited from pooling of funds within the areas having no economic or political barriers and from countries that have no stringent exchange control policies, with a reference study on Toyota Motor Corporation.

Second, critical analysis on MNC's working capital management and an intensive study on "Toyota Motor Corporation", referring past 6 year's performances.

The review is not designed to critique the literature which suggested several preliminary conclusions on how MNCs managed their working capital, instead to highlight how prior research conceptualized MNCs various aspects of working capital management and in what way, the literature are different from the earlier study. The paper focused on the undernoted areas which are unlike from literature review;

1. MNCs, having centralized cash management with cash pooling opportunities, allocate internal surpluses to optimize interest spending. In-house bank, in the process, facilitates MNCs for succeeding trade-off between expected profitability & liquidity.
2. MNC's pooling benefit of funds although sound very good but has limited financial benefits as all the countries allow MNCs the freedom to pool funds. The study highlighted that MNCs can be benefitted in reducing working capital borrowing costs with the support of bank's day light limit facilities by pooling funds within the permissible locations.
3. Historically, Toyota's total production system (TPS) globally has been accepted by most of the major auto manufacturers. Toyota's operating income and working capital throughout exhibited high with positive correlation and indicated that it managed working capital efficiently all through with the support of its existing production system (TPS).
4. For MNCs, inventory normally comprised a major contributing factor of current assets. Toyota maintained better inventory turnover than most of its competitors, even better than industry level. Inventory contributed on an average 20% of Toyota's current assets.
5. Automotive companies generally have high aggressiveness in managing working capital finance (Swati, 2012), however Toyota retained conservative approach throughout.

3 | HYPOTHESIS DEVELOPMENT

Hymer (1960) commented that MNC's investment, in order to organize production abroad, is the key

contributory factor and as long as investments generate knowledge spill over or technology transfer the host country growth objective can be achieved. MNCs enabled host country firms to access latest product and process know-hows for the improvement of productivity. Multinational corporations made long term investment in building infrastructure to countries for commercial activities across the globe with ultimate goal to access host country resources, withstand multiple risks and wait till invested projects yield returns. The study presumed that MNCs are motivated to enter and to invest in foreign markets to search for economic advantages that facilitated them in maximizing profitability. Therefore, the spirit of working capital management, is the combination of,

- Minimization of working capital utilization by maintaining a unique optimal level with the support of well-designed supplier's policies and market oriented credit policy.
- Minimization of overall cost in raising working capital funds, through an in-house treasury department, well conversant in negotiating with lenders and is capable to manage and deploy short term cash surpluses in profitable ways.

3.1 | Cash flows

MNCs have global operations and enjoy diverse types of arbitrage opportunities. The study explored the possibilities how MNCs are required to reposition funds for managing current assets, current liabilities to support business needs. Effective management of assets, liabilities, and overall operations, are highly dependent on the predictability of cash flows. Generally, it is assumed that cash outflows are more predictable than cash inflows because management may control the timing of outflows. Cash flow predictability should positively be related to the efficacy of internal communications among marketing, production, and finance functions and as better the internal communications network, the higher the predictability of cash inflows (Stephen et al., 2013). MNCs manufacture goods in few specific countries and transport the intermediate, finished products globally to other centres for completion and distribution, possessed unique challenges in managing their working capital. For prudent working capital management, MNCs are required to reposition funds to different locations in tune with the business requirements, generated out of optimal utilization of current assets and current liabilities. MNCs cash management is considerably complex as they need to raise and deploy cash in multi currencies covering multiple locations.

MNCs, to finance their operations and in managing their foreign exchange risk, sourced funds in different currencies from global money/forex markets, as a result, effective cash management came out as one of the paramount concerns which compelled MNCs to adopt an effective well designed cash management policy (Siddaiah, 2010). MNC's prudent fund management profoundly focused on how to enhance return on assets, to reduce funds tied up in working capital and to provide requisite liquidity to all operating locations. Optimal cash management ultimately helped MNCs to reduce investment in cash and to reduce expenses in foreign exchange transactions besides to augment returns by investing surplus cash.

Pooling of funds might sound very good but financial benefits are limited as pooling of funds are controlled by the country's central bank. In view of this, MNCs initially quantify total amount of working capital requirements, then segregate into unrestricted and restricted countries, having positive and negative funds pooling benefits.

Accordingly, the author hypothesizes that.

H1. *"MNCs can reduce short term borrowing costs by pooling funds within unrestricted locations."*

3.2 | Working capital management

Working capital management is a part of general enterprise strategy to firm's value maximization (Michalski, 2014) and signifies management of working capital components in a manner to achieve optimum balance between liquidity and profitability. In an ideal world, if no risk or uncertainty persist, there is almost non-existence of working capital management process and firms are required to manage only working capital tied into work-in-progress. Operating cycle, an important concept in managing cash and working capital, generates funding need based on cash in and cash out flows, foreign exchange rate fluctuations and on the level of business risks (Bhalla 2012). The main role of working capital management, is to hedge the firm from the potential risks of all its elements during the realization period of operating cycle besides to eliminate anxieties on potential shortage/excess of working capital components (Richard et al., 2014). Working capital management focused on three aspects-fixation of current assets level-maintaining optimal investment level for each type of working capital components and lastly to source funds globally at competitive rate. Accordingly, arriving at an appropriate level of working capital and understanding trade-off between expected profitability and liquidity, are essential. Working capital denotes as current or circulating capital and

the main theme of the theory is to establish an interaction between current assets and current liabilities. Important components of the firm's financial structure include level of investment in current assets and extent of current liability financing. Therefore, the goal of working capital financial management is to manage each of the firm's current asset components (inventory, accounts receivables, cash and marketable securities) and current liabilities (accounts payables, accruals and notes payables) to achieve a balance between profitability and risk that contribute positively to the firm's value (Federhen, 2004). Central to working capital management is an understanding of firm's cash conversion cycles that is, recurring transition of cash to inventories to receivables and back to cash (Eugene & Michael, 2013). A positive cash conversion cycles mean the firm must use negotiated liabilities like bank loan to support its operating assets. Firm's goal is to minimize the length of cash conversion cycle and to avail optimal level of negotiated liabilities. The firm first used net working capital (gaps between current assets and current liabilities) to consider the basic relationship between current assets and current liabilities and then find out the cash conversion cycle to consider the key landscapes of current asset management (Stewart & Anand 2007). High level of net working capital, due to more current assets investments, increased firm's liquidity but reduced returns as current assets are less profitable than long term assets. Like, low level of net working capital increased profitability due to better deployment of funds but invite risk of technical insolvency. The bottom line is that any suboptimal level of net working capital at the end, reduce return to shareholders by lowering the firm's value (Gitman, 2000).

To validate the significance of working capital management, the author selected "Toyota Motor Corporation", one of the major auto MNC, for assessing different facets of working capital management and accordingly hypothesizes that:

H2. *"Toyota Motor Corporation with the objective of ensuring liquidity and profitability, adopt prudent working capital management".*

3.3 | Limitation of the study

1. The study has the limitation of developing hypothesis on the basis of yearly data whereas working capital management took place on daily basis, even every moment of business cycle.
2. Toyota Motor Corporation, in the annual report of 2020, presumed average exchange rates as 105 yen per US\$1 through the fiscal year 2021. The same

conversion rate is applied by the author while converting performances for the past 6 years, depicted in Japan and also to arrive expected data for 2021.

4 | METHODOLOGY

The study has two major objectives:

- To evaluate all the facets of MNCs cash flows besides to assess difficulties being faced by Toyota in utilizing available cash, optimally.
- To ascertain significance of MNCs working capital management with reference study of Toyota Motor Corporation.

The objectives are established on a sample comprising of past 6 years (2015–2020) performances data, sourced from Toyota's annual reports. The following statistical techniques are adopted,

- The percentage method, CAGR and coefficient of correlation, to analyze Toyota's past 6 year's data.
- Least squares method to predict current year key working capital components with respect to forecasted revenue.
- Correlation matrix to identify quantitative factors affecting Toyota's working capital.

4.1 | Variables and measures

Independent variable is a variable, supposing to affect the dependent variable which is measured using statistical techniques. Independent variable predicts dependent variables, completely dependent on the independent variable and are called “response variable” or “outcome variable”. In the study, the independent variable that is, Toyota's current year revenue forecast, is used to predict dependent variables that is, working capital components like current assets, current liabilities and total cash availabilities (cash, cash equivalent and marketable securities).

Regression analysis is a technique to study the dependence of one variable on one or more other variables with a view to estimating and/or predicting the average value of dependent variable in terms of the forecasted or fixed value of the independent variables. Accordingly the technique is used here to ascertain the value of working capital components (Dependent Variables) i.e., current assets, current liabilities, total cash with respect to the forecasted value of revenue (Independent variables) i.e., US\$207.072bn (2021). In the study, the assumption is that all the working capital components have leaner relationship independently/separately with the revenue and for which least squares

regression is used to predict dependent variables that is, current assets, current liabilities and total cash.

4.2 | Least square method

The least squares method is a statistical techniques to find the best fit that described the probable relationship between independent variable and dependent variable. The study tested the value of Toyota's current assets, current liabilities and total cash availability separately with respect to its auto revenue, forecasted at US\$207.072bn. Here the adopted statistical tool fits a set of Toyota's past 6 years observed data where the dependent variables represent the outcome. It is usually represented by the letter “Y” as under:

$$Y = a + bX,$$

where, a is the y-intercept of the estimated regression line, b is the slope of the estimated regression line, X is the Toyota's auto revenue forecast (2021), Y is the predicted value of current year dependable variables that is, current assets, current liabilities and total cash availabilities (cash, cash equivalent and marketable securities).

With Y_i denoting Toyota's actual yearly current assets and Y in the equation representing the predicted value of current assets, every year the sample will have an observed value of current assets and a predicted value of current assets. For the estimated regression line to provide a good fit to the data, the differences between the observed current asset values and the predicted current asset values, should be minimal. The least squares method used the sample data that is, Toyota's past 6 years performances, to provide the values of a and b that minimized the sum of the squares of the deviations between the observed values of the dependent variables Y_i and the predicted values of the dependent variables Y . The criterion for the least squares method is given by the expression

$$\min \sum (Y_i - Y)^2$$

Differential calculus can be used to show the values of Y_i and Y that minimized expression, can be found by using equations,

$$b = \frac{\sum (X_i - \bar{X})(Y_i - \bar{Y})}{\sum (X_i - \bar{X})^2}$$

$$a = \bar{Y} - b\bar{X}$$

where, X_i is the value of the independent variables (Revenues), Y_i is the value of dependent variables

(current assets), $\bar{X}$ is the mean value for the independent variable, $\bar{Y}$ is the mean value for the dependent variable (Chawla & Sondhi, 2011).

Similar methods are applied separately to arrive other two dependent variables (current liabilities and total cash).

4.3 | Correlation matrix

The correlation matrix comprised of rows and columns, which displayed the correlation coefficients for different variables and represented correlation between all possible pairs of values. Correlation matrix is very important to examine for detecting the problem of multicollinearity that is, existence of high correlation between pair of predictor variables. If correlation coefficient between any pair of predictable variables is greater than 0.75, it indicates that both the variables in that particular pair share a large amount of common shared variance and might reflect same attribute. Under such circumstances, one of the two variables could be eliminated for further analysis. However, Table 11, indicated that the correlation between working capital and other predictor variables (Key financials) does not exceed 0.75. Therefore, there does not seem to be any serious problem of multicollinearity and the model is reliable. Here the matrix is used as inputs for exploratory factor analysis to find out, in what way, key financials supplement Toyota in taking decision on working capital management.

5 | TOYOTA MOTOR CORPORATION

The paper argued that automotive industry is increasingly concerned with their internationalization strategies due to increasing time-based competition as the sector established as one of the key contributor in playing the major force in driving globalization of the world economy (Mukund & Radhika, 2004). The industry markets remained stable in developed countries and expanded marginally in emerging countries but had slowed down in some resource-rich countries. During the recent past, the industry has entered into a transformational period due to environmental issues and added social challenges besides rapid progress in technological innovations like electrification, automated driving, connected vehicles and car-sharing (Landery & Likerz, 2007). “Toyota Motor Corporation”, one of the largest global auto player designs, manufactures, assembles, and sells almost all type of passenger vehicles, parts and accessories. It has three business segments such as automotive operations, financial services operations and other operations where

significant business segment is automobile which covers around 90% of Toyota's total revenues. Toyota's financial services business segment includes loan programs and leasing programs for auto related customers and dealers. Toyota divided its entire automotive operations into five geographic clusters (zones) comprised of Japan, North America, Europe, Asia and others. Presently, Toyota is the top most world-wide automotive manufacturer by revenue, volume and possessed high brand recognition and market position. The study focused only on Toyota's automotive business segment.

5.1 | Performances

The significant aspect behind Toyota Motors' growth to standing, has been the “Toyota Production System (TPS)”, developed over several years and proved itself as the key contributing factor in managing working capital. Toyota has created such strong infrastructure that helped Toyota to survive easily not only for the current era, but also in the long run (Toyota Motor Corporation Global Website, n.d; Figure 1).

Toyota Motor Corporation predicted annual profit for 2021 would drop by 80% as the COVID-19 pandemic has wiped out global appetite for transportation. Further, automakers around the globe have been reporting weak sales as quarantine orders keep workers home and out of their cars. Toyota estimated current year consolidated vehicle sales at 7 million units with an operating income of \$4.6 billion. Worldwide sales in April and May registered at 53.7% and 68.2% year on year and April–June quarter touched at an average about 60% y-o-y (Table 1).

Toyota's business philosophy is capital preservation and liquidity which are the great learnings for MNCs. Toyota relies on dynamic, forward-looking market indicators utilizing robust qualitative and quantitative approach on cash holding and determined to spend in the near future more funds into capital expenditures, research and development activities including investment in environment technologies. As an outcome, Toyota's performance continuously outperformed the industry over the years and helped to gain market share year on year. Recently, President of Toyota, Akio Toyoda said that COVID-19 virus has dealt a bigger shock than the 2008 global financial crisis.

5.2 | Working capital management policy: MNCs vis-à-vis Toyota

The task of MNC's working capital management, has become a key determinant for profitability as they should have financial resources in the right form in the

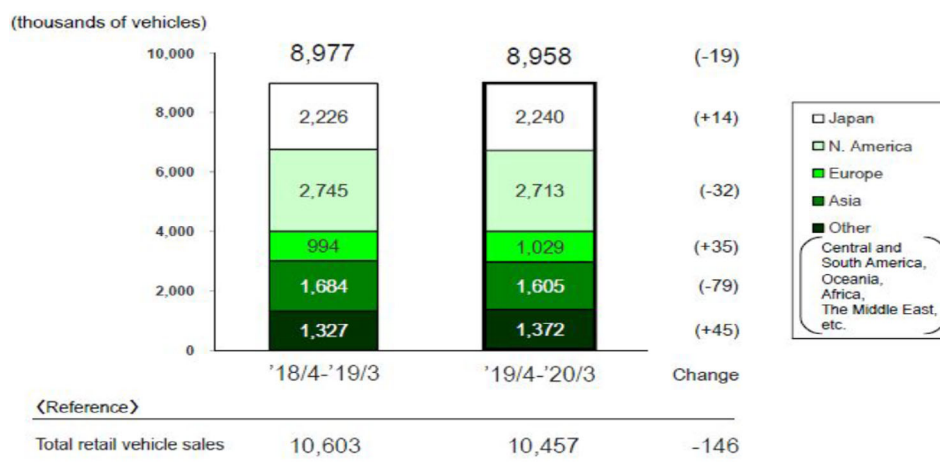


FIGURE 1 Consolidated vehicle sales (2020). *Source*: Annual Report (2020). Consolidated and retail vehicle sales for 2020, comprised of wholesale vehicles (10.457 million units) (Figure 1) produced by Toyota Motor Corporation and its subsidiaries (Daihatsu & Hino) besides Toyota's affiliates (JV in China, etc), a decrease of 146 thousand units (Figure 1) compared to the previous fiscal year (2019). Vehicle units sold in Japan increased by 14 thousand units, or 0.63% to 2,240 thousand units in FY2020, compared with FY2019 (Figure 1). Overseas vehicle unit sales decreased by 31 thousand units, or 0.46%, to 6,719 thousand units in FY2020 compared with FY2019, due to sales expansion in Europe (35,000 units) and other regions by (45,000) with simultaneous decrease in Asia (79,000 units) and North America (32,000) (Figure 1). Automotive operation's net revenue decreased by 215.5 bn yen, or 0.8% to 26,863.5 bn yen and operating income increased by 13.4 bn yen, or 0.7%, to 2,052.3 bn yen respectively at the year-end 2020 in comparison with FY2019. The increase in operating income was due to cost reduction efforts, decrease in expenses through constant efforts on expense reduction and change in depreciation method. Historically, Toyota's net income is dependable majorly on its cost reduction mechanism and on exchange rates fluctuations. As the uses of working capital finance, have direct effect both on profitability and liquidity, Toyota puts all out efforts to maintain optimal investment level to each of its current asset's components and to restrict short term borrowings, at a minimum level. Due to conveniences and to take quick business decisions, Toyota represented its balance sheet under five zones (Japan, North America, Europe, Asia and others)

TABLE 1 Key financials for the past 6 years (in equivalent US Million \$)

Year	Revenue (A)	Current asset (B)	Current liability (C)	Net working capital $D = B - C$	Cash, cash equivalent & Mkt secs	Short term loan availed (F)	Cash, cash eqv, mkt secs used $G = (D - F)$ as margin	% of internal cash used as margin for short term loan
2015	238,687	96,639	70,478	26,161	37,453	5,405	20,756	55.42
2016	247,404	104,953	72,021	32,932	33,605	5,587	27,345	\$\$\$ ^c
2017	238,874	97,962	77,716	20,246	35,210	6,380	13,866	39.38
2018	251,409	100,950	80,825	20,125	37,495	5,162	14,963	39.91
2019	257,896	106,316	80,965	25,351	37,131	5,523	19,828	53.40
2020	255,843	99,311	74,373	24,938	32,605	4,608	20,330	62.35
2021 ^b	207,072	88,284	65,058	23,226	37,322	4,531	18,695	50.092 (Average)
CAGR ^a	1.16%	0.45%	0.90%	-ve	-ve	-ve		

Note: Source: Toyota's Annual Reports.

^aCompound Annual Growth Rate over 2015 through 2020.

^bForecasted key financial data.

^c\$\$\$ In the year 2016, Toyota realized Yen 2,471,876 (US\$23541 million) from sales and maturity of marketable securities, which were majorly used to repurchase common shares. Due to this exceptional transactions, net working capital exhibited differently and not considered while arriving current year expected cash availabilities (cash, cash equivalent and marketable securities) towards working capital margins.

right place at the right time. As working capital is measured as part of operating capital, and represents the availability of functional liquidity in business, the

likelihood of cash inflows and outflows, are the greatest concern in managing working capital requirement.

5.3 | In-house bank

MNCs generally have centralized cash management with cash pooling opportunities. Since the introduction of floating exchange rates, short-term money management has become significant as in many cases, earnings from good treasury management can over suit even 50% of corporate profits. Presently, international financial executives, face number of non-technical odds like time, distance and culture where time-zone differences play significant role both as opportunities and threats in managing short-run cash and foreign exchange management.

Investors possessed normal expectation that MNCs should find ways to productively use cash, to maximize returns through higher dividends or buybacks and do not like that MNCs should sit on a mountain of cash liquidity. As on March'20, Toyota kept a big war chest around US\$32.6 bn, in the form of total cash availabilities (cash, cash equivalents and marketable securities), over auto segments operations, to meet known and unknown eventualities such as momentous acquisition, to meet car recalling and other unexpected expenses. Most of Toyota's cash equivalents & marketable securities, are held in Jap yen or in U.S. dollars and out of total working capital requirement, Toyota, on an average, deploys around 45% of its own sources towards working capital margin.

In line with the US Securities and Exchange (SEC) Commission latest regulations, treasury team of Toyota Motor Credit Corporation (TMCC) identified investment opportunities in high yield securities keeping in mind its downside risk potential after quantifying inherent credit risk using credit default swap (CDS) spreads and through default risk model (Report on United States Securities and Exchange Commission). In other word, Toyota puts all-out efforts to maintain returns over the cost of capital.

5.4 | Fund transfers

Repositioning of fund embraces redeploying funds from one operating region to another region. MNCs are required to reposition funds for managing current assets, current liabilities as they operate under different political, foreign exchange regimes and tax scenarios. Further, MNCs normally target to locate profit centres having low-tax environment besides to move funds to areas that have greater profit potential. In the process, MNCs face various odds in pooling funds from one location to other locations having restrictions to move funds out of the areas with economic, political problems and countries that have stringent exchange control regulations (Apte, 2013).

Toyota, having worldwide business operations, capitalizes the operational advantages and also faces disadvantages. Due to worldwide productions and sales, Toyota has to come across countries having restricted exchange control regulations, varied economies, different tax structures and currencies, which are the greatest limitations for Toyota, in repositioning of funds. However, Toyota prudently managed the liquidity needs for all its locations with the help of a well-managed "In House Bank".

5.5 | Intra-firm working capital

MNCs need to procure inputs across the globe and to convert it to finish/semi-finished products by deploying labor, equipment's and market them globally. Presently, Toyota has 67 overseas manufacturing facilities spread over 24 countries in different locations where semi/finished products are produced and dispatched over 170 countries for completion and/or distribution. Toyota's inventories, receivables and payables, as exhibited in its balance sheet, are the combination of inter-firm and intra-firm transactions of various locations. Depending upon the locational economies, Toyota has to adopt varied business practices which create sometimes severe divergences in its overall working capital management policy.

5.6 | Cost reduction

MNC's cost reduction process by adopting unique production system, have direct consequence on the utilization of working capital finance. Toyota using "Total Production System (TPS)", produced vehicles quickly of sound quality which considerably satisfied customer desire in maintaining strong relationship besides reducing production cost. Toyota believes that sales prices are determined by customers and accordingly implemented TPS to reduce costs rather than to operate on cost basis (Cheng et al., 2014).

5.7 | Collaboration with Suppliers

MNCs pursue to work closely with its suppliers with a notion that they are the main contributing factor in maintaining un-interrupted production which in turn monitor their working capital need. Toyota's global input purchases, key contributing factors for working capital management, are built on three basic policies such as fair competition based on an open-door policy,

mutual benefits based on mutual trust and the last, to contribute local economic vitality through localization. Toyota procures inputs from multiple competing suppliers located world-wide to strengthen its vehicle competitiveness.

5.8 | Collaboration with sales networks

Dealers being the front line contract, put concerted efforts in meeting customer expectations and help to keep pace on sales which in-turn narrowed down the basic concern of MNCs working capital management. Toyota upholds three pillars-compliance-environment-social contribution, as the key core strategies for all the dealers, who are also covered through Toyota's basic "Corporate social Responsibility (CSR)" policy.

6 | VALIDATION

Automotive industry occupies a significant proportion of global economy as the industry has mass penetration in almost all the upstream and downstream linkages of economic activities. Despite entering into a phase of cyclical changes in the short term, future of automotive markets are expected to expand steadily in the medium term due to expected wider uses of cars, emerging countries in particular. Auto industry's cost structure benchmarks, are based on input purchases (70.7%), wages (6.3%), depreciation (6.0%), rent & utilities (1.7%), other (10.4%) and profit (4.9%) (Thembani, 2013). Toyota enjoys an average profit of around 7.55%, much higher than industry level. Toyota forecasts current year consolidated vehicles sales at 7 million units against 8.958 Million units (2020), due to predicted weak response of the global market.

Working capital requirement for the current fiscal year is estimated by establishing the relationship between forecasted revenue and working capital components using regression analysis. In this regard, past 6 years data (2015–2020) are sourced from the annual report of Toyota Motor Corporation and method of least square, applied. The relationship between Toyota's auto revenues and working capital components can be expressed by Equation.

$$Y = a + bX,$$

where, a is the y-intercept of the estimated regression line, b is the slope of the estimated regression line, X is the Toyota's forecasted auto revenues, Y is the predicted value of working capital components and n is the number of years.

Toyota forecasted its revised consolidated revenues for FY2021 at 24,000bn yen and auto sales (past 6 years average trends, 90.594% of consolidated sales) are expected to register at Yen 217.4256bn (Eqv US \$207.072bn @1\$ = Yen 105). Using regression analysis, key working capital components that is, current assets, current liabilities and total cash availabilities (cash, cash equivalent and marketable securities), against forecasted revenue of US\$207.072bn, arrived at US\$88284 M, US \$65058 M, US\$37322 M respectively (Table 2).

6.1 | Pooling of funds

Pooling of funds might sound very good but financial benefits are limited as movements of funds to restricted countries, are controlled by the local government laws and regulations. In view of this, considering the possible pooling benefits within unrestricted countries, Toyota would quantify location wise working capital requirements separately for restricted and unrestricted countries. The following modalities are suggested;

6.2 | Region/country wise working capital requirements

Pooling of funds can facilitate to bring control both on utilizations and costs. Working capital equivalent to US \$1,834 M (Table 3) as estimated for restricted countries, Toyota would not receive pooling of funds benefits (Tables 4 and 5).

6.3 | Region/country wise movement of funds

Toyota can minimize working capital borrowing costs by availing funds repositioning benefits within unrestricted countries with the help of bank's day light limit facilities. As global day begins from Japan and ends at America/Canada, funds used by Toyota at the start of the day that is, from Japan, can be pooled forward globally to other unrestricted locations during the global day banking operation time, till the funds reached at America/Canada (Tables 6–9).

Assume, Toyota enjoys Bank's day light limit facilities with global funds pooling solution, then as explained, funds used by Toyota at the start of the day for unrestricted countries, can be pooled forward globally to other unrestricted locations. In the process, current year, Toyota, in a global banking day operation time, can limit its short term borrowings at US\$3370 M while effectively

TABLE 2 Toyota's expected key financials (2021), using regression analysis

Revenue (in million) (A)	Current assets (in million) (B)	Current liabilities (in million) (C)	Net working capital (in million) (D = B – C)	Total cash (in million) (E)	45% of total cash (in million) (F)	Estimated utilization (in million) (G = D – F)
\$207,072 (Table 1)	\$88,284 (Table 1)	\$65,058 (Table 1)	\$23,226 (Table 1)	\$37,322 (Table 1)	\$18,695 (Table 1)	\$4,531

Note: Current year “Net Working Capital” Eqv\$23.226bn is forecasted by deducting estimated current liabilities (US\$65.058bn) from estimated current assets US\$88.284bn. Toyota, on an average, used around 45% of its total cash availability towards working capital margin. In the current year, uses of cash towards working capital margin, is expected around US\$18.695bn, leaving US\$4.531bn (Table 2) towards utilization of short term finance from banks against current year revenue forecast EqvUS\$207.072bn.

can enjoy EqvUS\$4531 M. Therefore, Toyota, on its short term loan portfolio, everyday can save interest costs on US\$1,161 M. The hypothesis (H1) that “Toyota can reduce short term borrowings costs by pooling funds” accepted.

6.4 | Transfer of funds between zones where pooling is permitted

As global day begins from Japan and ends in North America, Toyota starts using funds from Japan and pools forward further to other unrestricted locations within five zones during the global banking day operation time, till the funds reached at North America.

6.5 | Zone wise movement of funds

Toyota has world-wide manufacturing facilities, where funds repositioning benefits, facilitate to minimize the level of short term borrowings by pooling funds from one zone to other zones (Table 10).

6.6 | Working capital analysis: Toyota Motor Corporation

Toyota maintained its average net working capital for the past 6 years at US\$24959 M with a negative CAGR over 2015. Current assets and current liabilities, key networking capital components, maintained positive CAGR at 0.90%, 0.45% whereas cash availability exhibited negative CAGR over 2015 (Table 1). Past 6 years average current ratio maintained at 1.42, exhibited Toyota's considerable stake in building current assets portfolio. Average working capital turnover ratio for the past 6 years also sustained at 8.82 against industry bench mark of 16.62, indicated Toyota's efficient deployment of working capital in supporting sales. Average operating cycles for the

past 6 years arrived at 70 days, far better than industry average of around 103 days. Inventory turnover (38 days average) represented healthier than most of its competitors, even better than industry level (Approximately 76 days). Average receivable turnover for the past 6 years registered at 32 days (11.40 times), marginally higher than competitors having similar business model with average of around 27 days. Average payables for the previous 6 years maintained at 40 days (9.12 times) which is far better than industry benchmark of around 70 days and also maintained positive cash conversion cycle (30 days) throughout, better than industry bench mark of around 33 days, justifying overall well planned working capital management. Toyota, on an average, covered around 53% of its liabilities through total cash availability, represent strong liquidity in repaying short term obligations.

6.7 | Quantitative factors

Working capital management is recognized as one of the significant benchmark to measure MNCs operational and financial efficiency. It is a part of the MNC's strategic and operational thinking for which MNCs put continuous efforts besides fine tuning of working capital management policy to achieve greater short-term financing yield. Past 6 years (2015–2020) performances are analyzed (Table 11) to appraise how efficiently working capital management processes have been carried out by Toyota.

- Toyota's current assets exhibited positive relationship with working capital, indicated that company's working capital has been managed prudently. Current ratio exhibited on an average, at 1.42 over the previous 6 years, denoted high short term liquidity. High investment in current assets vis-e-vis operating revenue (40%) and uses of low level working capital finance, established flexibility in Toyota's working capital policy.

TABLE 3 working capital across the global locations (Madhu, 2011).

Zones	Country	Production capacities pa (million units)	Forecasted daily max availability of WC (US\$M)	Present risk free rate (central bank rate in %)	Estimated ROI on short term loan (1.5–2% over central bank rate)
Japan	Restricted	NIL	1,536	–0.10%	1.4–1.9%
	Un restricted	3,083			
North America	Restricted	NIL	912	US:0.25%, Canada:0.25%	Preferred to source working capital from US/Japan @ 2.5–3%.
	Un restricted	1829			
Europe	Restricted	426	212	Czech (0.25%), Turkey (8.25%), Russia (4.25%)	No choice
	Un restricted	374	186	France (0), Portugal (0), UK (0.10%)	Preferred choice UK (2–2.5%)
Asia	Restricted	2,927	1,459	Central bank's interest rate range from 1.5–7.5%	No choice
	Un restricted	NIL			
Others	Restricted	327	163	Brazil (2.25%), Kenya (7%), Egypt (9.25%), South Africa (3.75%)	No choice
	Un restricted	127	63	Mexico (5%), Argentina (38%),	Preferred choice US: 2.5–3% over central bank interest rates)
Total (As on Dec'2019)	Restricted	3,680	1834	Restricted countries	Specific country central bank interest rate + float (2–2.5%)
	Un restricted	5,413	2,697	Unrestricted countries	Ranging from 1.5–3% over central bank interest rates
		9,093	4,531		

Note: As working capital requirement is factored with unit of vehicle productions, it's apparent that Toyota would estimate working capital requirements proportionately based on country wise installed production capacities. Accordingly based on the location wise production capacities, current year estimated utilization of short term finance aggregating to US\$4531M dollar (Table 3), would likely to be the sum total of Japan: EqvUS\$1536 M, North America: US\$912 M, Europe: EqvUS\$398, Asia: EqvUS\$1,459 M and Others: EqvUS\$226 M. However, to manage working capital prudently, Toyota needs to source funds in two ways; First, to source restricted country's requirements, locally.

Second, to source unrestricted countries requirements, locally or globally based on merit that is, interest cost differentials.

TABLE 4 Working capital to raise in the zones without pooling benefits

Zones	Countries with pooling restriction	WC requirement where pooling cannot be used (USD Million)
Europe	Czech, Turkey, Russia	US\$ 212
Asia	All	US\$1,459
Others	Brazil, South Africa, Kenya, Egypt	US\$ 163
Total		US\$1,834

Note: Due to pooling restrictions, an equivalent of US\$1,834 M (Table 4), Toyota needs to raise locally across the restricted countries.

- Negative relationship of current liability with working capital, established efficient management of current liability financing, an evidence of prudent working capital management.
- Toyota's net income and working capital exhibited high with positive correlation, established that Toyota had been keen in utilizing more internal funds than bank borrowings the positive relation throughout indicated that the company's working capital management has been conducted prudently. The positive relationship also indicated that payment of taxes, dividends and other dues are made by Toyota without any difficulties.
- Negative relationship between receivables and working capital, recognized that Toyota has not been able to realize cash immediately from its customers. The reasons would be Toyota's week collection mechanism or liberal credit policy. The relationship replicated adverse effect on profitability which has also been justified through the negative relationship between receivables and operating income. However, Toyota's auto receivables are entirely controlled and managed by Toyota's financial services business segments.
- Negative relationship between inventory and working capital, indicated that Toyota may not be utilized inventory effectively and or unable to convert it into cash quickly. However, it has comparatively less effect on the profitability as inventories comprised, on an average, around 20% of current assets.
- Payable management in other way demonstrates as a spontaneous source of financing in the sense that it arises from ordinary business transactions. Payables exhibited negative relationship with working capital, established Toyota's efficient working capital management backed by well-planned supplier's policy.
- Effective from first April'2019, Toyota has changed the depreciation method of the parent company and Japanese subsidiaries, to straight-line method, resulted an increase in net income by 117.0 billion yen

TABLE 5 Working capital requirement that can benefit zones from pooling

Zones	Countries without pooling restriction	WC requirement where pooling can be used (USD million)
Japan	Entire Japan	US\$1,536
North America	United States + Canada	US\$912
Europe	France, Portugal, UK	US\$186
Others	Mexico, Argentina,	US\$63
Total		EqvUS\$2,697

Note: Un-restricted countries working capital requirements, evaluated at US \$2,697 M (Table 5), can be sourced globally or locally as these locations enjoy funds pooling benefits. Toyota prepares its balance sheet by combining five zones and plans working capital management policy, based on fund's repositioning possibilities of restricted and unrestricted countries. In the current year, out of estimated short term loan utilization of Eqv US\$4531 million dollar, Toyota is expected to avail maximum short term finance amounting to EqvUS\$1,834 million for restricted countries and EqvUS\$2,697 million for unrestricted countries respectively.

(US\$1.114bn) for the year ended 2020. In the process, depreciation expenses reduced by 173.2 billion yen (US\$1.643bn) which would be the reasons for negative relationship between working capital and depreciation.

- Available cash and working capital, displayed negative relationship whereas average cash ratio, the severest measure of liquidity, depicted at 0.53. Higher cash ratio is the indicator of more profitability than liquidity. The reasons for the negative relationship would be due to the effect of COVID-19 which has affected Toyota's performances and compelled Toyota for huge cash out flows, particularly in Q4. Cash balance in the form of cash, cash equivalent and marketable securities, registered at US\$32.605bn at the year-end 2020 with a steep fall from US\$37.131bn (2019). Historically, Toyota, out of its auto operations, showed high effectiveness in generating robust cash, and availed limited short term finance from banks. In the current year, against working capital gap of US\$23.226bn, maximum utilization of short term loan estimated at US\$4.531bn, using a major chunk of internal cash amounting to US \$18.695bn.
- Negative relationship between short term finance and working capital, justified that Toyota availed limited short term finance and used majorly internal sources to meet working capital need. The better a company manages its working capital, the less it needs to borrow, which has been established by Toyota Motor Corporation.

TABLE 6 Borrowings during Asia time including Japan

Zones	Where funds pooling cannot be used (USD million)	Where funds pooling can be used (USD million)	Effective borrowings (USD million)
Japan	—	1,536 (\$912 M Swept from North America plus equivalent \$624 M from Japan)	1,536
North America	—	—	Nil
Europe	—	—	Nil
Asia	1,459	—	1,459
Others	69 (South Africa, Egypt & Kenya)	—	69
Total	1,528	1,536	3,064

Note: Globally, commercial business starts from Japan. Therefore Japan's entire short term loan requirements (EqvUS\$1536 M) (Table 6) can be met partly by funds, swept from USA/Canada (USD912M) when North America zone closed and to avail rest from domestic sources (EqvUSD624M). Sweeping from Europe zone would not prefer as some parts of Europe zone operation timings coincide with Japan timings. Restricted countries requirements, during that time equivalent to US\$1,528 M (Table 6) (Entire Asia: EqvUS\$1459 M plus EqvUS\$69 M for South Africa, Egypt & Kenya), are to be raised locally.

TABLE 7 Borrowings during Europe Time

Zones	Where funds pooling cannot be used (USD million)	Where funds pooling can be used (USD million)	Effective borrowings (USD million)
Japan	—	—	—
Asia	—	—	—
Europe	212 (Czech, Turkey, Russia)	186 (France, Portugal, UK) (To be Swept from Japan)	212
America	—	—	—
Others	—	—	—
Total	212	—	212

Note: Short term loan requirements for unrestricted countries (France, Portugal and UK: Eqv USD186M), can be availed either by pooling funds that have already been availed at the start of the day or even raised locally on merit based on the prevailing interest rates. However for both the options, total working capital utilization would be restricted to US\$1536 M. An equivalent of US\$212 M (Table 7) for restricted countries (Czech, Turkey, Russia) requirements are expected to be raised locally. Effective utilization of working capital, till such time of global banking day, for restricted and un-restricted countries would be Eqv US\$1,740 M & EqvUS\$1,536 M respectively, with a total utilization of Eqv\$3,276 M.

TABLE 8 Borrowings during Other Zones Time

Zones	Where funds pooling cannot be used (USD million)	Where funds pooling can be used (USD million)	Effective borrowings (USD million)
Japan	—	—	—
America	—	—	—
Europe	—	—	—
Asia	—	—	—
Others	94(Brazil, excluding South Africa, Kenya, Egypt)	63 (Mexico, Argentina can be Swept from Japan)	94
Total	94	—	94

Note: Total other zones, un-restricted countries requirements that is, EqvUS\$63 M, can be swept from Japan as during that period banking day operation of Japan, closed. An equivalent of US\$94 M (Table 8) can be raised locally for restricted countries (Brazil, excluding South Africa, Kenya, and Egypt). Working capital utilization, till such time of the global day, for restricted and un-restricted countries would be reached at Eqv US\$ 1,834 M & EqvUS\$1,536 M respectively, with a total utilization of Eqv to US\$3,370 M.

TABLE 9 Borrowings during North American Time

Zones	Where funds pooling cannot be used (USD million)	Where pooling can be used (USD million)	Effective borrowings (USD million)
Japan	—	—	—
America	—	912 (Swept from Japan)	—
Europe	—	—	—
Asia	—	—	—
Others	—	—	—
Total			—

Note: North America Zone's requirements (US\$912 M) (Table 9) can be met entirely by swept from Japan that is, funds moved at the start of the day from North America. Utilization of working capital during the entire global banking day time, would be restricted to US\$3,370 M (Asian Time including Japan-EqvUS\$3,064 M, Europe Time: EqvUS\$212 M, Other Zone's Time: Eqv US\$94 M and North America Time: Nil US\$).

A number of key financials of working capital components exhibited high positive correlation with working capital, established Toyota's prudent working capital management. Therefore, at 5% level of significance, the hypothesis (H2) that "Toyota Motor Corporation with the objective of ensuring liquidity and profitability, adopt prudent working capital management"-accepted.

6.8 | Limits of working capital management

Working capital management is a strategy being executed by business managers for monitoring working capital. Fundamental concept behind it, is to calculate and assess firm's financial and operational health. Although, working capital management is regarded as an indicator to measure the overall performance of a business but it has its own limitations 1989.

6.8.1 | Nature of business

The concept of working capital management, is contingent on the nature of business as the composition and requirement of working capital, differ from industry to industry. Due to growing demand of a particular industry, firms compelled to manufacture variety of products resulting high material inventory on the other hand if the finished goods are in seasonal nature, the inventory of finished goods will constitute a high percentage of current assets. As account receivables are influenced by Firm's credit policy, it will affect firm's working capital requirement. Further, firms having high operational efficiency improve the utilization of current assets and reduce investment in current assets.

6.8.2 | Nature of raw material and finished goods

The nature of raw materials used to manufacture finished goods greatly influence the quantum of raw materials, which lead to invite disconnect in forming working capital management strategy. Likewise the strategy will not work where the nature of finished goods importantly influence the quantum of finished goods inventory. Further, if raw materials are processed in multiple stages, the work in progress inventory is likely to have higher values. Where technology is used for production, it factors the requirement of raw material.

6.8.3 | Non-situational

The strategy is based on past events and figures and does not acknowledge sudden changes in the market conditions which have significant impact on business operations and profitability.

6.8.4 | Omission of financial and investment transactions

Important information regarding changes in the resources and financial structures, are not considered while formulating working capital management strategy. The concept also omits a few major financial and investment transactions such as issuing equity shares for acquiring fixed assets etc. Although it has no direct effect on working capital, but as it is a significant financial transactions, should be a part of the strategy formulation.

TABLE 10 Transfer of funds between zones where pooling is permitted

Zones	Where funds pooling permitted (USD million)	Total borrowings during global day time (USD million)	Zones	Where funds pooling permitted (USD million)	Total borrowings during global day time (USD million)
Asia Zone time includes Japan					
Asia	1,536 (US\$921 M swept from North America Zone Plus borrowings in yen equivalent to US\$624, locally)	1,536	Europe Zone Time		
			Asia	Nil	Nil
North America	Nil	Nil	North America	Nil	Nil
Europe	Nil	Nil	Europe	186 (France, Portugal & UK, Swept from Japan)	Nil
Asia	Nil	Nil	Asia	Nil	Nil
Others	Nil	Nil	Others	Nil	
Total	1,536	1,536	Total	Nil	1,536
Others Zone Time					
Asia	Nil	Nil	North America Zone Time		
North America	Nil	Nil	Asia	Nil	Nil
Europe	Nil	Nil	North America	912 (swept from Japan)	Nil
Asia	Nil	Nil	Europe	Nil	Nil
Others	63 (Mexico and Argentina, swept from Japan)	Nil	Asia	Nil	Nil
			Others	Nil	Nil
Total	Nil	1,536	Total	Nil	1,536

Note: Asia Zone includes Japan Time: Except Japan all the Asian countries, where Toyota presently has manufacturing facilities, are exempted in enjoying free funds transfer facilities. Out of Japan's short term loan requirements of Eqv US\$1,536 million dollar (Table 10), Toyota is likely to source locally equivalent US\$624 million and rest amounting to US\$912 million dollar by swept from North America zone as historically US\$ remained at a premium over yen all time. Recently, as forward market exhibited a different scenarios where yen marginally is at a premium with US dollar, Toyota may not bring US\$ from North America instead can avail Japan's entire short term requirement, locally. *Europe Zone Time:* Short term loan requirements for unrestricted countries (France, Portugal and UK: Eqv US\$186M), can be met either by pooling funds that have already been availed at the start of the day or even raised locally depending upon the conversion costs. Presently, yen is at a discount with euro, it is better to raise funds locally except for UK requirements, as yen presently is at a premium with pound sterling. However, for any option, total working capital utilization would be restricted to US\$1,536 M in a particular global day time. *Others Zone Time:* Un-restricted countries (Mexico and Argentina) requirements that is, EqvUS\$63 M, can be swept from Japan as during that time banking day operations of Japan, closed. Working capital utilization for un-restricted countries, till such time of the global day, would reach at EqvUS\$1,536 M. *North America Zone Time:* Short term finance requirements of North America zone (US\$912 M) can be met entirely by swept from Japan as currently in the forward market, yen marginally is at a premium with US\$ or to bring back US\$ 912 million from Japan, moved at the start of the day from North America zone. Therefore, five zones unrestricted countries maximum forecasted short term finance requirements of EqvUS\$2,697 million, can be met with EqvUS\$1,536 million either by raising funds locally or pooling funds globally. In the process, Toyota, on its short term loan portfolio, everyday can save interest costs on Eqv US\$1,161 million.

TABLE 11 Factors affecting working capital of Toyota Motor Corporation

Toyota Motor Corporation (Million US Dollar) (1US\$ = ¥105)									
Year	Working capital	Current assets	Current liabilities	Receivables	Inventories	Total cash	Payables	Net income	Short term loan
2015	26,161	96,639	70,478	20,752	20,353	37,453	22,594	19,725	5,405
2016	32,932	104,953	72,021	19,897	19,629	33,605	22,441	21,052	5,587
2017	20,246	97,962	77,716	20,872	22,747	35,210	24,191	16,902	6,380
2018	20,125	100,950	80,825	21,949	24,186	37,495	24,347	19,683	5,162
2019	25,351	106,316	80,965	23,706	25,299	37,131	24,916	16,741	5,523
2020	24,938	99,311	74,373	20,532	23,189	32,605	22,899	18,299	4,608
Working capital	1								
Current assets	0.4713581	1							
Current liabilities	−0.644761	0.37023	1						
Receivables	−0.375093	0.46326	0.7965945	1					
Inventories	−0.653202	0.25641	0.9102468	0.8318624	1				
Cash & cash eqv	−0.407711	−0.04807	0.3940166	0.6355405	0.3044887	1			
Payables	−0.662391	0.30379	0.9609859	0.8583835	0.8807864	0.5177112	1		
Net income	0.567315	0.01501	−0.5845418	−0.5865082	−0.7170821	−0.1110771	−0.708651	1	
ST loan	−0.139649	−0.02334	0.12686356	0.01755339	−0.1456028	0.22244605	0.2984156	−0.297503891	1
Depreciation	−0.277464	0.66472	0.8683687	0.75342606	0.6427774	0.463398394	0.8430373	−0.29899,781	0.2978014

Note: A correlation matrix of Toyota's various key financials, indicated that although consolidated vehicle sales either marginally decreased or increased compared to the previous fiscal years, net income trends exhibited almost positive throughout. Major factors for the increase, took place due to favorable situations on currency fluctuations and Toyota's continual cost reduction efforts through well designed production system (TPS). Net income, excluding the impact of valuation gains/losses from interest rate swaps, also increased for the past years. Toyota maintained positive operating and cash cycle throughout, indicated retention of overall strong position.

6.8.5 | Inflation, government regulations-policies

The strategy takes only monetary factors like the value of receivables, finished goods etc., which are considered as the basic determinants while implementing the strategy. Non-monetary factors having immense effects on the strategy like recession, behavior of unsatisfied workers, and change in government's policy towards the industry etc. are not considered or hold any relevance in the concept (Brewer, 1993).

6.8.6 | Interpretation

The concept is founded on techniques like ratio analysis which are simply denoted by numbers and are considered for interpretation in formulating strategies. However, it is unclear to users which number is favorable for which industry. If a business has a longer receivables cycle than the industry average, the users would not be able to interpret the ratios accurately.

6.8.7 | No return on capital

Any excess working capital lying with the firm will not earn any return. Further, due to the existence of excess working capital, there are possibilities that the firm may end up spending which are not important for the business.

6.9 | Impact of exchange risk

Currency conversion costs are contingent on two countries favorable/unfavorable scenarios like inflation rates, interest rates differentials, current account/balance of payments, government debt, terms of trade, political stability/performance, recession and speculation. However, interest differentials of two countries play significant role in arriving currency conversion cost than other factors. The difference in the rate of interest prevailing at the home country and at the concerned foreign country determines the forward margin. If the rate of interest at the foreign country is higher than that prevailing at the home country, the forward margin will be at a discount, conversely, if the rate of interest at the foreign country is lower than that prevailing at the home country, the forward margin will be at a premium. Forward margin is arrived by the formula (Eiteman et al., 2013).

$$\text{Spot Rate} \times \text{Forward Period} \times \text{Interest Differentials.}$$

Short term Funds used by Toyota at the start of the day (Japan) can be pooled forward to other unrestricted locations during the global banking day operation time, till the funds reached at America/Canada. However, Toyota has to face transfer risk/conversion risk while funds pooled from one country to other locations within unrestricted countries. As dollar at all-time remained a premium currency, beginning of the day, Toyota will transfer equivalent US\$912 M from the approved short term facilities of North America (USA, Canada) to Japan. The transaction is typically denominated in USD and to convert the same into Japanese Yen. Presently both the currencies are frequently traded without any capital controls and the countries have well-regulated and stable economies. Afterwards, the availed funds (USD or Jap Yen) either fully or partly, can be pooled to unrestricted European countries (France, Portugal and UK) where the local currencies are frequently traded without any capital controls. The used funds further can move to Mexico and Argentina freely. At the end, the entire used funds, can be pooled forward for the entire North America operations. All the above movements attract conversion risks/costs while pooling funds particularly from comparatively weaker currency areas to stronger currency locations (Rajiv 2015).

If the forward margin is at premium, the foreign currency will be costlier than home currency and if it is at discount the foreign currency will be cheaper (Eun Cheol & Resnick Bruce, 2013). While Toyota pools funds from premium currency areas to discounted currency locations, will gain in the process of conversion. Therefore multiple transfers from premium currency countries would be favorable for Toyota. As per the available 1 year forward rate, sourced from CME Group, Japanese Yen is at premium with pound sterling and marginally with US dollar. As a result, any transfer from Japan to countries using pound sterling will fetch conversion gain and the countries using US dollar presently would enjoy almost neutral position. On the other hand, yen is at a discount with Euro for 1 year forward, accordingly any transfer from Japan to euro currency countries will be an unfavorable proposition to Toyota. As US dollar is at a premium with Euro and Pound Sterling, any transfer in US dollar currency to euro currency countries and UK would yield conversion gain. As, there are not much significant changes of Mexican and Argentina peso with dollar for 1 year forward, there would be all time gain in pooling funds to these countries. As the prevailing interest rates of countries where Toyota has major operations, are

much lower such as USA: 0.25%, GBP: 0.10%, Yen: (0.10%) and Euro Areas: 0%, therefore conversion cost will not be significant except Mexico (5%) and Argentina (38%) that would be favorable for Toyota. Considering the present foreign exchange forward market, interest differentials and expected growth scenarios, overall, it will be beneficial for Toyota to pool funds from Japan to other locations. However, tax authorities in all countries are fairly aware of the magnitudes of pooling and hence keep a wary eye out for issues that could be sensitive from a regulatory standpoint.

7 | CONCLUSION

Globalization brought transformations that cause worldwide division of labor, resulted an unintended negative effect which generated uneven distribution of wealth and rising inequality, particularly in advanced economies (Lammarino', 2018). However, the world economy, Japan, US, Germany and some developing countries in particular, had continued its moderate recovery due to improvements in employment and income generations.

Development of a generalized model for working capital management, is likely to be more fruitful than the modelling efforts in the direction of strategy formulation. As short-run objectives do not correspond with long range goals, financial planning of variables are really not relevant to predict short run cash inflows, rather, a full proof sales forecasting system comprising of product leadership, market dominance and internal communications between the treasurers on the one hand and the marketing or production group on the other hand, should look-for prudent working capital management. MNCs also should have closely fit hypothesized cash out flow model where inventory management is deemed to be relatively significant. MNCs, commonly, enjoy diverse types of arbitrage opportunities which include financial market arbitrage, tax arbitrage and regulatory system arbitrage. Global tax rivalry is highly inefficient for trade because it may lead MNCs to locate operations where they do not display an efficient value-adding fit with local environments. Therefore, without harmonized tax policies, the one-off equilibrium as a substitute, is the reduction of MNCs income tax rates to zero. This scenarios will incentivize MNCs to invest in a global value-maximizing manner. As international tax regime in relation to multinational corporations, is ineffective, it is the high time to think uniformity on global tax regime, which will not only improve the predictive level of cash flows but reduce one of the major concerns of MNCs working capital management process.

In spite of having globalized and integrated economy, MNCs face odds in establishing set-ups in host countries and also come across difficulties to move funds from one location to other locations. As a result, some host countries face challenges with too much concentration of capital and also face massive quantities of capital inflows and outflows, which complicates MNC's working capital management. The thought of the paper is to have a well-designed global fund pooling policy, business friendly regulations and economy friendly tax regime which can resolve this chronic problems. The study suggests a model where MNCs, during global day time, can pool funds within unrestricted countries to minimize working capital borrowings costs.

Global economy going forward, there are great concerns for the sharper decline in many countries and regions due to the impact of COVID-19. During the recent past it has already been witnessed also. Automobiles production and sales have already been reduced to a great extent due to disrupted supply chain, slow customer demand, deferred off line sales besides massive cash outflow pressure. However, gradual recovery in global automobile market is likely to transpire from the second half of the current year after bottoming out the catastrophe and expected to return to the same level as the previous year at the end of current year or at the first half of 2021. However, we have to admit that the weakness will continue for the time being as the impact is across-the-board, momentous and grave in nature. However the industry as a whole to take immediate steps on recovery of supply chain, seize first purchase demand, online off line integration and to enhance cash flow management process.

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CONFLICT OF INTEREST

The author declares that he has no conflict of interest.

ETHICAL APPROVALS

This article does not contain any studies with human participants or animals performed by the author.

DATA AVAILABILITY STATEMENT

Data derived from public domain resources. The data that support the findings of this study are available in [Toyota Motor Corporation] at [<https://global.toyota>], reference number [Toyota Motor Corporation official global website]. These data were derived from the following resources available in the public domain: [www.toyota.com].

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