CHAPTER –1

INTRODUCTION

1.1 Background of the study

Nepal is agriculture-based country. It is one of the least developed countries in the world economy. Agriculture is still major source of country income. Over 80% of the population depends on agriculture for their income generation. Nepalese agriculture has suffered from lack of modernization, deterioration in fertility due to soul erosion and rapid deforestation. Nepal is second richest country in the world in the water resources but it has to depend on monsoon for its irrigation. There is no specialization and commercialization in agriculture. However agriculture alone cannot contribute in the development of the economy as a whole. Nepal is at a crossroads in its development of history. Medium-term growth prospects are under threat due to external shocks and slow implementation of performs. Also poor governance, rising insecurity and political instability are hindering human development and poverty reduction. Government has wisely recognize that faster growth of income and employment and improving governance and public service delivery have to be integral part of the response to the current crisis. The main challenges for the government now is to implement these reforms with urgency such that it will strengthen its creditability with the people of Nepal and its development patterns and decisively accelerate Nepal's progress in reducing poverty.

It is well known fact that economy of the country depends upon industrialization development. As a developing country, our country is striving to develop and modernize. But the structure of the economy has still primarily based on agriculture within a very small industry based. So as to divert and modify agro-based economy, Government of Nepal adopted mixed economic model with implicit objective to help the state and private sector economy that complement each other in the development process from very inception of economic planning process based in 1956. The responsibility for the planned economic development ultimately rests o public sector and government and is the best instrument for ensuring equitable, social and economic system, creating basic infrastructure for economic development and guiding the nation towards a new economic direction. It is believed that in order to achieve security, stability and high standard of

living, the country must be industrialized. Historically, industrial development began after 1936 with the establishment of Biratnagar Jute Mill. After 1956's various manufacturing companies have been established and developed though government efforts. Due to poor performance and negative return, lack of efficiency, inefficient management and the government has now started emphasizing on privatization so that public enterprises could be competitive, efficient and profitable. The government has started reducing its investment in public sector and has given higher priority to private sector to develop and uplift industries and has started lunching privatization process for public sector industries. Most of the public enterprises have been privatized and most are in the prospective for privatization.

So industrialization is universally accepted as strategy of economic development. The industrial development is the backbone of economic development. It is the key factor in contributing the achievement of economic growth prosperity. It helps in generating employment opportunities, income which in turn helps in uplifting living standard of peoples. It generates innovation, technical change that brings about satisfaction production, frontier, then by accelerating growth and factor productivity. It is clear that industrialization has proved itself to be the most powerful instrument in speeding up the economic development of the country. For overall economic development, government should focus and given due concern in the establishment and development of different industries such as tourism, manufacture, banking, agriculture, transportation, insurance etc.

1.2 Introduction to Working Capital Management

The study of working capital behavior occupies and important place in financial management. It has never received so much attention as in recent years. The earlier emphasis of financial management was mostly on long-term financial decision making which lead to the development of theories concerning this decision as compared to short term financial decision. Latter on when many enterprises failed work their growth restricted either due to shortage or miss management of working capital, the study of working capital management assumed a greater significance.

Working capital is the life blood of every organization. Working capital management refers to the proper management of the firm's current assets and current liabilities. It is concerned with all

decisions and acts that influence the determination of appropriate level of current assets and their efficient use as well as choice of the method of financing them, keeping in view of liquidity.

No area of business is so intimately related to its other areas as the area of working capital management. Working capital policies affect marketing, personnel, production and other functions. Almost every activity of business or every thing that happens in the business is related to working capital decision.

The inefficient management of working capital will lead to loss of profit in short run but it will ultimately lead to the downfall of the enterprise in long run. A deeper understanding of the important of working capital can lead not only to material savings in the economical use of capital but can also assert in furthering the ultimate aim of business. An excessive investment in working capital will lower the rate of return while inadequate investment will hamper the solvency position and growth, thereby affecting the smooth operation of the business.

1.3 Introduction of Dugar Brothers and Sons

Dugar Brothers & Sons is a part of TM Dugar Group. It is trading automotive business organization, which has been continuously running successfully under the leadership and guidance of Mr. Motilal Dugar, Managing Director over 34 year.

TM Dugar Group is one of the largest and renowned industrial and trading houses in Nepal. It was established and incorporated by Late Mr. Chandmal Dugar over 100 years ago during 1894 A.D. The Group has achieved the phenomenal growth under the dynamic leadership of Mr. Tolaram Dugar, Chairman, ably sported by Mr. Motilal Dugar, Mr. Malchand Dugar as Vice Chairman and Mr. Bibek Dugar as the Executive director. As time passes, the group consolidated its position and retained the berth in top five businesses as an industrial house in Nepal with the strength of highly qualified experienced, dedicated team of over 1500 people and having a total turnover of more than Rs. 500 millions. Dugar family stepped in and reached out a supporting hand to help Nepal in uplifting its economy. It has proved to be a milestone in the history of industrialization. Today it has carved out a proud niche for themselves in agriculture, industrial, automotive, import and export sector.

The current activities of the Group are in automotive operation, agricultural products, fertilizers, oil, confectionery, soft drinks, mineral water and other bulk importers of many other goods. The group is not only the largest importer and distributor of fertilizers in Nepal among private sectors but also the biggest buyer of agriculture products direct from farmers and such is deeply associated with common people of village and elite of the urban area as well.

TM Dugar Group, in its constant endeavor to give the best, has today become on absolute leader in the industrial sector, in Nepal manufacturing products of the highest quality. It provides such as rice, oil, lentils, fruit juice and mineral water has a distinct class of quality. To enhance the agro-economy of Nepal, the TM Group has established Kohinoor Cold storage and Shubbham Cold Storage. With this storage the TM Group offers the biggest cold storage facility in Nepal. The production such as Himalaya Aqua Mineral Industries, Nidhi Oil Industry, Amrit Pulses Industries, Pooja Rice Mills, Dugar Fertilizer, Nidhi Industries, Kamdhenu Veg. Oil Industries etc.

In fact Nepalese agro-economy has received quite a boost since TM Dugar Group entered in to food grains and lentils that are in short supply in Nepal and export country's surplus to the world market. Moreover TM Group has initiated a scientific farming program for better output and to improve the quality of seeds and grains. The TM Dugar Group is one of the few authorized suppliers for the World Food Program (WFP) supply grains as per the WFP standards for more than 10 years. TM Dugar Group is also one of the top exporters of Nepalese lentils to UK, Bangladesh, Srilanka, India and other part of the world.

TM Dugar Group has been importing products in Nepal for more than 40 years and is the pioneers to start import business in Nepal. TM Dugar Group imports lots of product in bulk in ship level basis like fertilizers, oil seeds, chickpeas, green peas, edible soybeans and sunflower oil. TM Dugar Group is top fertilizer importers in Nepal as it imports urea, DAP and Ammonium sulphate from various countries under group's own brand name TRACTOR with is very popular amongst Nepalese farmers. Today TM Group has become one of the top importers in the country, importing various products from around the world.

Like Industry, trade and commerce, the TM Group has been continuously serving the nation by participating and contributing in various social and charitable activities for more than 100 years. Few of the current activities are: Tolaram Malchand Dugar Charitable Trust, under this trust construction of Tolaram Bhanwari Devi Chikitsalaya and Research Center (TBDCRC). Construction of TBDCRC has been completed with more than 20,000 sqft. Built of area in Biratnagar, Motilal Vivek Dugar Charitable Trust helps poor and needy people of Nepal by providing food, clothes, education, scholarships etc. similarly, various charities for temples, colleges, community centers etc are being socially served by TM Group.

TM Group has served the nation by doing various activities and helped the nation for its betterment. The services they had done have been highly recognized and are being praised. One of the roads has been named by "DUGAR MARG" by Kathmandu Municipal Corporation in recognition and contribution of TM Dugar Group towards national development.

Shri. Tolaram Dugar has been bestowed with following decorations and letter of appreciations:
"PRABAL GORKHA DAKHIN BAHU IV" by late His Majesty's King Mahendra Bir Bikram Shah Dev for his social services rendered to the kingdom of Nepal.

"SUPRASHIDH PRABAL GORKHA DAKHIN BAHU II" by late His Majesty's King Birendra Bir Bikram Shah Dev for his social services rendered to the Nepal.

"Executive Vice President's Award" given to Mr. Motilal Dugar, CEO Automotive Division for achieving No. 1 shipment share among all Japanese Brand Vehicles for the year 2002 by Nissan Motor Company.
Parle Agro Pvt. Ltd, India awarded "The Best Frooti Seller Award" to Mr. Malchand Dugar, Vice Chairman, TM Dugar Group for the year 2003.

"Special Award" is given by Federation of Nepalese Chamber of Commerce& Industry for outstanding contribution to the betterment of Chamber's activity continuously for 25 years.

"Sales Performance Award" by Mahindra in recognition of TM Dugar Group's achieving outstanding sales performance for the year 2001-2002.

Dugar Brother and Sons, Automotive division of TM Group was established in 1972 A.D. The Automobile Division of the TM Dugar Group is right on top. A combination of highly successful passenger cars and commercial vehicles has been the group shift gears since 1972 and are on the fast track today, under the able guidance of its Vice Chairman Motilal Dugar. In 1973 A.D, it has started its automotive division by being sole importer and distributors for Volkswagen vehicle with Germany. The Automotive division of Dugar Brothers and Sons is located at Balaju Industrial Area. Keeping the motto of business objective 'Customer Delight' and transforming it in to reality, the Automotive division has been consolidating its position day by day and set the standard for others to follow. Dugar Group has introduced many new concepts in automotive field.

At present, the Group is associated with some of the leading International players in the field of Automotive, such as:

Ford India Ltd. (India)	Entire Range of Ford Vehicles-2000 A.D
Nissan Motor Co. Ltd (Japan)	Entire Range of Nissan Vehicles- 1984 A.D.
Mahindra & Mahindra Ltd. (India)	Mahindra Light Commercial Vehicles-1985 A.D
Volkswagen AG (Germany)	Entire Range of Volkswagen Vehicles- 1973 A.D.
Audi AG (Germany)	Audi Vehicles- 1973 A.D
L&T- John Deere Ltd. (India)	Tractors & Farm Equipment-2000 A.D
NGK Spark Plugs Co. Ltd. (Japan)	Spark Plugs & Glow Plugs
Amara Raja Batteries Ltd. (India)	Range of AMARON Batteries- 2001 A.D
IBP Co. Ltd. (India)	IBP Red Brand Lubricants-2001 A.D

With a view to achieve the objective of the organization and strengthen the service output, the company imports large quality of spare parts in Nepal. The list o f few leading Parts Exporters are: NGK Spark Plug Co. Ltd. Japan; Pulsar Technology Inc., USA; Nissan Genuine Spare Parts, Japan; Volkswagen Genuine Spare Parts, Germany; Mahindra Genuine Spare Parts, India; Ford Genuine Spare Parts, India; L&T – John Deere Tractors Parts.

Group has introduced many new concepts in Automobile field of Nepal i.e. Nissan Club, Stock Sales, getting cars by car carrier and state- of -art Service Center. The supporting arm is of highly dedicated team of professionals who take care of the total customer satisfaction factors, which is the automotive department goal. This has placed all it's product in the top position in Nepal market. The Group has been awarded by Mahendra & Mahendra as the biggest importer in the World.

Dugar Brother and Sons has formed NISSAN CLUB where members enjoy privileges like vehicle's insurance, free periodic services, free computerized wheel balancing and alignment, special discounts of spare parts, assistance for emission test and pass certificate, clearance of road tax, municipal tax, renewal of blue book, driving license etc.

Under the Nissan Club Scheme, the members also get the opportunity to avail the Group Insurance facility if there Vehicle's insurance is covered through Nissan Club. The special package consists of 20% discount on premiums, prompt settlement of claims and immediate repair of the vehicle without waiting for the settlement form the Insurance Company.

Dugar Brothers and Sons are the first and the only Company, which offers such an exclusive service to its club members. Dugar Brothers and Sons was the first company to introduce the concept of sale of Vehicles from stock for imported vehicles. It has been the trendsetter in making the vehicles available from the stock enabling the customer to choose the vehicle at side and take prompt delivery. This concept has helped Nissan Vehicles to become the No.1 brand in Nepal among all imported brands (Except India), beating Toyota. Dugar Brothers and Sons were the first company in Nepal to get all the vehicles on a "Car Carrier" which definitely helps the vehicles to reach in safe and sound condition.

TM Dugar Group has established Showroom, service center and spare parts center in Birgunj on 3S concept basis. Its Birgunj Showroom having more than 14,000 sqft is the biggest automobile showroom in Nepal. TM Dugar Group has planned to extent the same to other cities of Nepal gradually.

Recently, Dugar Brothers and Sons, has opened its new showroom at Balaju Industrial District in January 15, 2006. It has also set up a competent after- sales service facility in Balaju, which leaves the competition miles behind. The service station known as Gurans Engineers is equipped with the best technology and mechanics.

The new Nissan Showroom is built with 3S (Sales, Spares and Service) concept that offers sales, spares and service under one roof assures total satisfaction to its customers. Keeping in view of Nissan's strong brand identity, the new showroom is built as per Nissan RVI (Retail Visual Identity) design worldwide.

The new showroom is one of the important steps towards Nissan's strong tagline SHIFT, which means change, change for betterment. Dugar Brother and Sons believes new showroom further strengthen Nissan's Brand identity and boost its sales in Nepal.
Presently these Nissan models are available in Nepal:

- Nissan Sunny, Nissan X- Trail, Nissan Pickup, Nissan Civilian, Nissan Cefiro, Nissan Patrol, Nissan Urvan.

The vehicles models of Nissan have found to have a good market potential. TM Dugar Group has proved to be a milestone in the history of industrialization. Today it has carved out a proud niche for themselves in Agriculture, Industrial, Automotive, Import and Export sector. They have contributed to Nepal's status as an industrial and commercial force with its all round representation in the field of industry, trade and commerce for over 100 years. They have further plan to consolidate its position by introducing more new products and technologies in its field of activities.

1.4 Statement of the Problem

Working capital is the life blood of every organization. Working capital management refers to the proper management of the firm's current assets and current liabilities. It is concerned with all decisions and acts that influence the determination of appropriate level of current assets and their efficient use as well as choice of the method of financing them, keeping in view of liquidity. It has become difficult in many organizations. In most of the organization, it has been

misunderstood as the management of money and the managers are found over conscious about the burden of money rather than its efficient utilization. It has been the most challenging area of modern corporate finance where the management always faces a trade off between liquidity and profitability of the firm.

The effective management of working capital plays vital role to the overall successes of most firms over investment. Unproductive current assets will reduce the profitability of a firm. Where an ineffective management of current liabilities is will have a negative impact on both the firms' cost of capital and risk. Also, in the short run current assets and current liabilities may be the only items that a firm can adjust to meet change circumstances. So, it is very essential to analyze and find out problem and its solution to make efficient use of funds for minimizing the risk of loss to attain profit objective. Given a volatile economic development, it is not surprising that working capital management deserved the large portion of management time. It should be realized that the working capital needs of the firm should fluctuate with the changing business activity. This shows that the management of working capital in itself a decision area in the frame work as the overall financial management. Most of the companies have well recognized the importance.

Followings are the major problems that have been identified for the purpose of the study:

- What is the relationship between working capital and profitability and its impact?
- What is the financial position of the Dugar Brothers & Sons in line with working capital management?
- What is the relation ship between the current assets and total assets?
- What is the proportion of the cash, inventory to current assets and total assets?
- Are the Dugar Brothers & Sons is following appropriate working capital policy?
- What is the liquidity and profitability position of Dugar Brothers & Sons?

1.5 Objectives of the Study

Working capital play vital role in success or failure of every organization. The excess as well as inadequate level of working capital may cause harm to the business. The aspect of working capital management is concerned with a short-term financing decision. It has never received much attention in the literature of finance.

The basic objectives of the study have been to study and analyze the position of working capital management of Dugar Brothers & Sons and to provide the necessary suggestions and recommendations for the improvement. The specific objective of this study is as follows:

- To study and evaluate the financial position in relation to working capital management of Dugar Brothers & Sons.
- To identify and examine whether the organization is being able to adopt appropriate working capital policy.
- To examine the impact of working capital management in liquidity and profitability of Dugar Brothers & Sons.
- To provide the suggestions to Dugar Brothers & Sons for future betterment on the basis of study findings.

1.6 Significance of the Study

Working Capital management plays vital role in smooth running of the business. No, business can run successfully with an adequate amount of working capital. Nepalese business environment is in the threshold of change. In the situation, firms have to adopt suitable strategies for their existence. They should maintain proper balance and coordinate different functional area of business concern. The success or failure of any organization depends on its strategy, which is affected by working capital. Adequate working capital creates an atmosphere of certainty, security and confident in business. Working Capital Management assumes great significance as huge sum of money has been invested in the form of current assets. It occupies most crucial area of management. Regardless of excellent production and wide fixed assets, management faces the loss of control of its firms because of the liquidity crisis. Thus, this study can be helpful for the

management of Dugar Brothers & Sons to adopt appropriate working capital position and to make sound strategy in future. This study can further be helpful to cay out further research study in the same field. This study will diagnose the relationship of working capital management to the efficiency of the enterprises as a whole. It can also prove to be helpful for the management to improve its efficiency as well as the probability with proper management of working capital and its components.

1.7 Limitation of the Study

Following are the major limitation of the study:

- The study is entirely based on only one company, Dugar Brothers & Sons.
- The study covers the time period of 5 years from FY 2059 - 2064.
- The study is based on secondary data.
- This study is mainly based on the annual accounting data collected basically from the balance sheet, profit and loss account maintained by the company and also booklets, website.

1.8 Organization of the Study

The study has been organized into five major chapters each devoted to some aspects of the study of working capital management, which are as follows:

Introduction

The first chapter includes introduction, which will cover background of the study, brief history of Dugar Brothers & Sons, and introduction to working capital management, purpose and objectives of the Dugar Brother & Sons and their principle, statement of problem, objective of the study and limitation of the study.

Review of the literature

The second chapter deals with the review of the literature relating to working capital management. The available literatures will be divided into three sections. The first section will cover the review of books; second section will cover the review of journals or articles and third will cover the review of dissertation.

Research Methodology

The third chapter covers the research methodology to be adopted for the study consisting introduction, research design, sources of data, data processing procedures, tools and techniques of analysis and definition of the key terms.

Presentation and Analysis of Data

The fourth chapter deals with the presentation and analysis of data. It will fulfill the objective of the study by presenting the data, analyzing them with the help of various statistical tools followed by methodology.

Summary, Conclusion and Recommendations

The fifth chapter will cover conclusions and recommendations.

At the last, appendixes have been included according to the test of relation in between various variables of working capital. Bibliography has also been included according to the reference books reviewed.

CHAPTER- 2

REVIEW OF LITERATURE

2.1 Introduction

Review of literature is basically a study of available writing in ones field of research. The literature survey is done to accomplish the knowledge of the studies of their field of research. It provides the foundation for developing comprehensive theoretical framework to conduct research writing. The main objective of this chapter is to provide an insight into working capital management of Dugar Brother and Sons. It includes reviewing of various studies such as different financial books, reports, journal, magazine, research done by researchers. Thus this chapter aimed at reviewing on available literature on working capital management.

This chapter is broadly divided as follows:

2.2 Conceptual frameworks

2.3 Review of various studies

2.2 Conceptual frameworks

Proper financial management is the great essence for every business organization from the point of view of achieving entire success. In this respect, working capital management plays a significant role in every organization. Simply the term working capital management refers to the administration of all aspects of current assets and current liabilities, which greatly influence the overall day-to-day functional areas of the organization. The current assets are those assets including cash, which can be converted in cash within an accounting year i.e. a year span. The current asset is also called short-term assets comprises cash, inventories, marketable securities and account receivable etc. so, the amount of fund that is needed to finance the current assets of the firm is called working capital.

The current liabilities are those obligations, which have to be paid within an accounting year. It comprises trade creditors, account payable, short-term bank loans and outstanding

expenses. The short term current assets and current liabilities are outstanding expenses are collectively known as working capital. For instance, without cash, bills can not be paid, without receivable the firm cannot allow timing difference between delivering goods or services and collecting the money to pay them.

The goal of Working capital is to manage the current assets and current liabilities of the firm to keep at satisfactory level. It helps the firm to operate day to day transaction without any interruption. If the firm cannot maintain the satisfactory level of working capital, it is likely to become insolvent and may even be forced to bankruptcy. Working capital management involves deciding upon the account and composition of current assets and to finance the assets, the decisions involves trade off between risk and profitability.

Working capital management practices in Nepalese organization provide totally a different picture. The past trend of many organizations had given emphasis in fixed assets, so they are facing financial problem all the time and result shows the lower efficiency. The government policy to concentrate more on fixed assets has overlooked the financing of working capital. So in order to create the culture of risk bearing ability through commercial prudence and professionalism, the aspect of working capital should be treated in the same way as fixed capital, while deciding the structure of the companies. Short-term financial decision has never received much attention in the literature of finance. More emphasis had been given to long-term financial decision.

By analyzing above concept about working capital, we concluded that all the corporate, whether public of private, manufacturing or non-manufacturing needs to have adequate, working capital to serve in competitive market. The consideration level of investment in current assets should avoid two-danger points -excessive and inadequate investment in current assets. Excessive investment in current assets should avoid as it impairs firm's profitability, as idle investment yields nothing. On the other hand, inadequate investment in working capital can threaten solvency of the firm, if it fails to meet its current obligations. It should be realized that the working capital needs of the firm might be

fluctuating with changing business activity. So the effective management of working capital is must for the success of any organization. To have the adequate healthy and effective working capital, it should properly determine, controlled, and reviewed regularly. Working capital management is the process of planning and controlling the level and mix of the current assets of the firm as well as financing their assets.

It is therefore recognized fact that any mistake made in management of working capital can level to adverse effects in business and reduce the liquidity, turnover and profitability and increase the total cost of financing of the enterprises. The skill of working capital management should be unique as to make efficient use of funds for minimizing the risk of loss to attain profit objective.

2.2.1 Concept of Working Capital

There are two concepts of working capital which are as mentioned below.

A. Gross Working Capital

Gross working capital simply refers to firms' investment on current assets. Current assets are those assets which can be converted into cash with in an accounting year or operating cycle. it includes cash, short-term securities, debtors, bills receivables and stocks. From the management point of view, the gross concept deals with the problem of managing individual current assets in day to day operation. The excessive investment in current assets affects the profitability, as idle investment yields nothing. Similarly, inadequate investment in current assets makes it difficult to carry out day-to-day operation of the organization. It also enables a firm to plan and control funds to maximize the return on investment. (Kulkarni, 1996:376).

R.S. Pradhan and K.D. Koirala express their view about concept of Gross Capital as "If all the expenses needed to run the day-to-day operation of business such as amount to be invested in form of cash, finished goods, receivable etc are put together it is called Working Capital". This working capital and total current assets are synonymous.

Gross Working Capital = Total Current Assets

This concept is also known as quantitative concept.

B. Net Working Capital

Net working capital refers to the difference between current assets and current liabilities. Current liabilities are those claims of an outsider, which are expected for payment with in accounting year; include cash, bills payable and outstanding expenses. Net working capital can be negative or positive. A positive net working capital will arise when current assets exceeds current liabilities. A negative net working capital will occur when current liabilities are in excess of current assets. Net working capital can be more useful for analysis of the trade off between profitability and risk.

Now a day, the net concept has overcome to gross concept because the gross concept is narrow in terms of working capital, as it does not indicate the firm's liquidity correctly and do not compared with current liabilities. Sufficient procurement of funds in business cannot be made without having current liabilities.

From management point of view, gross working capital deals with the problem of managing individual current assets in the day-to-day operation. But for having long run view of working capital, we have to concentrate on the net value of current assets. The gross concept is important to newly established companies where liabilities have not been acquired immediately, but the net concept is important for both newly established and operating concerns where some amount of current liabilities are maintained for the payment of different creditors, income taxes, bills payable, secured and unsecured loans etc.

Besides, the gross working capital and net working capital there is another concept called "Zero Net Working Capital" in which the firm maintains the balance between sums of inventories receivable with the amount of account payables. It means account payables are maintained through inventories and receivables and reduces the need of external financing. (Poudel, Baral, Gautam, Dahal and Rana, 2005:323)

The definition described virtually represents the characteristics of working capital. Following are the characteristics of working capital:

a. Short Life

The working capital is characterized by assets with a life of less than one year such as cash, marketable securities, account receivables etc. this life span leads to high volatility in the level of investment.

b. Nearness to cash or liquidity

The basic characteristic constitutes the first line of defense against technical insolvency. Cash is the liquid assets having zero conversion time 100% conversation rates but for inventory and marketable securities two factors - nearness to cash or amount of time required converting assets into cash and price on conversion must be considered.

c. Lack of synchronization

Since the enterprises cannot produce on order only cannot insist on cash payment, there is always the problem of synchronization in cash receipts and distributions. It is also due to the level of investments in working capital that is affected by the sales volume, production policies and collection policies.

The basic characteristics of working capital as mentioned above indicate that it is a term of capital intended to be kept moving or circulating and its potential for earning comes from movements. Though the expenditures can be controlled and planed, its income is usually subject to random variation and is not controllable.

2.2.2 Need for Working Capital

The need for working capital to run day-to-day business activities cannot be underestimating. It helps to achieve entire goal of t he business to run smoothly and uninterrupted.

A. The transaction motive

The transaction motive refers to the holding of cash meet day-to-day requirement of the businesses to run smoothly and uninterrupted basis.

B. Precautionary motive

The precautionary motive refers to the holding of cash to meet the random and unforeseen fluctuations in cash flow i.e. unpredictable change in demand and supply, strikes, unexpected slow down in collection of account receivable.

C. Speculation motive

The speculation motive refers to the desire of a firm to take advantage of opportunities, which present themselves at unexpected moment. They can make purchases at favorable price or reduce price on payment of immediate cash, speculative interest rate etc.

2.2.3 Types of Working Capital

There are two types of working capital which are as mentioned bellow:

A. Permanent working capital

Permanent working capital refers to that level of current assets which is required on continuous basis over the entire year. Organization cannot operate its regular operation and sales functions in the absence of this portion of working capital. It includes the amount of cash, receivable and inventory mentioned as current assets to carry operations at any time. Therefore, manager holds certain minimum amount of working capital to ensure uninterrupted production and sales function, this portion of working capital is directly related to the firm's expansion of operation capacity.

B. Variable working capital

Variable working capital is also known as temporary seasonal and fluctuate working capital. It represents that portion of working capital, which is required over permanent working capital. If the nature of production and sales of a firm directly related to seasonal variation, it should stock extra raw material, work in process and inventory of finished goods. Therefore this portion of working capital depends upon the nature of firms'

production, relation between labor and management. The following figure clearly shows about the portion of working capital. If firm has sound management of this portion of working capital, it can easily win the other competitor in the cutthroat of the market.

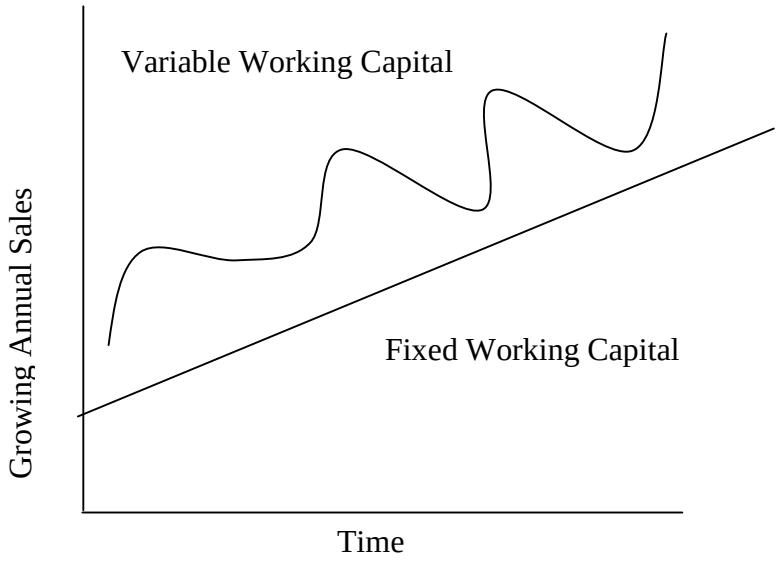


Figure No. 1

Types of Working Capital

2.2.4 Determinations of Working Capital Policy

There are no set rules to determine the working capital requirement of a firm. The firm itself should manage working capital in proper way by considering the need of the business. The total working capital requirement is determined by a wide variety of factors and these factors could affect different enterprise differently and they do vary from time to time. Generally, following factors affects the working capital requirement of the organization.

A. Nature of business

Working capital requirement of a firm are basically related to the nature of the business. Trading and financial firm needs large sum of money to be invested in a working capital. Pubic organization need limited working capital only for the use of cash sales and supply services. Working capital for the manufacturing concern falls between the two extreme requirement of trading firm and pubic enterprises.

B. Manufacturing cycle

Shorter the manufacturing period (cycle), the lesser will be the need of working capital to finance and vice versa.

C. Production Policies

Production policies are also another factor, which affects in determining the working capital requirement. For instance, if a firm produces seasonal goods, then it will be sold in a certain month of the year and inventories will be kept at minimum level, this increases working capital. If the work of business is done manually, the requirement of working capital will be more.

D. Business fluctuation

Business fluctuation and business cycle also affects the need of a working capital. Time and cycle fluctuation effects demand of the product that in turn affects the temporary and variable working capital need. In boom period when sales increase, the firm need its investment in purchasing inventories, additional funds may be required to invest in plant and machinery to meet the increased demand. At the time of boom, more investment has to be made in stock and the need for working capital increases but during the time of recession and depression low amount of working capital is enough.

E. Growth and Expansion of Business

The volume of assets, sales as well as expansion activities of the enterprises has direct bearing upon the need of working capital. The business firms having the program of expansion, development and modernization have to manage more working capital. It might also need working capital to utilize it full production and operation capacity of fixed assets. Higher the volume and expansion of activities of the enterprises, the higher will be needed of working capital and vice versa.

F. Credit Policy

The firm may adopt liberal credit policy or the tight credit policy. A firm with liberal policy gives longer credit period to the customer. It results in the higher receivables thereby increasing the need for the working capital. On the other hand, a firm having tight credit policy gives shorter credit policy that decreases the investment in account receivables thereby reducing the need for working capital.

G. Price level change

The fluctuations in price level have greater influence in determining the need of working capital. The firm requires maintaining high amount of working capital if the price level rises due to increase in cost of inputs.

H. Sales Volume

The fluctuation in demand and supply of the product affects the level of working capital. The higher the volume to sales, the higher will be need of working capital. It is because; the firm needs additional inventories to support the payment of additional labor that is needed to support the increased sales.

I. Cash Conversion Cycle

Working capital is also called a circulating capital. The larger the cash conversion cycle, the larger will be the need for working capital and vice versa.

J. Others

Factors such as coordination between production and distribution activities, conservative dividend policy as well as liberal depreciation policy strengthen the working capital position of the organization.

2.2.5. Working Capital Policy

Working capital refers to the firms basic policies relating to the target level of each category of current assets and how current assets to be financed. Deciding how much current assets to be maintained and how to finance them are crucial issues of working capital management because the level of current assets and financing them have direct impact on the firm's profitability, liquidity and risk.

Basically there are two policies of working capital to examine the above two issues:

A. Current Assets Investment Policy
B. Current Assets Financing Policy

A. Current Assets Investment Policy

Current assets investment policy refers to the policy regarding the total amount of current assets to be carried out to support the given level of sales. How much a firm to invest in current assets will depend on its operating cycle? There are three alternative current assets investment policy relaxed, moderate and restricted. Under each policy, a different amount of working capital is carried to support each level of sales.

i) Relaxed Current Assets Investment Policy

Relaxed current assets investment policy is also called conservative, flexible, and fat cat policy. In this, the organization holds relatively large amount of current assets i.e. cash, marketable securities, inventory and receivable to support the given level of sales. In addition the company is motivated to sale by applying liberal credit policy. Therefore, this policy creates the longer receivable collection period. It is also used to create longer inventory and cash conversion cycle. Thus, the policy provides the lowest expected return on investment with lower risk.

ii) Restricted Working Capital Investment Policy

It is also called as tight, lean and mean, aggressive policy. Under this, the organization has high control in current assets. The company holds minimum level of inventories, marketable securities, receivable and cash to support the level of sales. This policy tends to reduce the inventories, receivable, cash conversion period. The company follows tight credit policy and bears the risk of losing sales.

iii) Moderate Working Capital Investment Policy

In this policy, a company holds the amount of current assets in between the relaxed and restricted policy. The ratio of current assets to sales is neither too high nor too low under this policy. Both the risk and return are moderate in this policy.

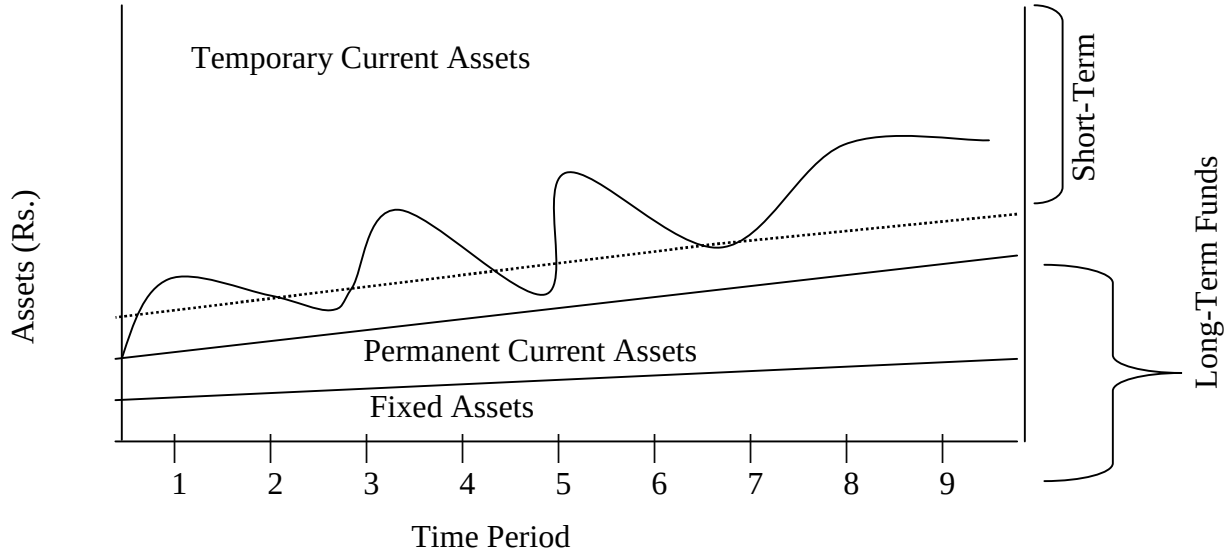
B. Current Assets Financing Policy

Current assets financing is one of the concerning topic of working capital management. Working capital management involves deciding upon the amount and composition of current assets and how to finance these assets. This decision involves trade off between risk and profitability. The financing of current assets through short-term and long-term sources is different regarding the

cost and flexibility. Therefore, business enterprises have to identify the way to apply financing mix on current assets financing.

i) Aggressive Financing Policy

The aggressive financing policy is quite risky leading to high profitability and low liquidity. Under this policy, firm finance its entire temporary current assets and a part of permanent current assets from short term financing and permanent requirement by long term source. Some extremely aggressive firm may even finance a part of their fixed assets with short term financing. The relatively more use of short term financing makes the firm more risky. There is higher risk, higher return and low liquidity position under this aggressive policy.



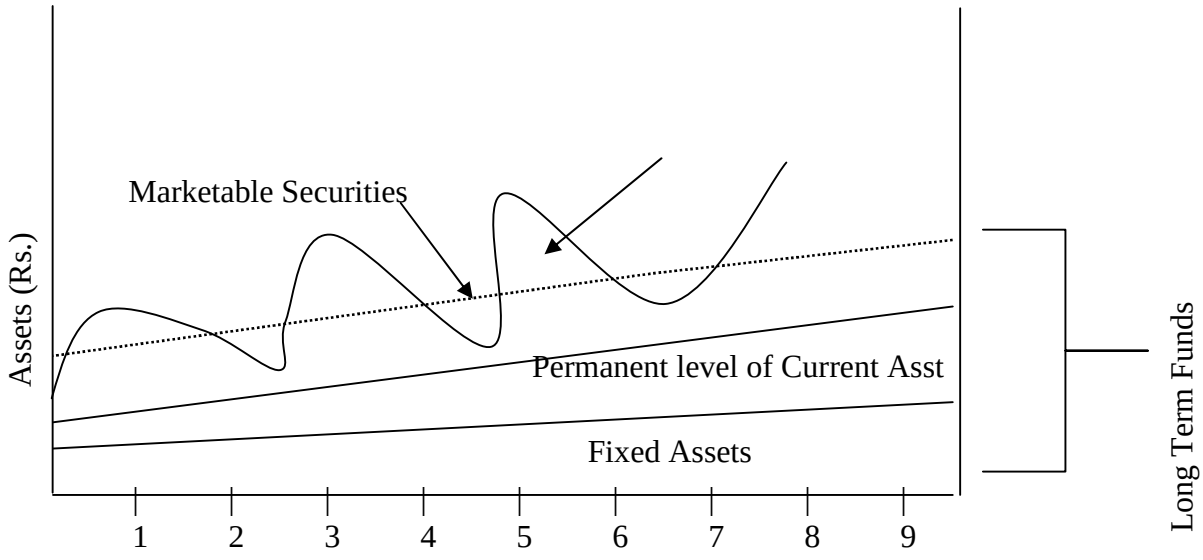
Financing Under Aggressive Policy

Figure No.2

ii) Conservative Financing Policy

The financing policy of the firm is said to be conservative when it depend more in long-term funds for financing need. Under this policy, the firm finances its permanent current assets and part of temporary current assets through long-term funds. While short term funds are use in the

event of an emergency. This policy has kept a large amount of current assets with long conversion period, low level of current liabilities and higher interest. When the firm does not need temporary current assets, the idle long-term fund can be invested on marketable securities. This policy is less risky leading to profitability and high liquidity. Thus risk and return are lower than aggressive policy and liquidity position is higher then aggressive policy. So, the policy is also known as very safe financing policy.

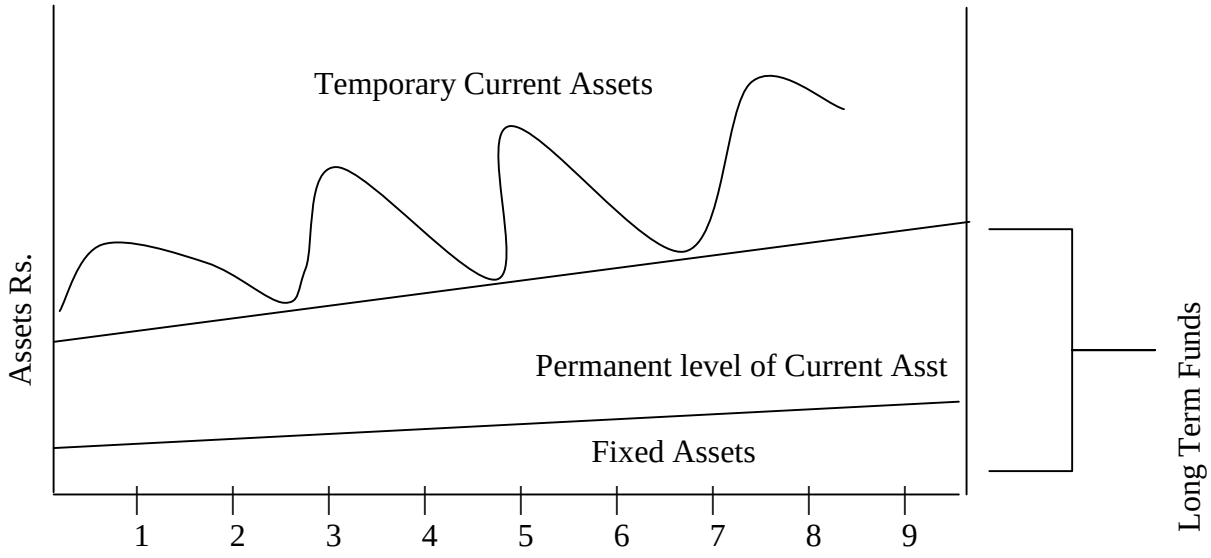


Financing Under Conservative Policy

Figure No. 3

iii) Moderate Financing Policy

This approach lies between aggressive and conservative policy. It is neither too risky nor least risky. It lies between a low liquidity, high profitability case and high liquidity low profitability case. Under this policy, the firm finance it permanent current assets with long term financing and temporary current assets with short term financing. It aims at achieving a trade off between profitability and liquidity. In other words, a firm adopts that financing plan, which matches assets and liabilities, maturates, so it is also called maturity matching policy. This approach is also called self-liquidating approach.



Financing Under Moderate Policy

Figure No. 4

2.2.6 Goals of Working Capital Management (Hampton, 1998)

The firm's policies for managing its working capital should be designed to achieve three goals.

a) Adequate Liquidity

If a firm lacks sufficient cash to pay its bill when due, it will experience continual problem. The most important goal is to achieve liquidity for conducting day-to-day operation.

b) Minimization of Risk

In selecting its source of financing payables and other short term liabilities may involve relatively low cost. The firm must ensure that these near term obligation do not become expensive compared to the current assets on hand to pay them. The matching of assets and liabilities among current account is a task of minimizing the risk of being unable to pay bills and other.

c) Contribution on Maximizing Firms Value

The firm holds working capital for the same purpose as any other assets, which are to maximize the present value of common stock and value of firm. It should not hold idle cash any more than it should have idle fixed assets. The investment of excess cash, minimizing of inventories, and seedy collection of receivable and elimination of unnecessary and costly short term financing all contributes for maximization of the firm's value.

2.2.7 Adequacy of Working Capital

The proper functioning of business operation will be ensured only when the management would maintain tight amount of working capital on continuous basic. Both excessive and as well as inadequate working capital position are dangerous from the firm's point of view, which is reflected below (Pandey, 1999:825)

The dangers of excessive working capital are:

- It results in unnecessary accumulation of inventories. Thus, chance of inventory mishandling, waste, theft and losses increase.
- It is an indication of defective credit policy and stock collection period. Consequently, higher incidence of bad debts results, which adversely affects profit.
- Excessive working capital makes management co placement, which degenerates, into managerial inefficiency.

- Tendencies of accumulation inventories tend to make speculative profit grow. This may tend to make dividend policy liberal and difficult to cope with in future when the firm is unable to make speculative profit.

The dangers of inadequate working capital

- It stagnate growth. It becomes difficult for the firm to under take profitable projects for non-availability of working capital funds.
- It becomes difficult to implement operating plans and achieve the firms profit target.
- Operating inefficiency creep in when it become difficult even to meet day-to-day commitment.
- Fixed assets are not efficiently utilized for the lack of working capital funds. Thus, the firm's profitability would deteriorate.
- Paucity of working capital funds render the firm unable to avail attraction credit opportunities etc.
- The firm loses its reputation when it is not in a position to honor its short-term obligation.

2.3 Literature Review

2.3.1Review of Articles/Journals

Different analysts have approached working capital management in different ways. A review of these approaches is important in order to develop an approach that can be employed in the context of selected organization. Articles, journals, bulletins are of great significance for thesis writing. It adds extra input in study. So, various published articles, journals relating to working capital management published by different management expert are reviewed.

Prof. Dr. Manohar K. Shrestha (1983) in his study has conducted an empirical observation of ten-selected PEs. He has focused on the liquidity, turnover and profitability position of sampled enterprises. He states that the managers often lack basic knowledge of working capital and its overall impacts on the operative efficiency and financial viability of public enterprise. In his analysis, he focus that four PEs had maintained sufficient liquidity position, two PEs is excessive and the remaining four had failed to maintain desirable liquidity position. On the turnover side, two PEs had negative working capital turnover, four had adequate turnover, one had high

turnover and the remaining three had not satisfactory turnover on net working capital. He has also found that out of ten PEs, six were operating in loses while only four were getting same percentage of profit. Based on Prof. Dr Manohar K Shrestha has brought certain policy issues such as lack of suitable financing planning, negligence toward working capital management, deviation between liquidity and turnover of assets and in ability to slow positive relationship between positive relationship between turnover and return on net working capital. He has also suggested the measures to overcome above policy issues like identification of needed funds, regular checks, and development of management information system, positive attitude toward risk and profit and determination of right combination of short- term and long-term sources of funds to finance working capital.

Prof. Radhe Shayam Pradhan and Kundan Dut Koirala (1983) had jointly published an article on "Working Capital Management in Nepalese Corporation". This article aims to find out the difficulties, problem and importance to current assets management and also aims to find the motive for holding cash and inventory. They have focused on evaluation of the working capital position of selected manufacturing and non-manufacturing Corporation of Nepal. They sampled five manufacturing and six non-manufacturing public enterprises. This study is concentrated on the size of investment, trends of investment and need to control the investment in current assets, significance of current assets management. Major finding of this study are as follows:

1. Investment in current assets had declined over a period of time in both manufacturing and non Manufacturing Corporation. However, the manufacturing companies had consistently more investment in cash and receivable as compared to Non- Manufacturing Corporation.
2. Management of working capital was more difficult than that of fixed assets capital. They found the high level of inventories in manufacturing ones.
3. Inventory management was a great significance in Manufacturing Corporation and the management of cash and receivable was a great significance in non-manufacturing corporations.
4. The major motive for holding cash in Nepalese corporation was to provide a reserve for routine not outflow of cash to keep on the production process and sales.

Another article relating to working capital management is by Prof R.S. Pradhan (1988). He studied on "The demand for working capital by Nepalese Corporation". For the analysis he has selected nine manufacturing public corporation within the 12 years data from 1973 to 1984. In earlier studies concerning the demand for cash and inventories by business firms didn't report unanimous finding. A lot of controversies exist with respect to the present economies of scales, role of capital cost, capacity utilization rate and the speed with actual cash and inventories are adjusted to describe cash and inventories respectively. The pooled regression results show that the demand for working capital and its component is a function of both sales and their capital cost.

Dr. K. Acharya (1985) has published his article regarding "Problem and implement in the management of working capital in Nepalese enterprises". He has described operational and organizational problem as a two major problem faced by Nepalese PEs regarding working capital management. In his number of studies, it has been repeatedly found that the gross efficiency exists in the operation of public enterprises. He states most of the Nepalese enterprises has misunderstood the management of working capital as the management of money and managers are found conscious about receiving the money rather than its efficient utilization. Thus, existing problem in the finance are mostly directed toward the management of working capital rather than in any area. Lack of regular evaluation of financial result as well as regular internal and external audit system, most of PEs being unable to present their capital requirement with proper justification, functioning of finance department was not satisfactory, some PEs are facing the problem of under utilization of capital.

He has stressed on high cost of production, which have left PEs in less secured position. He further added the cost of reduction is only possible reassure for smooth operation and long term existence of the public enterprises in Nepal. The cost reduction program is highly associated with the optimization of working capital. Increase of current liabilities than current assets, not following the current ratio 2:1, slow inventories in PEs, change in working capital in relation to fixed capital had very low impact over the profitability, PEs have not followed the conventional proportional of debt to equity as 1:1, very thin transmutation of capital employed into sales, absent or inefficient information management system, ineffective use of performance evaluation

tools and techniques, and working capital management has never been considered as a managerial job.

He has suggested avoiding the system of crises decision, which prevailed frequency in the operation and also to strictly follow the set system and method of decision making to achieve set objective.

Joseph A. Mauriello (1962) has presented an article on "Working capital concept." This article looks afresh at the problem of determining working capital, and proposes a simple yet comprehensive restatement of principles with respect to current assets and current liabilities. The working capital is measure liquidity of a concern working capital is an important to management as a measure of the fluidity of capital and as a n indicator of balance in the assets and liability structure in the company bank and the other short term creditors are vitally interested in the amount of working capital from the standpoint of evaluating the prospect of repayment of their claims against the company.

Achieve more efficient financial management and eliminate unnecessary "hits" to the company's bottom line!

With today's unsetting economic conditions, there is no more challenging area in finance than working capital management. This seminar address all the key issues: from organization and improving control over your company's cash flows to identifying key friction point among the various financial function (cash, marketable securities, inventories, account receivable and payable and notes payable) to establishing efficient investment and borrowing approaches and developing a global working capital management system. You will discover an effective way to broaden your horizons and learn how specific element of working capital management works separately and together.

How you will benefit:

- Create an effective, company-wide working capital management system
- Handle cash flows more efficiently
- Develop successful strategies for short term liquidity
- Enhance the conversion of account receivable to cash
- Find out how different purchasing approaches affect account payable and cash management

- Measure and control the cost of your company's working capital management
- Apply a global approach to working capital management, incorporating major foreign subsidiaries into your system

(www.knowledgestorm.com/seminar no: 01530-XNBB)

Working Capital efficiency can be a beautiful thing, as any finance executive familiar with the working capital survey conducted by CFO magazine and REF Consultancy Group should know by now. From the survey, the researcher comes in conclusion that If minimize working capitals that is, the amount tied up in receivables, payables, and business, thereby enhancing the prospects for growth. This year's survey once again shows how companies stack up within their industries according to this measure financial performance.

(Fink, 2001)

2.3.2 Review of Thesis

The numbers of thesis have been done by the students relating to working capital management and among them few-selected thesis related to working capital management are studied in his section:

Mr. Ramesh Manandhar (December 2006) has carried out a study on 'working capital management of manufacturing companies listed in NAPSE'. For this study he has selected five manufacturing companies of Nepal for five years (2057/58-2061/62). The selected companies are- Unilever Nepal Limited, Bottlers Nepal Limited, Nepal lube Oil Limited, Shree Bhrikuti Pulp and Paper Limited and Gorkhkali Rubber Udhyog Limited. The main aim of this study is to understand the working capital policy followed by manufacturing companies and its influence on liquidity and profitability position. He has also focused on the issue and gaps in working capital management of listed manufacturing companies. Beside this the study also tried to know the impact of sales and net profit on working capital and to access the relationship of working capital, sales and net profit.

The major finding of this study is as follows:

- The liquidity position of most of the manufacturing companies is weak and is below the standard level. The overall position of manufacturing companies is hardly covering short-term liabilities by short-term assets.
- The most of the manufacturing companies are moving downward financially due to lack of specific investment in current assets in long run and unavailability of source of financing.
- The overall profitability of Nepalese manufacturing companies are negative due to excessively loss in some companies in comparison to profit of other companies. And some are facing from huge loss due to administrative negligence, unskilled manpower, unsystematic handling of raw material etc.
- Most of the companies are not being able to fully utilize the working capital due to the higher variation and lower turnover ratio.
- The productively power of assets is not satisfactory and profitability on sales is also negative.
- Credit terms and standard are too much liberal in Nepalese manufacturing companies.

Mr. R. Manandhar has forwarded some suggestion and recommendation for the improvement. Due to the maximum fluctuation in working capital and to overcome it he has suggested to determine certain proportion for component of current assets in order to manage working capital in future.

According to his finding, management should compulsorily formulate the working capital plan and policy for effective working capital management. Inventories are the major component of current assets. It should be kept adjustable to sales and production and should reduce the problem of over stock. Definite credit and collection policy should be adopted for effective management of working capital. Cash is important part of working capital management and there should be minimization of cost, better synchronization of cash flow slow distribution. Target sales and production plan should be prepared beforehand to overcome the problem of perpetual loss situation. The overall manufacturing companies are in loss position. The management should give attention toward the minimization of administrative and operating expenses. They should give attention to manpower planning, over staffing and suggested to hire only competent staff. He has focused to employ modern tools and technique of financial analysis to improve

effectiveness. Management of information system should be developed within and outside the analysis for effective flow of necessary and corrected information.

Mr. Uttam Kumar Mahato (November 2006) has carried on "Working Capital Management of Nepal Lever Limited". The main objective of his study is to analysis the working capital policy and trade off between liquidity and profitability of Nepal Liver Limited for five years (2000/01-2004/05). He has used financial tools, correlation coefficient as statistical tools as the major tools for the analysis.

NL LTD has affiliation with Mother Company, which is out of the kingdom. It imports various raw materials from different countries so company's total current asset and total current liabilities are always high.

In his study, he found all the components of current asset of NL LTD are highly fluctuating. The CA/FA is highly fluctuating in increasing trend. The ratio indicates the investment in current assets is greater than fixed asset. From this it can be said that the company has adopted more conservative current asset investment policy, which indicate that there is no clear vision about the investment in current asset to fixed asset. Inventory and miscellaneous current asset is covering largest portion of total asset. The level of maintaining largest inventory level should be reduced. In this regard management is advised to improve its marketing policy and should be integrated with credit policy, which has high influence on sales.

Inventory turnover, receivables turnover, total assets turnover cash and bank balance turnover ratio are quite fluctuating. This shows that the N.L. Ltd is taking high risk. In general its correlation of liquidity ratio and net profit margin is significant. The significant relationship between liquidity and net profit margin implies that there is trade off between liquidity and profitability. The specific financing policy should be fixed to avoid the risk related liquidity of the company.

Nepal Liver Ltd is facing the problem to manage its tax provision due to the changeable economic policy and strategies of the country. Due to the company marketing scenario of this modern business age and globalization concept the company is making outflow of their goods in credit and eventually facing great problem in collection debtors.

Nepal Liver Ltd is still following aggressive working capital management policy which increases the risk of the company and able to achieve high gain. It helps to achieve business goal by wealth maximization of the shareholders.

Bishnu Prasad Aryal has carried out study on 'A Study on Working Capital Management of Nepal Tele Communication Corporation 2000'. His major objective of this study is to know how far NTC is able to utilize its current assets property. He has used various financial tools for his calculation to fulfill his objective. For the study he has covered five years period.

He has found that the size of working capital affect the trade off between risk and profitability of NTC. His analysis showed that there is a high liquidity in corporation. Main current assets of the corporation are cash and bank balance, account receivable, and inventory, miscellaneous current assets. Cash and bank balance holds large amount of current asset. He has found that the company has used long-term fund to finance in working capital and it has followed conservation financial policies. In addition, he has found that the company has reduced external financing by using its internal funds.

The current assets with respect to total assets and net sales are in increasing trend. According to him, this increment is due to the high investment in current asset. He was not satisfied with the turnover ratio of the company's sales and we have been increasing year after year but increment in sales is lower than increment of working capital. Therefore, he has notified that the company has the lack of efficient management. He has observed that the profitability position of NTC is not satisfactory because of low return in comparison to the investment in current assets. The liquidity condition of the company is favorable. According to him, large proportion of the fund has been used in current assets.

He has suggested that company should optimize its liquidity position, concentrated in the collection period. Again, he has given advice to apply in cash management for the optimal cash balance and excess cash can be invested in marketable securities.

Mr. Uttam Neupane (November 2006) has conducted research study on "Working Capital Management of Janakpur Cigarette Factory". The main objective of his study is to appraise the performance of working capital management of cigarette in Nepal with special reference to Janakpur Cigarette Factory. Beside this, the other objectives are to find out the efficiency of management in utilization of inventory, receivable and use of cash, to evaluate the financing

pattern of working capital and to examine the effects of working capital on profitability. It also attempts to present and analysis the sources and use of fund.

The major findings of the study are:

- The JCF has been following conservation working capital policy. As the fixed assets, permanent assets and some portion of temporary current assets are financed by long-term funds and other remaining portions are financed by short-terms sources.
- Inventory holds the largest portion of current assets than other assets.
- Investment in current assets is high with respect to total asset, net fixed assets.
- The company has not adopted efficient management receivables collection policy. The inventory turnover position of JFC is higher and has maintained the fixed inventory policy. The higher inventory turnover indicates that good inventory management.
- The liquidity position of the company is analyzed with current ratio and quick ratio. The overall current ratio is satisfactory because company is able to maintain its current ratio of 2.7:1 in average. The quick ratio is not so favorable. It is 0.64 in average, which is below 1:1. So, the company has not been able to meet its current assets quickly in cash in order to meet its current liabilities.
- The company is continuously incurring with heavy loss during the study period. The overall gross profit is negative. Net profit margin also indicates no average return.
- There is high operating ratio. The negative net profit margin and gross profit margin and high operating cost indicate the operational inefficiency of the management. Such high ratio shows only a relatively small percentage share is available for meeting financial liabilities like interest, tax and dividend.
- The overall return position of company is negative. The return on total asset is not satisfactory as the average return on asset is negative. Similarly, return on net worth is also negative. It is due to the inefficient utilization of current asset, total assets and shareholders wealth.

Pathak P.K (1994) has carried out a study on 'An Evaluation of Working Capital Management of Nepal Lube Oil Limited'. The main objective of his study is to apprise the working capital management of NLOL and to study the relationship between sales and different variables of working capital. To achieve this objective, he has taken five years study and applied the

secondary data. He has used ratio analysis, Karl Pearson coefficient of correlation and t-test as major tools for the analysis and findings. The major findings of this are:

- Current assets hold high portion and are in increasing trend years after year during the study period.
- Investment on current assets has affected as investment on total assets. According to him, the growing tendency of investment over current assets could have adverse effect in NLOL's wealth maximization goals in long run.
- Nepal Lube Oil has been able to effectively maintain the cash balance. It holds very minimum amount in current assets, which is not enough for day to day transaction. So, it has to manage optimal level of cash balance.
- Inventories have occupied the major portion of current assets but the share of finished goods stock is very low which is not favorable. It affects on profitability of the company.
- The liquidity position of company is analyzed with current ratio and quick ratio. The overall current ratio is unfavorable because company is not able to maintain the standard level and quick ratio is also not satisfactory. So the company has not been able to meet its current assets quickly in cash in order to meet its current liabilities.
- Receivable has occupied the second place in current assets and it is continuously growing.
- The turnover position of the company was also weak because of high collection period.
- Nepal Lube Oil has adopted the moderate working capital financing policy because it has financed less than half of its current assets through short term financing where as long term financing is financing the rest.

2. 4 Research Gap

Working capital is a controlling nerve center for any type of organization. It is more important for the manufacturing, trading company like Dugar Brothers and Sons. Till date none of the study of this organization on this topic has been attempted. Therefore, this study is an attempt to observe working capital management of Dugar Brothers and Sons (Automotive Division of TM Dugar Group).

At present many changes have taken place in our country. There has been drastic change in economical as well as political situation of the country and has followed the policy of liberalization, privatization and globalization. As a result, every business organization is also affected. Many more companies have been established after the changes and many more studies have been conducted. These previous studies on these topics may not coordinate with the present scenario. Therefore, it is necessary to bring out new fresh study on working capital management of trading business to suggest the possible ways for the improvement of this sector.

The objectives of this study is to analyze the financial position in relation to working capital management of Dugar Brothers & Sons, policy of working capital that are adopted by the organization and finding out the impact of working capital management in liquidity and profitability of the company. To achieve the objective, researchers has tried to see the working capital from different angles using different statistical and financial tools. Probably this study may be the first research of its kinds in the area. Trading business of the automobiles has been slowly and gradually able to gain a ground of profit. People's living standard is rising. Now a day, purchasing good branded vehicles have become a matter of pride. The vehicles models of Nissan are found to have good market potentialities. So, to boost up this kind of business, study of working capital is must. Thus, to fulfill this gap between previous and present scenario, this research has been done.

CHAPTER – 3

RESEARCH METHODOLOGY

Research methodology is the process of arriving to the solution of the problem through planned and systematic dealing with collection, analysis and interpretation of facts and figure. It is a way to systematically solve the research problem. It may be misunderstood as a science of studying how research is done scientifically. In this we study the various steps that are generally adopted by a researcher in studying the research problem along with the logic behind them. It is inquiry into any subject matter, which is an endeavor to discover for find out valuable fact, which would be useful for future application or utilization. (Micheal, 2002). A systematic research study needs to be followed to achieve predetermined objectives.

The main objective of this study is to measure the degree of financial soundness and performance of Dugar Brother and Sons i.e. analyzing the working capital management. This chapter includes the entire research methodology used and followed in the study. It includes research design, nature and sources of data, data processing procedures, and financial and statistical tools analysis.

So, the main purpose of research is to make research work easy, effective and helps to find a solution of the problem.

3.1 Research Design

Research design is the arrangement of the condition for the collections and analysis of data in a manner that aims to combine relevance to the research purpose. It can be defined as the plan, structure and strategy of investigation concerns so as to answer the research questions and to control variants. It is the overall operational pattern of framework of the project that stipulates what information to be collected sources by what procedures. Thus, it is not possible for the researcher to conduct a research work without a research design.

In this study, descriptive as well as analytical research approach is followed to analyze the present structure, constraints and future potentiality of the Dugar Brother and Sons. Besides, the

research also includes various financial, statistical and qualitative aspects and theses aspects are described details where it is necessary.

3.2 Nature and Sources of Data

Nature and Sources of data plays a vital role on research work. Without proper information and data, research study cannot be made effective. Here, the research is based on secondary data. The most of the study is based upon the secondary data provided by the organization. The secondary data are collected from journals, booklets, balance sheet published official records, previous literatures etc.

3.3 Data Processing Procedure

Data processing procedure depends upon one's study. Here, both primary and secondary data collection procedure are applied. The collected data secondary data are property arranged, tabulated and computed in accordance with the requirement of the study. Where as secondary data are collected directly from the organization mainly from its office located at Balaju Industrial Area and other different branches of TM Dugar Group, annual reports, bulletins, journals, booklets and unpublished officials records and also from the website www.tmdugargroup.com. And some are collected from different library including T.U, Nepal Commerce Campus and Shanker Dev Campus.

3.4 Tools and Techniques of Analysis

Financial as well as the statistical tools are used to make the analysis more convenient, reliable and authentic. For data analysis, different items from the balance sheet and other statements are tabulated. Their ratios, means, standard deviation, and coefficient of correlations of different variables, regression analysis is then calculated, presented in the table. Like wise, trend analysis is also used to know the trend of various ratios. Following are the brief introduction of the financial and statistical tools used in the study:

I. Financial Tools

The most widely used tools for the financial analysis is the ratio analysis. Ratio analysis is widely used tools for financial analysis whish establishes the numerical quantitative relationship between two items i.e. variables from the financial statement. It helps to ascertain the financial

condition of the organization. The management may be able to judge their financial stability by using various ratios. With the help of the financial ratio calculation, the company could easily know the financial situation, performance and take suitable and corrective actions to relieve from arising problems.

The ratios are simply calculated by dividing one component to another to show their corresponding relationship with each other. Following are the financial ratios, which can be analyzed to determined financial position of an organization:

i. Current Assets to Total Assets Ratio

This ratio measures what percentage of company's total assets is invested in the form of current assets. In other words it includes what percentage of the company's total assets are current assets. It is calculated as follows:

$$Current\ Assets\ to\ Total\ Assets\ Ratio\ \text{X}\ \frac{Current\ Assets}{Total\ Assets}$$

Higher ratio indicates decrease in the risk and profitability of the company as it holds sounds working capital position. But a high ratio gives the business freedom to adapt to changing circumstances.

ii. Current Assets to Fixed Assets Ratio

This ratio represents the relationship between the current assets and fixed assets. It can be calculated by using following formula:

$$Current\ Assets\ to\ Fixed\ Assets\ Ratio\ \text{X}\ \frac{Current\ Assets}{Fixed\ Assets}$$

If the ratio is greater than 1, it represents more investment in current assets than fixed assets. If the ratio equals to 1, it represents the equal proportion of current assets and fixed assets.

iii. Cash and Bank Balance to Total Assets Ratio

This ratio shows the portion of cash and bank balance in Total Assets. It is calculated by using following formula:

$$Cash\ and\ Bank\ Balance\ to\ Total\ Assets\ Ratio\ \text{X}\ \frac{Cash\ and\ Bank\ Balance}{Total\ Assets}$$

Here, increase in the ratio would decrease both risk and return.

iv. Cash and Bank Balance to Current Assets Ratio

This ratio measures the relationship between cash and bank balance to current assets i.e. it shows the portion of cash and bank balance in current assets. It is calculated by following formula:

$$Cash\ and\ Bank\ Balance\ to\ Current\ Assets\ Ratio\ \text{X}\ \frac{Cash\ and\ Bank\ Balance}{Current\ Assets}$$

Higher the ratio, the more liquid will be the current assets group. A large ratio may be taken as a sign of poor cash management. The low ratio indicates the sound management and higher ratio vice versa. The working capital of organization is directly affected by it.

v. Inventory to Current Assets Ratio

This ratio indicates the relationship of inventory to current assets i.e. it represents the portion of inventories to current assets.

It is calculated by using following formula:

$$Inventory\ to\ Current\ Assets\ Ratio\ \text{X}\ \frac{Inventory}{Current\ Assets}$$

Higher ratio measures greater part of current assets occupied by the inventory (blocking of material in stock). It indicates the weak working capital management of the company.

vi. Inventory to Total Assets Ratio

This ratio indicates the relationship of inventory to total assets i.e. it represents what percentage of total assets is in the form of inventories.

It is calculated by using following formula:

$$Inventory\ to Total\ Assets\ Ratio\ \text{X}\ \frac{Inventory}{Total\ Assets}$$

Higher ratio measures greater part of total assets occupied by the inventory (blocking of material in stock). It indicates the weak working capital management of the company.

Liquidity Position

Liquidity ratio is used to measure the firm's ability to meet the short-term obligation. The consequences of inadequate short term liquidity are very serious and therefore measures of such liquidity have been attached greater importance.

Net Working Capital itself is one of the measures determining liquidity. An enterprise with more net working capital is considered to be more liquid than one with less net working capital.

i. Current Ratio

Current Ratio is the relationship between current assets and liabilities. The current ratio measures a firm's liquidity position i.e. ability to meet current obligation. It shows the short-term solvency and financial strength of the firm. It measures the extent to which short-term assets cover the claims of short-term creditors. It indicates the availability of current assets for every unit of current liability. It can be calculated by using following formula:

$$Current\ Ratio\ \text{X}\ \frac{Current\ Assets}{Current\ Liabilities}$$

The standard measurement of current ratio is 2:1. If the current assets are two times of current liabilities i.e. 2:1, there will be no adverse effect on daily operation. If the ratio is less than 2, the

difficulties may arise while paying current liabilities. If the ratio is more than 2, it is very comfortable for the creditors but on the other hand it indicates the idle fund in business that does not produce return.

ii. Quick Ratio

Quick ratio helps to test the ability of the firm to make immediate payment of current liabilities. Not all the current assets are equally liquid, the inventory and prepaid expenses cannot be termed to be a liquid assets. It can be calculated by using following formula:

$$Quick\ Ratio\ \text{X}\ \frac{Quick\ Assets}{Current\ Liabilities}$$

Where,

Quick Assets = Current Assets – inventory, prepaid expenses

Generally, the quick ratio of 1:1 is considered to be ideal for any business organization.

Profitability Position

Profitability ratio measures the efficiency of the organization. It indicates the degree of success in achieving desired profit. Various profitability ratios are calculated to measure the operating efficiency of the business enterprises. Through profitability ratios, the investors and lenders can decide whether to invest in a particular business is good or not. In addition, the adequate return, to its shareholders also depends on profitability. Generally, the profitability position of the companies is analyzed with the help of following ratios:

i. Return on Total Assets Ratio (ROA)

This ratio measures the overall profitability of all financial resources invested in the firm's assets. It is calculated as follows:

$$\text{Re}turn\ on\ Total\ Assets\ Ratio\ \text{X}\ \frac{Net\ \text{Pr}ofit\ After\ Tax}{Total\ Assets}$$

Here, higher ratio indicates the better utilization of the total assets and high efficiency of the company.

ii. Return on Current Assets Ratio

This ratio helps to analyze the earning power of the current assets of the company. It measures the effective utilization of current assets. The table given below shows the relationship between the current assets and net profit after tax of Dugar Brother and Sons.

It is calculated by using following formula:

$$\text{Return on Current Assets Ratio} \quad X \quad \frac{\text{Net Profit After Tax}}{\text{Current Assets}}$$

iii. Gross Profit Margin Ratio

The gross profit margin ratio expresses the relationship between gross profit and sales. It indicates the productivity and efficiency of the organization. It is calculated as:

$$\text{Gross profit Margin Ratio} \quad X \quad \frac{\text{Gross Profit}}{\text{Net Sales}}$$

Where,

Gross Profit = Net sales – Cost of Goods Sold.

A high gross profit margin ratio indicates better profitability position and also implies ratio that firm is able to produce at low cost. A low gross profit margin may reflect higher cost of goods sold due to the firm's inability to purchase goods at favorable terms.

iv.Net Profit Margin Ratio

This measures the relationship between net profit and sales of the enterprise. It measures the overall profitability of firm's ability to earn net profit. It is calculated by following formula:

$$\text{Net profit Margin Ratio} \quad X \quad \frac{\text{Net Profit After Tax}}{\text{Net Sales}}$$

Higher ratio indicates the overall efficiency of the firm and better utilization of total resources. Lower ratio indicates the poor financial planning and low efficiency of the firm.

Turnover Ratio

Funds are invested in various assets in a business to make sales and to earn profit from it. The efficiency with which assets are managed directly affects the volume of sales. Thus an activity ratio measures the efficiency or effectiveness with which a company manages its resources or assets. These ratios are called turnover ratio. The relationship between sales and assets are indicated by the turnover ratios. It is also known as efficiency of the business concern in inventory management. The higher turnover ratio indicates better utilization of assets. Thus it measures the degree of effectiveness in use of resources by firm. Following are the turnover ratio calculated in the study:

i. Current Assets Turnover Ratio

This ratio shows the relationship between current assets and sales. It indicates the number of times the average current assets are turned over during a year. It shows how far the company can effectively utilize assets. It is calculated by using following formula:

$$Current\ Assets Turnover\ Ratio\ \text{X}\ \frac{Sales}{Current\ Assets}$$

Higher turnover ratio shows the efficient utilization of current assets. It reflects the adequacy of current assets. Lower ratio indicates greater volume of working capital.

ii. Inventory Turnover Ratio

The inventory turnover ratio measures how quickly inventory can be converted into sales. It is the test of efficient inventory management. It establishes the relationship between cost of goods sold during the given period and average amount of inventory for the period. It can be calculated by using following formula:

$$Inventory Turnover\ Ratio\ \text{X}\ \frac{Net\ Sales}{Average\ Inventory}$$

Where,

$$Average\ Inventory \text{X} \quad \frac{Opening\ Stock \Gamma Clo \sin g\ Stock}{2}$$

High inventory turnover ratio indicates the good inventory management of the company. Where as lower inventory turnover ratio shows excessive inventory levels and suggests the management to manage its inventory its inventory properly.

iii. Net Working Capital Turnover Ratio

This ratio shows the number of times the working capital is turned over during a year. It is calculated as:

$$Net\ Working\ Capital\ Turnover\ Ratio \text{ X} \quad \frac{Net\ Sales}{Net\ Working\ Capital}$$

Where,

Net Working Capital = Current Assets – Current Liabilities

Here, higher net working capital turnover ratio indicates effective utilization of working capital.

iv. Cash and Bank Balance Turnover Ratio

This ratio shows the number of times the average cash balance is turned over during a year in relation to its sales. Generally, it measures how rapidly cash can be converted into sales. It is calculated as:

$$Cash\ and\ Bank\ Balance Turnover\ Ratio \text{ X} \quad \frac{Net\ Sales}{Cash\ and\ Bank\ Balance}$$

The higher ratio indicates how cash is rapidly converted into sales and shows company's good cash management. The lower ratio indicates slow, weak cash management.

v. Total Assets Turnover Ratio

This ratio shows the relationship between sales and total assets. This ratio indicates how much total assets being used to generate sales. It can be calculated by using following formula:

$$Total\ Assets Turnover\ Ratio\ \text{X}\ \frac{Net\ Sales}{Total\ Assets}$$

Higher ratio indicates the effective utilization of total assets and vice versa.

II. Statistical Tools

With the help of statistical tools, we can measure the relationship between two or more variable. In this study following statistical tools are used:

i. Mean

It is the most popular and widely used to present the given data. The value is obtained by adding together all the items and by dividing its total by the number of items. It represents the entire data, which lies almost between the two extremes.

ii. Standard Deviation

The standard deviation is an important and widely used measure of dispersion. The standard deviation measures the absolute dispersion (or variability) of distribution. The measurement of the scatterness of the mass of figures in a series about in an average is known as dispersion. The high amount of dispersion reflects high standard deviation where as lower standard deviation means a high degree of uniformity of the observation as well as homogeneity of the observations. It is denoted by Sigma (σ).

iii. Coefficient of Correlation

The coefficient of correlation measures the degree of relationship between two sets of figure. Coefficient of correlation analysis is the statistical tools generally used to describe the degree to which one variable is linearly related to other variables. But it does not study about the cause and effect relation. The result of coefficient of correlation must lie +1 and -1.

There are different types of measures to study the correlation between the variables. Here, Karl Pearson's Correlation coefficient is used to find out the relationship between the variables of Dugar Brother and Sons.

The correlation (r) must always lies between +1 and -1. Thus +1 and -1 are the limits of coefficient.

If r = +1, the relationship is perfectly positive
If r = -1, the relationship is perfectly negative
If r = 0, there relationship is no relationship between the variable
If r < 0, there is negative relationship between the variable
If r > 0, there is positive relationship between the variable

iv. Probable Error (P.E)

The probable error of the correlation coefficient is applicable for the measurement of reliability of the computed value of correlation coefficient. It also enables us to find the limits within which 'r' is expected to lie. It is denoted by P.E.

$$P.E = \frac{0.6745(1 Z r^2)}{\sqrt{N}}$$

Where,

r = correlation of coefficient

N = No. of observation

The probable error is used to test whether the calculated value of correlation is significant or not.
If r < 6P.E, the value of 'r' is not significant so, there is no evidence of correlation
If r > 6P.E, the value of 'r' is significant, i.e., correlation is certain.

v. Trend analysis

A trend analysis or a time series is a sequence of observation of variable made at regular points or intervals of time and arranged chronological order. Trend analysis is an analysis of financial ratio over time used to determine the improvement of determination of its financial situation. Time series analysis is one of the quantitative methods used to determine patterns in data collected over time. It helps to forecast the future behavior of variables under the study, which is essential for business and economic planning. It also helps to evaluate the present accomplishment by comparing the actual performance with the expected performance and analyze the clause of variation. For future estimation or prediction, management can use the information which are gathered from the past behavior data. Such data are collected, observed or recorded at successive intervals of time.

There are many methods for analyzing the trend. Among them least square method is used in this study for trend analysis. The least square method is used to fit a straight line trend to forecast the trend value of future. The straight line trend is represented by the equation:

$$Y_c = a + bX$$

Where,

Y_c = Trend Value of Y variable

b = slope of the trend line

X = Time i.e. independent variable

a = Y intercept

The following two simultaneous equation has to be solved to find out the value of a and b and then only trend equation estimation can be done.

$$\sum Y = na + b\sum X$$

$$\sum XY = n\sum X + b\sum X^2$$

$$a\ X\frac{Y}{N}$$

$$b \, X \frac{XY}{X^2}$$

In this study trend analysis of Working Capital, Sales, Cash and Bank Balance, Net Profit after Tax are analyzed.

vi. Regression analysis

Regression analysis is used as a tool of determining the strength of relationship between two variables. It is a statistical tool with the help of which we can estimate or predict the value of one variable when the value of other variable is known. The unknown variable which we have to predict is called dependent variable and the variable whose value is known is called independent variable. The analysis used to describe the average relationship between two variables is known as simple linear regression analysis. In other words it indicates the cause and effect relationship between two variables.

If X and Y are two variables, the algebraic expression of regression equations are called regression equation of Y on X which describe the variation in the value of Y for given change in the value of X.

Regression equation of Y on X is given by:

$Y = a + bX$ ---------- (i)

Where,

Y = dependent variable

X = independent variable

a = value of Y when X = 0

b = regression coefficient of Y on X

In other words, a and b are constants to be determined to find the position of the line completely. The parameters a and b of equation is obtained by solving the normal equation of least square method:

$\sum Y = na + b\sum X$-------- (ii)

$\sum XY = a\sum X + b\sum X^2$-------- (iii)

Where,

n = no. of years

By solving the equations (ii) and (iii), we get 'a' and 'b'. Substituting the values of a and b in equation (i) or (ii), we get the equation of line of regression of Y on X.

vii. Standard Error of the Estimate

Standard error of the estimate is a measure of the accuracy of predictions made with a regression line. Here, smaller the values of the standard error of estimate, greater will be the accuracy of the estimated values. If standard error of estimate is zero then the estimated values coincides with the actual values. In this case, all the data points would lie directly on the regression line, and no points would scattered around it. Thus, with the help of the standard error of estimate, it is possible to ascertain how good and representative the regression is to describe a relationship between two variables.

It can be calculated by using following formula:

Standard error of estimate for regression (SE regression) = $\sqrt{\frac{\sum(Y-\hat{Y})^2}{n-2}}$

viii. Coefficient of Determination

Coefficient of determination measures how well the line fits the data. In other words it is simply the squared value of the correlation coefficient. It tells what proportion of the variation between the data points is explained or accounted for by the best fit line fitted to the points. It indicates how close the points are to the line.

CHAPTER-4

PRESENTATION AND ANALYSIS OF DATA

4.1 Introduction

As mentioned in introductory chapter, the main objective of this study is to analyze the working capital management of Dugar Brother and Sons. To achieve the set objective, data are presented and analyzed. The major variables for this study are current assets, current liabilities, total assets, sales, inventory, and net working capital. It includes composition of net working capital, relationship between current assets to total assets as well as fixed assets, liquidity position, profitability position, turnover position, correlation analysis, trend analysis, regression analysis. Simply presenting the variables is not sufficient; so various financial and statistical tools have been used for further analysis.

4.2 Composition of working capital

Management of working capital is a crucial aspect of financial management that determines to a large extent the success and failure of an organization. The effective analysis of working capital enables management to detect trend and take corrective measure. For day – to – day operation of business activities, working capital is needed. Different kinds of assets are required such as current assets, fixed assets, tangible and intangible goods. The composition of working capital of Dugar Brother and Sons are analyzed below:

4.2.1 Position of Current Assets

Business Organization requires long - term as well as short – term resources. Utilization of resources plays vital role on success or failure of any business. In order to run day – to – day business activities more activities more efficiently, appropriate level of current assets (gross working capital) should be maintained. The requirement of current assets depends upon the nature, size of business. Current assets should be properly managed to achieve set objective. If it is not properly managed, the set objective to earn maximum profit and ultimately shareholders

wealth cannot be achieved. If the firm increases the proportion of current assets, there is high profitability return as well as risk.

The position of current assets of Dugar Brother and Sons during five year, FY 2059/60 – 2063/64) are as follows:

Let's assume the FY 2059/60 as 100 in index to find out the percentage change we get,

Table No.1

Position of Current Assets

Fiscal Year(FY)	**Current Assets Amount (Rs.)**	**Index**	**% Change**
2059/60	74628742.29	100	-
2060/61	92438271.69	124	24
2061/62	195114956.78	261	137
2062/63	94554048.62	127	-134
2063/64	189351679.13	254	127
Total	**646087698.40**		

Source: Balance sheet of DB&S

The above table shows the position of current assets of Dugar Brother and Sons. The position of current assets is in increasing trend up to first three years i.e. from FY 2059/60 – 2061/62. But in FY 2062/63, the amount has been decreased down to Rs. 94,554,048.62. It has been decreased by – 134%. We can observe in FY 2063/64, there has been increment in the amount of current assets by 127% and has reached to Rs. 189,351,679.13.

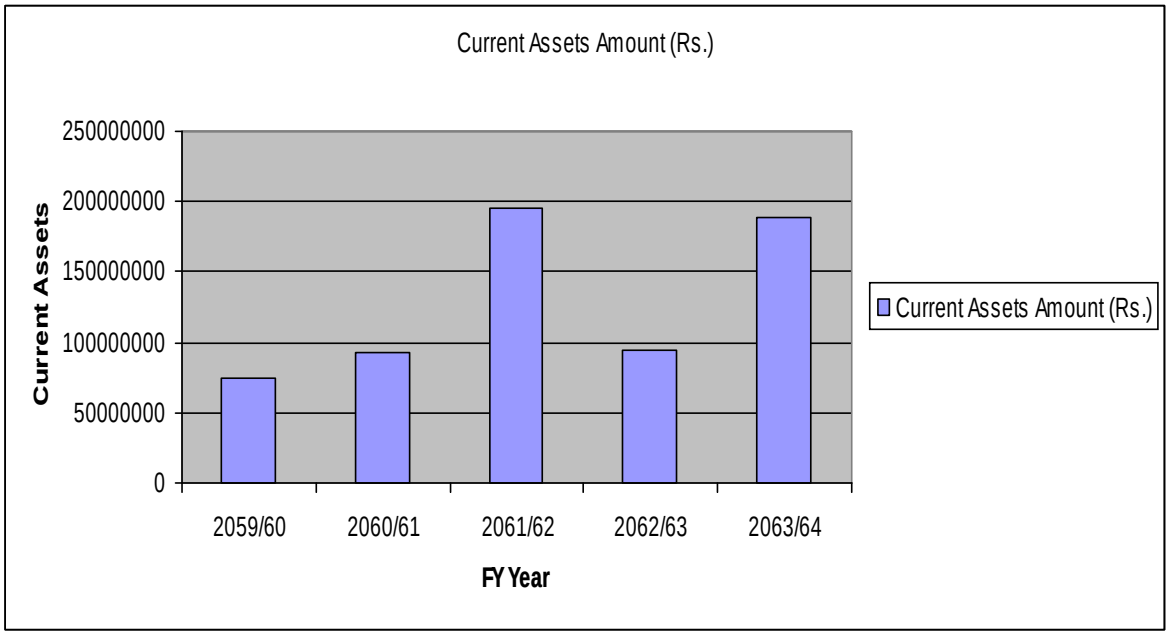


Figure No. 5

Above bar diagram clearly shows the position of current assets during FY 2059/60- 2062/63. In first three year (FY 2059/60 – 2061/62), the amount of current asset is gradually increasing. But in FY 2062/63 there has been drastic downfall in amount of current assets. Again in FY 2063/64 the position of current assets has been increased. From above analysis we can see that the current assets hold larger portion of total assets.

4.2.2 Position of Current Liabilities

The current liabilities are those obligations, which have to be paid within an accounting year. It comprises trade creditors, account payable, short – term bank loans, and outstanding expenses. The short – term current assets and current liabilities are collectively known as working capital. For instance, without cash, bills cannot be paid, without receivable the firm cannot allow timing difference between goods or services and collecting the money to pay them.

Following table shows the position of current liabilities of Dugar Brothers and Sons for the five year period from FY 2059/60 – 2063/64:

Let's assume the FY 2059/60 as 100 in index to the percentage change we get,

Table No. 2

Position of current liabilities

Fiscal Year (FY)	Current Liabilities Amount (Rs.)	Index	% Change
2059/60	17,783,762.92	100	-
2060/61	47,242,172.61	266	166
2061/62	87,017,081.86	489	233
2062/63	42,105,809.39	237	-252
2063/64	53,426,225.18	300	63
Total	**247,575,052.00**		

Source: balance sheet of DB&S

Above table shows the position of current liabilities for the five – year study period. The position of current liabilities is in increasing trend. In FY 2059/60 it is Rs. 17,783,762 and has reached to Rs. 87,017,081.86 by 233%. The liability position has been decreased in FY 2062\63. 42,105,809.39. But again in FY 2063/64 it has been increased to Rs. 53,426,225.18 by 63%.

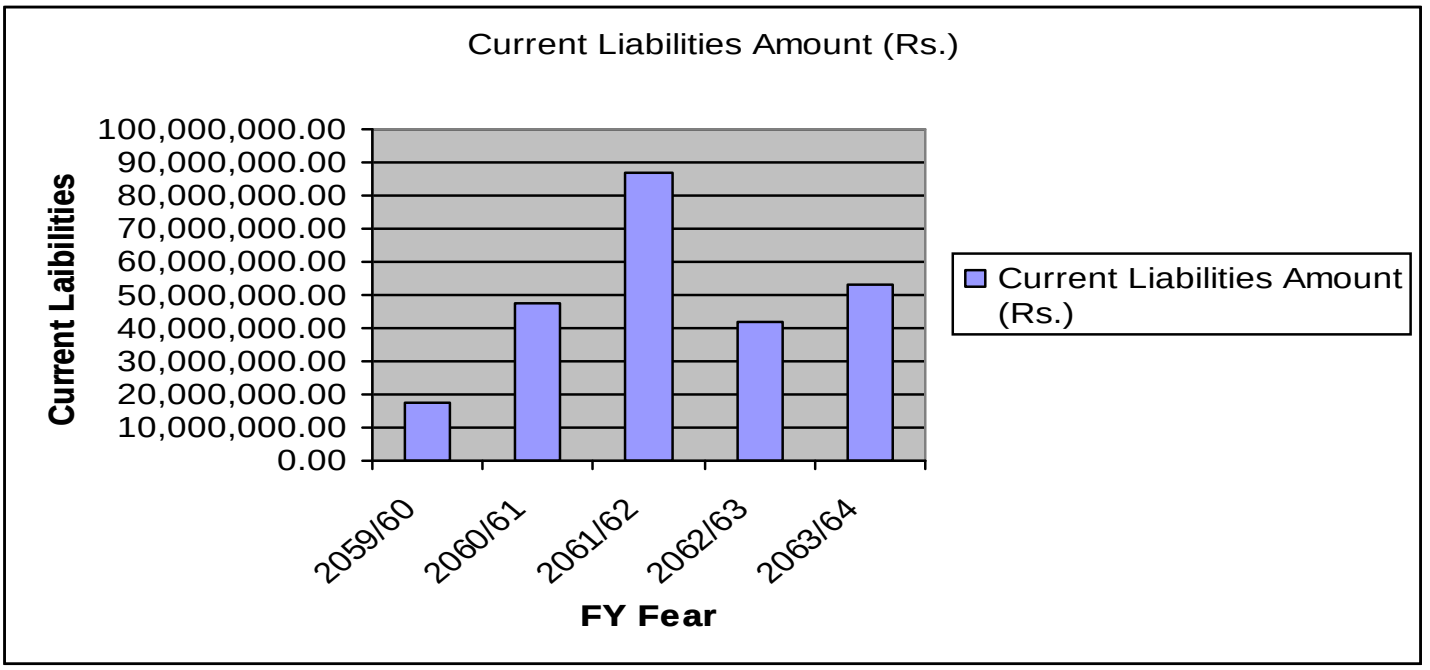


Figure No. 6

4.2.3 Proportion of Current Assets to Total Assets

The need of current assets depends upon the nature and size of the business. It is required to meet the working capital, which is required to run day – to – day operation of the business. If the firm increases the proportion of current assets, there is high profitability of return as well as risk and vice versa.

The following table shows the proportion of current assets to total assets:

Table No. 3

Current Assets to Total Assets:

(Rs. In million)

Fiscal Years	Current Assets	Total Assets	Ratio	% Change
2059\60	74.63	78.15	0.59	
2060\61	92.44	112.74	0.82	-14
2061\62	195.11	231.44	0.84	2
2062\63	94.55	132.22	0.72	-14
2063\64	189.35	224.24	0.84	17
Total	646.08	778.79	4.18	
Average	129.2	155.76	0.84	

Source: balance sheet of DB & S

The above table illustrates the ratio of current assets to total assets of Dugar Brother and Sons. It represents the proportion of current assets investment to total assets investment. During the study period, the proportion of current assets to total assets is quite fluctuating. In FY 2059/60 the ratio is 0.95 and it has been gradually decreasing and has reached to 0.72 in FY 2062/63. Again in FY 2063/64, there has been increase in the ratio and has reached to 0.84 times, which is increased by 17% than that of previous year. This year shows the highest percentage change.

The average ratio of current assets to total assets is 0.84. It shows that the Dugar Brothers and sons holds relatively large amount of current assets in total assets. From this analysis we can say

that the organization has adopted relaxed current assets investment policy and which also gives the business freedom to adapt to changing circumstances.

4.2.4 Current Assets to Net Fixed Assets

Every organization should properly invest in current assets and fixed assets to support a particular level of output. The organization should determine the proper proportion of current assets with fixed assets. The level of current assets can be measured by relationship between current assets to fixed assets, which can help to understand the current assets investment policy of the organization.

Assuming a constant level of fixed assets higher current assets to fixed assets ratio indicates an aggressive current assets policy, lower ratio indicates a conservative current assets policy. The two goals of financial management, profitability and liquidity are directly linked with the management of current assets. With a decrease in the volume of current assets, the profitability increases but the liquidity declines and vice versa. The following table shows the proportion of current assets to net fixed assets:

Table No. 4

Current Assets to Net Fixed Assets

(Rs. In million)

FY	Current Assets	Net Fixed Assets	Ratio	%Change
2059/60	74.63	3.52	21.20	
2060\61	92.44	20.29	4.56	-78
2061\62	195.11	36.33	5.37	18
2062\63	94.55	37.67	2.51	-53
2063\64	189.35	34.88	5.43	116
Total	**646.08**	**132.69**	**39.07**	
Average	**129.2**	**26.54**	**7.8**	

Source: balance sheet of DB & S

From above table we can see the ratio of current assets to fixed assets is quite fluctuating during the study period. It varies from 21.20 to 5.43 times. In FY 2059/60, investment in current assets

is 21.18 times higher than that of fixed assets, which is the highest one during the five years period. Here it seems that company had adopted relaxed working capital investment policy. But in FY 2060/61, there has been drastic decrease in the ratio by – 78% and has reached to 4.56 times. In FY 2061/62, there has been slight increment in the ratio and has increased by 18% than of previous year. But in FY 2062/63, there has been downfall in the ratio by – 53% and it has reached to 2.51. Again in FY 2063/64, there has been increment in the ratio and has reached to 5.43 times. The changes are due to the more investment in current assets in comparison to fixed assets.

The average ratio is 7.8. It shows that the investment in current assets is higher than that of fixed assets.

4.2.5 Cash and Bank to Current Assets

The main reason of holding cash is for transaction motive. So to fulfill the daily business requirement such as payment of bills, purchase of raw material, payment of debt, optimum cash balance has to be maintained. The following table shows the proportion of cash and bank to current assets.

Table No.5

Cash and Bank Balance to Current Assets

(Rs. In million)

FY	Cash and Bank Balance	Current Assets	Ratio	%Change
2059\60	6.14	74.63	0.08	
2060\61	0.91	92.44	0.01	-88
2061\62	0.96	195.11	0.00	-100
2062\63	1.21	94.55	0.01	100
2063\64	1.08	189.35	0.01	0
Total	**10.30**	**646.08**		
Average			**0.02**	

Source: balance sheet of DB & S

The above table shows the proportion of cash to current assets is highest in FY 2059/60 and holds 0.08 times of current assets. It is the highest one during the study period. From FY

2060/61, there has been fall in the ratio. In FY 2060/61, the ratio has been decreased to 0.01 times by – 88%. This falling down of ratio shows the management attitude towards the risk. From FY 2062/63, there has been slight increment in the ratio and maintain same level in next year too. Here, the organization has maintained the lower ratio during the study period.

During the overall study period, the average ratio is found to be 0.02 times which is low. Since the low ratio indicates effective management, it can be said that the organization has adopted sound management policy of maintaining the ratio between cash and bank balance to current assets.

4.2.6 Cash and Bank Balance to Total Assets

This shows the amount hold by cash bank balance to total assets of Dugar Brother and Sons. Following table show the proportion of cash and bank balance to total assets.

Table No.6

Cash and Bank Balance to Total Assets

(Rs. In million)

FY	Cash and Bank Balance	Total Assets	Ratio	%Change
2059\60	6.14	78.15	0.08	
2060\61	0.91	112.74	0.008	-88
2061\62	0.96	231.44	0.004	0
2062\63	1.21	132.22	0.009	25
2063\64	1.08	224.24	0.004	-111
Total	**10.30**	**778.79**	**0.02**	

Source: balance sheet of DB & S

The above table shows the investment in cash out of the total assets during the study period of FY 2059/60 – 2063/64. FY 2059/60 shows the highest ratio of 0.08 and it has been decreased down to 0.004 in FY 2063/64. The falling down of ratio shows the management attitude towards risk.

On average, the Dugar Brothers and Sons have invested 2% of total assets in the form of cash and bank balance i.e. it holds 0.02 times of total assets, which is the lowest one. As lower ratio indicates the sound management system and higher ratio vice versa so, from this we can analyze that the company has adopted sound management system.

4.2.7 Inventory to current assets ratio

Inventory is the stock of the product a company holds for the sale. The shortage of inventory may hamper the sales. So, the optimum position of inventory should be maintained. This ratio indicates the relationship of inventory to current assets i.e. it represents the portion of inventories to current assets.

The following table shows the proportion of inventory to current assets of Dugar Brother and Sons from FY 2059/60 – 2063/64:

Table No.7

Inventory to current assets ratio

(Rs. In million)

Year	Inventory (closing stock)	Current assets	Ratio	%Change
2059\60	42.09	74.63	0.56	
2060\61	64.74	92.44	0.7	26
2061\62	162.85	195.11	0.83	19
2062\63	54.09	94.55	0.57	-31
2063\64	96.12	189.35	0.51	-11
Total	**419.89**	**646.08**	**3.17**	
Average			**0.63**	

Source: balance sheet of DB & S

Inventory to current assets ratio is 0.56 in FY 2059/60 and has been gradually increasing and has reached to 0.7 times in FY 2060/61 and it has been increased by 26%. Again in FY 2061/62 the ratio has been increased to 0.83, which is the highest one during the study period. The level of maintaining high inventory has decreased to 0.57 in FY 2062/63 by – 31% and 0.51 on FY 2063/64 by – 11%. This analysis shows that the company has started adopting the policy to hold optimum level of inventory.

The average inventory to current ratio is 0.63. it shows the inventory holds greater portion of current assets, which indicates idle cash. The level of maintaining largest inventory level should be reduced.

4.3 Liquidity position

4.3.1 Current Ratio

Current ratio measures the firm's liquidity position i.e. ability to meet current obligation. It indicates the availability of current assets for every unit of current liabilities. The current ratio of Dugar Brother and Sons is presented in the following table:

Table No.8

Current Ratio

(Rs. In million)

Fiscal year	Current assets	Current liabilities	Ratio
2059\60	74.63	17.78	4.20
2060\61	92.44	47.24	1.96
2061\62	195.11	87.02	2.24
2062\63	94.55	42.11	2.25
2063\64	189.35	53.43	3.54
Total	**646.08**	**247.58**	**14.19**
Average			**2.84**

Source: balance sheet of DB & S

The current ratio is acceptable if it is 2:1. The above table shows that the company average current ratio is 2.84:1, which shows that the company has enough current assets to meet its current obligations. During all the study period except FY 2060/61, the ratio is higher than 2:1. In FY 2060/61, the current ratio is 1.96 times which is less than 2:1 and which shows the difficulty of the company to meet its obligation. Excess current assets are not beneficial to the company because it shows the investment in unproductive assets. During the study period, the organization seems to be technically able to meet its short-term obligation except in FY 2060/61.

The above analysis showed that the company has somehow tried to maintain optimal current ratio.

4.3.2 Quick Ratio

Quick ratio establishes a relationship between quick or liquid assets and current liabilities. Quick ratio helps to test the ability of the firm to make immediate payment of current liabilities. Not all the current assets are equally liquid, the inventory and prepaid expenses cannot be termed to be a liquid assets. The following table shows the quick ratio of Dugar Brother and Sons:

Table No. 9

Quick Ratio

(RsIn million)

FY	**Quick ratio**	**Current liabilities**	**Ratio**
2059\60	32.54	17.78	1.83
2060\61	27.69	47.24	0.59
2061\62	3.23	87.02	0.04
2062\63	40.46	42.11	0.96
2063\64	93.23	53.43	1.74
Total			**5.16**
Average			**1.03**

Source: balance sheet of DB & S

Quick ratio includes cash and bank balance, sundry debtors, advance and deposit. The quick is considered as perfect when the ratio is 1:1. Here, the average quick ratio is 1.03, which shows the ability of the company to pay immediate payment of its current liabilities. FY 2059/60 shows the highest ratio i.e. 1.83 times than other year. But the ratio has been gradually decreasing from FY 2060/61 to FY 2061/62 and has reached to 0.04. So, this shows the unfavorable condition to make immediate payment. However there has been increment in the ratio from FY 2062/63 to FY 2063/64 and has reached to 1.74 times. Any way there has been increment in quick ratio in FY 2063/64 and it is 1.74:1 times, which is favorable to the organization.

4.4 Profitability position

Profitability ratio measures the efficiency of the organization. It indicates the degree of success in achieving desired profit. Various profitability ratios are calculated to measure the operating efficiency of the business enterprises. Through profitability ratios, the investors and lenders can decide whether to invest in a particular business is good or not. In addition, the adequate return, to its shareholders also depends on profitability. Generally, the profitability position of the companies is analyzed with the help of following ratios.

4.4.1 Return on Total Assets

Return on total assets ratio shows the relationships between the total assets and the net profit after tax. It measures the percentage of return on overall total employed for every activities of the company. It gives the profit earning efficiency of the company with relation to total assets.

The return on total assets ratio of Dugar Brothers and Sons are as follows:

Table No. 10

Return on Total Assets

(Rs. In million)

FY	Net Profit After Tax	Total Assets	Ratio
2059\60	21.31	78.15	0.27
2060\61	18.21	112.74	0.16
2061\62	20.95	231.44	0.09
2062\63	9.79	132.22	0.07
2063\64	14.11	224.24	0.06
Total	**84.37**	**778.79**	
Average			**0.13**

Source: balance sheet of DB&S

The above table shows the relation between net profits after tax with total assets from FY 2059/60 – 2063/64. The average ratio is 0.13, which indicates the company is able to gain only small percentage of return on total assets employed. FY 2059/60 shows the highest ratio during the study period with 0.27% where company has employed 78.15 million of total assets. But from FY 2060/61, the ratio has been gradually decreasing and has reached to 0.06 in FY 2063/64.

From above analysis it is clear that the company is able to gain only minimum amount of net profit after tax. Hence the overall return on employed on employed on total assets is not much productive.

4.4.2 Return on Current Assets

This ratio helps to analyze the earning power of the current assets of the company. It measures the effective utilization of current assets. The table given below shows the relationship between the current assets and net profit tax of Dugar Brothers and Sons from FY 2059/60 – 2063/64:

Table No. 11

Return on Current Assets

(Rs. In million)

FY	Net Profit After Tax	Current Assets	Ratio	%Change
2059\60	21.31	74.63	0.28	
2060\61	18.21	92.44	0.19	-32
2061\62	20.95	195.11	0.12	-37
2062\63	9.79	94.55	0.10	-17
2063\64	14.11	189.35	0.07	-30
Total	**84.37**	**646.08**		
Average			**0.15**	

Source: balance sheet of DB&S

Above table shows the relationship between net profit after tax and current assets. In FY 2059/60, employed current assets of 74.63 million have created 21.31 million of net profit with the ratio of 0.28, which is the highest one during the study period. But from FY 2060/61 the ratio has been gradually decreasing and has reached to 0.07 in FY 2063/64. It has been decreased down by – 30% than that of FY 2062/63. The reason behind this is due to the minimum net profit.

The company has been able to maintain the average ratio of 0.15, which is very low. From this it can be said that the overall return employed on current assets is not much productive.

4.4.3 Net Profit Margin Ratio

Net profit margin measures the overall profitability of firm's ability to earn net profit. It establishes a relationship between net profit and sales and indicates management efficiency in manufacturing, administering, and selling product.

Following table shows the net profit margin of Dugar Brother and Sons:

Table No. 12

Net Profit Margin Ratio

(Rs. In million)

FY	Net Profit After Tax	Sales	Ratio
2059\60	21.31	185.93	0.11
2060\61	18.21	184.93	0.09
2061\62	20.95	302.25	0.06
2062\63	9.79	241.92	0.04
2063\64	14.11	224.68	0.06
Total	**84.37**	**1139.71**	
Average			**0.07**

Source: balance sheet of DB&S

The above table shows the relationship between the net profits after tax to sales during the FY 2059/60 to 2063/64. In FY 2059/60 the ratio is 0.11 times which the highest one during the study period is. But from FY 2060/61 the ratio has been gradually decreasing from 0.09 and has reached to 0.004 times in FY 2062/63. Again from FY 2063/64 there is slight increment in the ratio and has reached to 0.06 times. The average ratio is 0.07, which is very low. It indicates that the company has poor financial planning and low efficiency.

4.4.4 Gross Profit Margin Ratio

This ratio expresses the relationship between gross profit and sales. It indicates the productivity and efficiency of the organization. A high gross profit margin ratio indicates better profitability position and also implies ratio that firm is able to produce at low cost. A low gross profit margin may reflect higher cost of goods sold due to the firm's inability to purchase goods at favorable terms.

Following table shows the gross profit margin ratio of Dugar Brothers and Sons:

Table No. 13

Gross Profit Margin Ratio

(Rs. In million)

FY	Gross Profit	Total Assets	Ratio
2059\60	35.82	185.94	0.19
2060\61	33.77	184.93	0.18
2061\62	45.56	302.25	0.15
2062\63	35.46	241.92	0.15
2063\64	37.89	224.68	0.17
Total	**188.50**	**1139.72**	
Average			**0.17**

Source: balance sheet of DB & S.

The above table shows that the gross profit margin ratio is in decreasing trend during the first four year. In FY 2059/60 the gross profit margin ratio is 0.19 and it has been decreased down to 0.15 in FY 2062/63. In FY 2063/64, there has been slight increment in the ratio and has able to maintain the ratio of0.17. All the ratios of gross profit are in positive figure. This positive figure shows the company is in good condition and bears no loss during the five year study period. The average gross profit margin is 0.17.

From above analysis we can say that the average gross profit margin ratio is positive and is at satisfactory level. This indicates that the company bears no loss during the study period.

4.5 Turnover Position

The relationship between sales and assets are indicated by the turnover ratios. It is also known s efficiency of the business concern in inventory management. The higher turnover ratio indicates better utilization of assets. Thus it measures the degree of effectiveness in use of resources by firm. Following are the turnover ratio calculated in the study:

4.5.1 Current Assets Turnover Ratio

Current assets turnover ratio shows the relationship between current assets and sales. This turnover ratio indicates the management's efficiency in overall management of current assets. It is calculated by dividing net sales by total current assets.

Following table shows the position of current assets turnover ratio from FY 2059/60 – 2063/64:

Table No. 14

Current Assets Turnover Ratio

(Rs. In million)

FY	Sales	Current assets	Ratio
2059\60	185.94	74.63	0.49
2060\61	184.93	92.44	2
2061\62	302.25	195.11	1.55
2062\63	241.92	94.55	2.56
2063\64	224.68	189.35	1.19
Total	**1139.72**	**646.08**	
Average			**1.56**

Source: balance sheet of DB&S

In above table, the current assets turnover ratio is quite fluctuating. It is increasing and decreasing trend. In FY 2062/63, the current assets turnover ratio is 2.56, which is the highest one. Where as in FY 2059/60, it is 0.49 times and is the lowest one during the study period. Here the average ratio is 1.56 times. Since the ratio is quite fluctuating, the management is not being able to effectively maintain the overall management of current assets.

4.5.2 Inventory Turnover Ratio

Inventory is very important part of current assets. It should be maintained effectively and efficiently. The inventory turnover ratio measures how quickly inventory can be converted into sales. It is the test of efficient inventory management. Thus actual liquidity position of the company cannot be measured without measuring the liquidity of inventories. So, inventory

turnover ratio has been used to measure the liquidity financing. Higher inventory turnover ratio indicates the higher degree of liquidity and vice – versa.

Following table shows the inventory turnover position of Dugar Brother and Sons from FY 2059/60 – 2063/64:

Inventory Turnover Ratio

Table No. 15

(Rs. In million)

FY	**Sales**	**Inventory**	**Ratio**
2059\60	185.94	42.09	4.42
2060\61	184.93	64.74	2.86
2061\62	302.25	162.85	1.85
2062\63	241.92	54.09	4.47
2063\64	224.68	96.12	2.34
Total	**1139.72**	**419.89**	

Source: balance sheet of DB&S

The above table shows the inventory turnover position is quite fluctuating during the study period. It varies from 1.86 to 4.47 times. During the study period, FY 2062/63 shows the highest ratio and it has been able to maintain a ratio of 4.47 times. FY 2061/62 shows the lowest ratio with the ratio of 1.86 times. The average ratio is 3.19 times which is low. Since the ratio is highly fluctuating during the study period, it can be said that the company has not adopted appropriate inventory position.

4.5.3 Working Capital Turnover Ratio

Net working capital turnover ratio helps to analyze the efficiency of working capital management of the organization. This ratio indicates the reliability of the utilization of the resources. This indicates the number of times the working capital turnover during the accounting year. This ratio also measures the efficiency with which the working capital is being used by Dugar Brother and Sons.

The following table shows the position of working capital turnover ratio of Dugar Brother and Sons:

Table No. 16

Working Capital Turnover Ratio

(Rs. In million)

FY	**Sales**	**Net Working Capital**	**Ratio**
2059\60	185.94	56.84	3.27
2060\61	184.93	45.19	4.09
2061\62	302.25	108.09	2.79
2062\63	241.92	52.45	4.61
2063\64	224.68	135.93	1.65
Total	**1139.72**	**398.50**	
Average			**3.28**

Source: balance sheet of DB&S

From above table we can see that the proportion of sales to working is quite fluctuating. There has been increment in the proportion of sales to working capital from 3.27 in FY 2059/60 to 4.09 in FY 2060\61. But it has been decreased to 2.79 times in FY 2061/62. In FY 2062/63, the volume of sales has reached to high level and the ratio has increased to 4.61 times which is the highest one during the study period. Again, in FY 2063/64, there is downfall in the proportion and has reached to 1.61 times which is the lowest one among all.

During the study period, the average turnover ratio is 3.28, which is very low and is not favorable. This shows that the company is not able to maintain the fixed level of working capital to achieve high volume of sales.

4.5.4 Cash Turnover Position

It is one of the main parts of current assets. The main reason for holding cash is for transaction motive. The cash should be adequate to run the business smoothly and excess of holding it has no meaning, it earns nothing. The company always sees the risk return trade off to maintain the just adequate cash balance. So, to fulfill the daily business requirements optimum cash balance has to be maintained.

The following table shows the cash turnover position of Dugar Brother and Sons from FY 2059/60– 2063/64:

Table No. 17

Cash Turnover Position

(Rs. in million)

FY	**Sales**	**Cash and bank balance**	**Ratio**
2059\60	185.94	6.14	30.28
2060\61	184.93	0.91	203.22
2061\62	302.25	0.96	314.84
2062\63	241.92	1.21	199.93
2063\64	224.68	1.08	208.04
Total	**1139.72**	**10.3**	
Average			**191.26**

Source: balance sheet of DB&S

The above table shows the cash turnover ratio is highly fluctuating. In FY 2059/60, the ratio is 30.28 times which the lowest one during the study period is. But from FY 2060/61, there has been drastic increment in the ratio and has reached to 314.84 in FY 2061/62 in FY 2062/63 it has been decreased to 199.93 and in FY 2063/64 there has been slight increment and has become able to maintain the ratio of 208.04. Cash turnover position is highest in the FY 2061/62. The average ratio is 19.26 times.

From above analysis, we can see the cash turnover position is highly fluctuating over the study period. So, from this it can be analyzed that company has no fixed policy of cash management in relation to sales.

4.6 Statistical Analysis

4.6.1 Trend analysis or time series analysis

A trend analysis or a time series is a sequence of observation of variable made at regular points or intervals of time and arranged in chronological order. Time series analysis is one quantitative method used to determine patterns in data collected over time. It helps to forecast the future

behavior of variables under the stuffy, which is essential for business and economic planning. It also helps to evaluate the present accomplishment by comparing the actual performance and analyze the clause of variation. For future estimation or prediction, management can use the information which are gathered from the past behavior data. Such data are collected, observed or recorded at successive intervals of time.

There are many methods for analyzing the trend. Among them least square method is used in this study for trend analysis. The least square method is used to fir a straight line trend to forecast the trend value of future.

The straight line trend is represented by the following equation:

$Yc = a + bX$

Here, standard error of estimate for regression is also calculated which is given by:

Standard error of estimate for regression (SE regression) = $\sqrt{\frac{\sum(Y-\hat{Y})^2}{n-2}}$

It helps to decide whether the calculated trend value best fitted the liner fitted trend equation.

4.6.2 Trend Analysis of Working Capital

Trend analysis of working capital shows the future situation of working capital position. The following table and figure shows the trend analysis of working capital of Dugar Brother and Sons.

Table No.18

Trend Analysis of Working Capital

(Rs. In million)

FY	**NWC(Y)**	**Trend Value Yc= a+bX**	**$(Y - \overline{Y})$**	**$(Y - \overline{Y})^2$**
2059\60	56.84	46.62	10.22	104.45
2060\61	45.19	63.16	-17.97	322.92
2061\62	108.09	79.7	28.39	805.99
6062\63	52.45	96.24	-43.79	1917.56
2063\64	135.93	112.78	23.15	535.92
Total				**$(Y - \overline{Y})^2$=3686.84**

(Source: Appendix –I)

Standard error of estimate for regression (SE regression) = $\sqrt{\frac{\Sigma(Y-\hat{Y})^2}{n-2}}$

SE reg = 35.056

(Source: Appendix – I)

Above table shows the trend analysis of NWC of Dugar Brothers and Sons for the five years period from FY 2058/59 – 2062/63. The trend value of net working capital is in increasing trend. In FY 2058/59 it is 46.62 million and it has been increased to 112.78 million in FY 2062/63. But the actual value of net working capital is quite fluctuating.

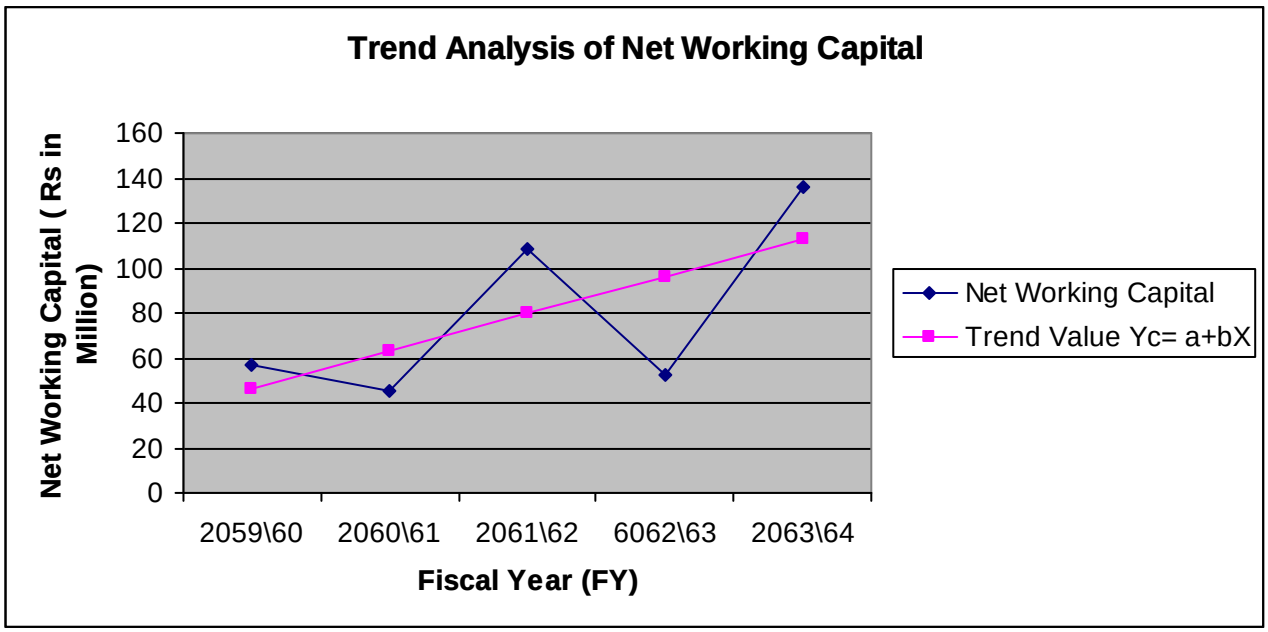


Figure No. 7

In above figure, X–axis represents the fiscal year while Y-axis represents the amount of net working capital. The actual value of net working capital is quite fluctuating. The actual net working capital line shows the decreasing trend up to the year 2059/60. But trend line shows the increasing rate of net working capital from FY 2060/61. Again in FY 2061/62, the trend line is in decreasing order. Again in FY 2062/63, it is in increasing. But the trend value of the net working capital is in increasing order. All the above estimated values have on an average fluctuation around the trend line by almost 35 units which indicates the linear trend $\hat{Y}$ = 79.7 + 16.54X has moderately high fluctuation.

4.6.3 Trend Analysis of Net Profit After Tax

Trend analysis of net profit after tax shows the future situation of net profit after position based on the past net profit. The following table and figure shows the trend analysis of net profit after tax of Dugar Brothers and Sons.

Table No. 19

Trend Analysis of Net Profit After Tax

(Rs. In million)

Fiscal Year (FY)	**NPAT (Y)**	**Trend Value Yc= a + bX**	$\sum Y - \bar{Y}$	$\sum (Y - \bar{Y})^2$
2059/60	21.31	12.31	9	81
2060/61	18.21	14.6	3.71	13.76
2061/62	20.95	16.89	4.06	16.48
2062/63	9.79	19.18	-9.39	88.17
2063/64	14.11	21.47	-7.36	54.17
Total				$\sum (Y - \bar{Y})^2$ **=253.58**

(Source: Appendix – II)

Standard error of estimate for regression (SE regression) = $\sqrt{\frac{\Sigma(Y-\hat{Y})^2}{n-2}}$

SE reg = 9.19

(Source: Appendix – II)

The above table shows the trend analysis of net profit after tax for the five years period from FY 2058/59 – 2062/63. The trend value of NPAT is in increasing trend. In FY 2058/59, it is 12.31 million and it has been increased to 21.47 million in FY 2062/63. But the actual position of NPAT for the different year is quite fluctuating.

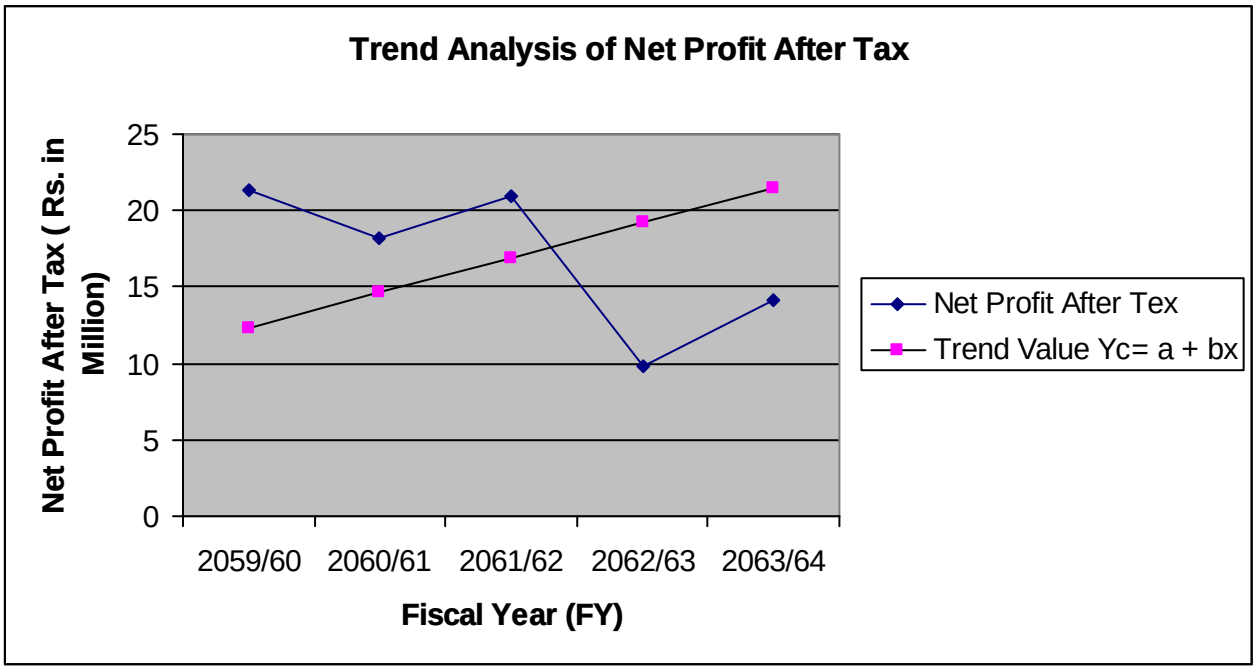


Figure No. 8

In above figure, X-axis represents the fiscal year and the Y-axis represents the amount of NPAT. The above figure shows the trend value of NAT is in increasing trend while the actual value of NPAT is in random position. In FY 2058/59, the actual value of NPAT is 21.31 million which the highest one is and it has been decreased down to 9.79 million in FY 2061/62 which is the lowest one. But in FY 2062/63, it ahs reached to 14.11 million. The average fluctuation of the actual data around the trend line is almost 9.19. It indicates the trend line is best fitted to the data.

4.6.4 Trend Analysis of Sales

Every organization's main aims are to maximize the sales so as to earn maximum return from it. The following table and figure shows the prediction of the future sales position by using post data of the company.

Table No. 20

Trend Analysis of Sales

(Rs. In million)

Fiscal Year (FY)	**Sales (Y)**	**Trend Value** Yc = a+bX	$(Y - \overline{Y})$	$(Y - \overline{Y})^2$
2059/60	185.94	201.04	-15.07	227.1
2060/61	184.93	214.49	-29.56	873.79
2061/62	302.25	227.94	74.31	5521.98
2062/63	241.92	241.39	0.53	0.281
2063/64	224.68	254.84	-30.16	909.63
Total				**$(Y - \overline{Y})^2$=7532.781**

(Source: Appendix – III)

Standard error of estimate for regression (SE regression) = $\sqrt{\frac{\sum(Y-\hat{Y})^2}{n-2}}$

SE reg = 50.11

(Source: Appendix – III)

The above table shows the trend analysis of sales from FY 2058/59 – 2062/63. The trend value of sales is in increasing trend. In FY 2058/59, it is 201.04 million and it has been increased to 254.84 million in FY 2062/63. But the actual position of sales for the different year is quite fluctuating. In FY 2058/59, the actual value of sales is 185.94 million and has decreased to 184.93 million in FY 2059/60. In FY 2060/61, it has increased to 302.25 million which is the highest one during the study period. But from FY 2061/62 there has been downfall in the sales and it has decreased to 224.68 million in FY 2062/63.

Here the standard error of estimate is 50.11 which are high. Since the standard error is 50.11 which indicates the linear fitted trend $\hat{Y}$ = 227.94 + 13.45X has a moderately high fluctuation.

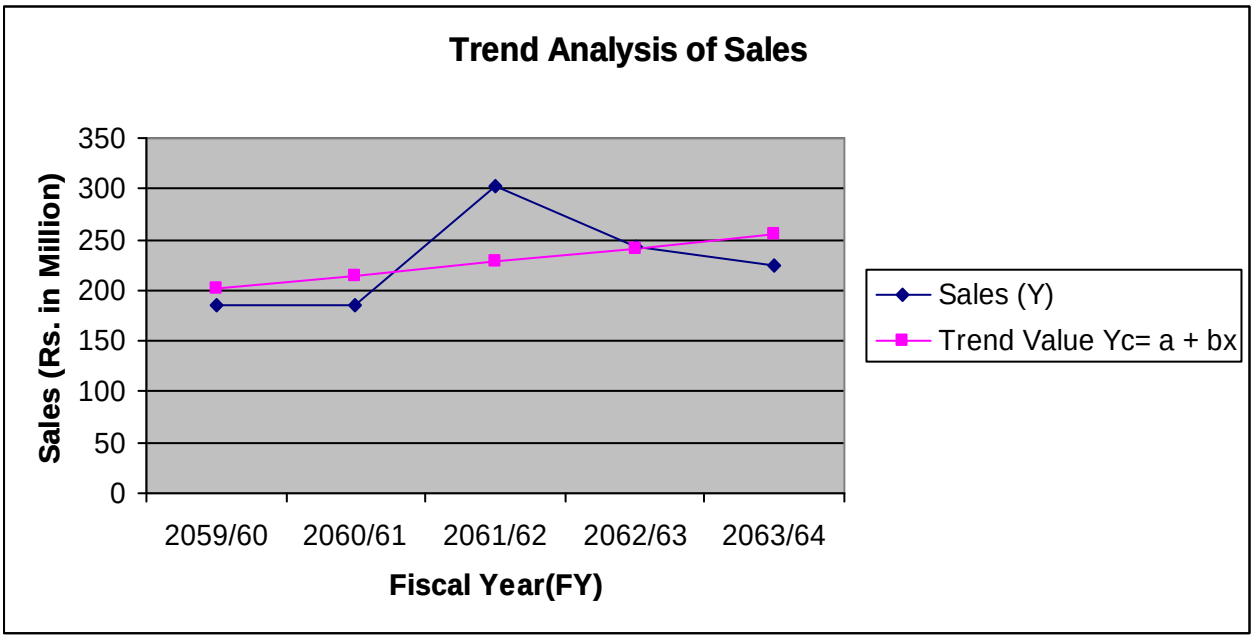


Figure No. 9

The above figure shows the trend analysis of the analysis of sales of Dugar Brothers and Sons. The X-axis represents the fiscal year and the Y-axis represents the amount of sales. The trend line shows the actual value of sales is in random position. But the trend value of sales is in increasing order.

4.6.5 Trend Analysis of Cash and Bank Balance

Table No. 21

Trend Value of Cash and Bank Balance

(Rs. In million)

Fiscal Year (FY)	**C & BB (Y)**	**Trend Value** Yc = a+bX	$(Y - \overline{Y})$	$(Y - \overline{Y})^2$
2059/60	6.14	4.024	20116	4.48
2060/61	0.91	3.042	-2.132	4.54
2061/62	0.96	2.06	-1.1	1.21
2062/63	1.21	1.078	0.132	0.017
2063/64	1.08	0.96	0.12	0.14
Total				$(Y - \overline{Y})^2$ **=102.61**

(Source: Appendix – IV)

Standard error of estimate for regression (SE regression) = $\sqrt{\frac{\Sigma(Y-\hat{Y})^2}{n-2}}$

SE reg = 5.85

(Source: Appendix – IV)

The above table shows the trend analysis of cash and bank balance from FY 2058/59 – 2062/63. From the above table, it is clear that there is high fluctuation in the actual value of cash and bank balance. Trend value of cash and bank balance is also is in decreasing trend. In FY 2058/59, it is 4.0244 million and it has been decreased to 0.96 million in FY 2062/63.

Here, the standard error of estimate for regression is 5.85. The average fluctuation of the actual data around the trend line is almost 5.85. It indicates the trend line is best fitted to the data. It means the trend analysis between the actual value and predicted value of cash and bank balance of Dugar brothers and sons is reliable.

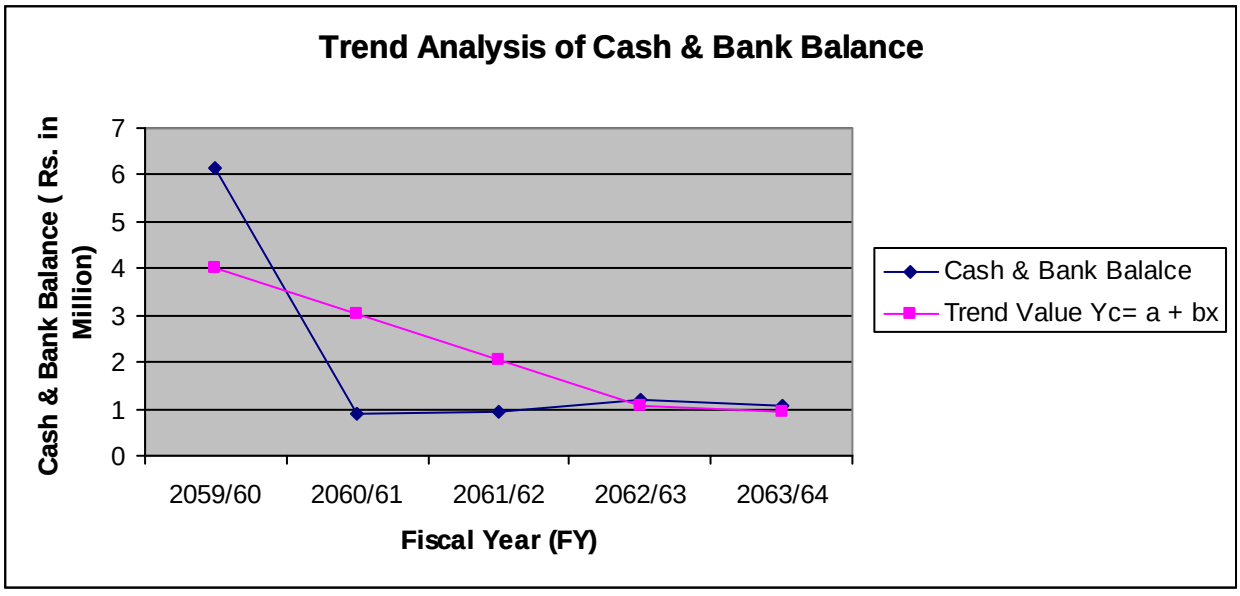


Figure No. 10

The above figure shows the trend analysis of cash and bank balance of Dugar brother and sons. The X-axis represents the fiscal year and the Y-axis represents the amount of cash and bank

balance. The trend line shows the actual value of cash and bank balance is in decreasing order up the year 2060/61. But from the FY 2061/62, there is slight increment in the position of cash and bank balance than that of the previous year. On the other hand, it can be clearly seen from above figure that the trend value of cash and bank balance is in decreasing order.

4.7 Correlation Analysis between the Variables

The financial performance of the company is directly related to their ability to manage working capital management efficiently and effectively. The use of the financial tools was already adequate finding in showing the analysis of various variables to determine the working capital management. But to make the analysis more fruitful and weighty, certain statistical tools such as correlation analysis, probable error, and regression analysis are used to show the relationship between the following:

a) Current Assets and Total Assets
b) Current Assets and Fixed Assets
c) Cash and Bank Balance and Total Assets
d) Current Assets and Current Liabilities
e) Quick Ratio
f) Sales and Inventory
g) Working Capital and Inventory
h) Net Profit After Tax and Sales
i) Net Profit After Tax and Current Assets
j) Gross Profit and Total Assets
k) Net Profit After Tax and Net Working Capital
l) Working Capital and Sales
m) Cash and Bank Balance and Net Working Capital

4.7.1 Correlation between Current Assets and Total Assets

The correlation coefficient between the current assets and total assets (r) = 0.98 (from appendix –V), which shows that there is highly positive correlation between C.A and T.A. a highly

positive correlation indicates the strong positive correlation between them i.e. increases in current assets increases the total assets and vice versa.

To test the statistical significance of calculated correlation coefficient the probable error is calculated,' which is 0.012 and 6(PE) = 0.07.

Since, r= .98 > 6PE = .07, this relation implies that during the study there is positive correlation coefficient between C.A and T.A during the study period and is statistically significant at all.

4.7.2 Correlation between Current Assets and Fixed Assets

The correlation coefficient between the current assets and fixed assets (r) = 0.66 (from appendix - VI), which shows that there is positive correlation between C.A and F.A.

To test the statistical significance of calculated correlation coefficient the probable error PE is calculated which is 0.17 and 6(PE) is 1.02.

Since, PE = 0.17 < r =0.66 < 6PE = 1.02, this relation shows that relationship between current assets and fixed assets is inconclusive.

4.7.3 Correlation between Cash and Bank Balance and Total Assets

The correlation coefficient between the Cash and Bank Balance and Total Assets
(r) = -0.63 (from appendix - VII), which is negative and it shows that there is negative correlation between Cash and Bank Balance and Total Assets.

To test the statistical significance or reliability of computed value of correlation coefficient, the probable error is necessary which 0.18 is and 6PE is 1.08.

Since PE = 0.18 < r = -0.63 < 6PE = 1.08 this relation shows that statistically the relationship between cash and bank balance and total assets is inconclusive.

4.7.4 Correlation between Current Assets and Current Liabilities

The correlation coefficient between current assets and current liabilities (r) = 0.82 (from appendix-VIII), which shows that there is highly positive correlation between C.A and C.L.

To test the statistical significance of calculated correlation coefficient the probable error is necessary, where, P.E = 0.098 and 6PE is 0.59.

Since, r= 0.82 > 6PE =0.59, this relation shows that there is positive and significant relationship between current assets and current liabilities of Dugar Brothers and Sons.

4.7.5 Correlation of Quick Assets and Current Liabilities

The correlation coefficient between Quick assets and Current Liabilities (r) = -0.27 (from appendix - IX), which is negative and it shows that there is negative correlation between the Quick Assets and Current Liabilities.

To test the statistical significance or reliability of computed value of correlation coefficient, the probable error is necessary which 0.27 is and 6PE is 1.62.

Since, PE = 0.27™ r = 0.27 < 6PE = 1.62, this relation shows that during the study period there is the relationship between quick assets and current liabilities of Dugar Brothers and Sons in inconclusive.

4.7.6 Correlation between Sales and Inventory

The correlation Coefficient between the sales and inventory (r) = 0.74 (from appendix-X), which shows that there is highly positive correlation between sales and inventory.

To test the statistic significance or reliability of computed value of correlation coefficient, the probable error (P.E.) is necessary which is 0.13 and 6(PE) is 0.78.

Since PE=0.13<r=0.78, this implies though there is positive correlation between sales and inventory no conclusion could be derived as to statically significant / insignificant i.e. inconclusive.

4.7.7 Correlation between Working Capital and Inventory

The correlation between the Working Capital and inventory (r) = 0.69 (from appendix- XI), which is positive and it shows that there is positive correlation between the Working Capital and the Inventory.

To test the statistic significance or reliability of computed value of correlation coefficient, the probable error (P.E.) is necessary which is 0.15 and 6(PE) is 0.9

Since PE =0.15 < 6PE = 0.9, this implies through during the study period there is positive correlation between working capital and inventory, no conclusion could be derived as to statically significant / insignificant i.e. inconclusive.

4.7.8 Correlation between Net Profit After Tax and Sales

The correlation coefficient between the Net profit after tax and sales (r) =-0.03 (from the appendix - XII), which is negative and it shows there is negative correlation between Net Profit after Tax and Sales.

To test the statistic significance or reliability of computed value of correlation coefficient, the probable error (P.E.) is necessary which is 0.03 and 6(PE) is 0.18.

Since PE = 0.03 > r = -0.03 it shows that during the study period there is insignificant relationship between Net profit After Tax and sales of Dugar Brothers and Sons.

4.7.9 Correlation between Net Profit After Tax and Current Assets

The correlation coefficient between the net profit after tax and Current assets (R) = 0.049(From the appendix -XIII), which is positive and it shows that there is positive correlation between net profit and current assets.

To test the statistic significance or reliability of computed value of correlation coefficient, the probable error (P.E.) is necessary which is 0.03 and 6(PE) is 0.18.

Since PE =0.30> r= 0.049< 6PE = 1.8, it shows that during the study period the relationship between Net Profit after tax and current assets of Dugar Brothers and Sons is inconclusive.

4.7.10 Correlation between the Gross Profit and Total Assets

The Correlation between the Gross Profit and Total Assets (R) = 0.89 (from appendix - XIV), which is positive and it shows that there is positive relationship between Gross profit and Total Assets.

To test the statistic significance or reliability of computed value of correlation coefficient, the probable error (P.E.) is necessary which 0.06 is and 6PE is 0.36.

Since, r = 0.89 > 6PE = 0.36, this relationship shows that there is positive and significant relationship between the total assets and the gross profit of the organization.

4.7.11 Correlation between Working Capital and Net Profit After Tax

The correlation coefficient between the working Capital and Net Profit after tax (r) =-0.007, (from appendix - XV), which is negative and it shows that there is negative correlation between working capital and net profit after tax.

To test the statistical significance or reliability of computed value of correlation coefficient, the probable error (PE) is necessary which is 0.30 and 6(PE) is 1.8.

Since PE = 0.30 > r = -0.007, this relation implies during the study period the relationship between WC and NPAT of Dugar Brothers and Sons is significant.

Correlation between Working Capital and Cash & Bank Balance

The correlation coefficient between the working capital and cash and bank balance (r) =-0.36189 (from appendix XVI), which is negative and it shows that there is negative correlation between working capital and cash and bank balance.

To test the statistical significance or reliability of computed value of correlation coefficient, the probable error (P.E.) is necessary which 0.27 and 6(PE) is 1.62.

PE = 0.27 < r = -0.3189 < 6PE = 1.62, this relation shows that the relationship between working capital cash and bank balance is inconclusive.

4.7.13 Correlation between Working Capital and Sales

The correlation coefficient between the working capital and sales (r) = 0.52 (from appendix - XVII), which shows that there is a positive relationship between sales and Inventory.
To test the statistical significance or reliability of computed value of correlation coefficient, the probable error (PE) is necessary which 0.22 is and 6PE is 1.32.

Since PE = 0.22< r = 0.52 < 6PE = 1.32, this implies though there is positive correlation between working capital and sales, no conclusion could be derived as to statically significant / insignificant which means inconclusive.

4.8 Regression Analysis

Regression analysis studies the statistical relationship between the variables. The main objective of the regression analysis is to find out the impact of one variable to another variable. It also helps to predict or estimate the value of dependent variables corresponding to a given value of independent variables.

4.8.1 Regression equation of Net Working Capital and Net Profit After Tax.

This regression analysis helps to find the impact of working capital on profitability. In this regression analysis, prediction of dependent variable net profit is calculated on the basis of independent variable net working capital.

Following table shows the regression equation between WC and NPAT of Dugar Brothers and Sons.

Table no. 22

Calculation of regression equation between WC and NPAT

Regression Equation of Y (NPAT) on X (N.W.C.	Regression Equation	Value of Constant 'a'	Regression Coefficient 'b'
Y(NPAT) on X (N.W.C.)	Y=16.80+0.0009x	16.80	0.009

Correlation test between the WC and NPAT (r) =0.007
Coefficient of determination, r^2 = 0.000049
Standard error of estimate for regression (SE regression) = $\sqrt{\frac{\Sigma(Y-\hat{Y})^2}{n-2}}$ SE regression =5.66

(Source: Appendix - XVII)

Above table illustrates the impact of net working capital on net profit after tax for the five year study period. According to the above table, regression equation of net profit after tax (Y) on net working capital (X) is Y= 16.80+0.0009X. The regression 'b' between two variables is positive (0.0009) which shows the positive relationship between net profit and net working capital during the five year period. The standard error of regression is 5.66 which is very low which shows that though there is positive impact between NWC and NPAT but is not much dependable due to the very low value of b = 0.0009. The coefficient of determination is 0.000049 which is also varying low which implies that NPAT is not affected by NWC. The NWC is not determinant factor which makes change in the net profit after tax of Dugar Brothers and Sons.

4.8.2 Regression equation of Net Working Capital and Cash and Bank Balance

This regression analysis is help to find out the impact of working capital on liquidity. In this regression analysis, prediction of dependent variable cash and bank balance is calculated on the basis of independent variable net working capital.

Table No. 23

Calculation of regression equation between working capital and cash and bank balance

Regression equation (cash and bank balanc X (N.W.C.)	Regression equation	Value of constant 'a'	Regression coefficient 'b'
Y (cash and bank ba on X (N.W.C.)	Y= 3.51-0.0182x	3.51	-0.0182
Correlation test between the WC and Cash & Bank balance (r) = -0.319			
Correlation of determination, r^2 = 0.1001			
Standard error of estimate for regression (SE regression) = $\sqrt{\frac{\Sigma(Y-\hat{Y})^2}{n-2}}$ SE regression = 2.5			

(Source: Appendix - XVIII)

Above table shows the impact of net working capital on liquidity during the five years study period. According to the above table, regression equation of cash and bank balance (Y) on net working capital (X) is Y = 3.51-0.0182X. The regression coefficient "b" between two variables is negative i.e. b= -0.0182, which shows that the negative relationship between the cash and bank balance and net working capital during the study period that means there is adverse relationship between the cash and bank balance and net working capital. Here, the standard error estimate for regression is 2.5 which is very low which implies that the NWC and C&BB are not dependable.

Similarly, the coefficient of determination is 0.101 which means only 10% of working capital is explain by C&BB. The other remaining 90% of the total variation is explained by the other factor of remains unexplained.

4.9 Major Findings of the Study

On the basis of the interpretation and evaluation of the methods of analysis, financial statements, accounting systems and reports, booklets and other related materials during the study period some factors obtained. These evaluations are pointed out as the major finding of the study.

1) Current assets of Dugar Brothers and Sons holds larger portion of the total assets. It is in increasing trend except in FY 2062/63. In FY 2059/60, it is Rs. 74.63million and it has been increased to Rs. 189.35 million in the FY 2063/64. This increment in the position of current assets indicates the transaction of the company is increasing. And also shows that the firm had high profitability return as well as risk.

2) The position of current liabilities is also in increasing trend except in FY 2062/63 which is sign of good working capital management. But it is Rs. 17.78 million in FY 2063/64. It indicates that the obligation of the company which has to be paid with in an accounting year has also in gradually increasing.

3) Current assets of Dugar Brothers and Sons holds relatively larger portion of total assets. The average ratio of current assets is 0.84 times which shows that the company has adopted the relaxed current assets investment policy.

4) The investment in current assets is higher than that of fixed assets. The average ratio is 7.8 times.

5) Dugar Brothers and Sons has invested 2% of total assets in the form of cash and bank balance i.e. it holds 0.02 times of total assets, which is the lowest one. Lower ratio indicates sound management system. So, we analyze that the company has adopted sound management system.

6) Inventory holds greater portion of current assets of Dugar Brothers and Sons. In the first three years of the study period the ratio of inventory to current assets is in increasing trend which indicates idle cash. But from FY 2062/63 there has been decreased in the ratio which indicates the company had started adopting the policy to hold optimal level of inventory. On the other hand, fluctuation in the investment is due to the fluctuation of the volume of sales.

7) Liquidity Position

The liquidity position of the company is analyzed with current ratio and quick ratio.

i. The current ratio of Dugar Brothers and Sons is quite fluctuating. The average current ratio is 2.84 times which is above the standard level (2:1) which shows that the company has enough assets to meet its current obligations. Excess current assets are not beneficial as it shows that investment in unproductive assets.

ii. The quick asset of Dugar Brothers and Sons is quite fluctuating but the average ratio of quick ratio is above the standard level. It is 1.03 times which shows the ability of the company to make immediate payment of its current liabilities.

8) Profitability Position

Profitability is the measure of efficiency. The profitability position of DB&S has been analyzed from various angles.

i) The ratio of return on total assets is in decreasing trend. It is 0.27 times in FY 2059/60 and it has been decreased down to 0.06 times in FY 2063/64. The average ratio is 0.13 times which indicates the company is able to gain only small percentage of return on total assets employed. It means the overall return on employed total assets is not much productive.

ii) The ratio of Net profit ratio is in decreasing trend. It is 0.11 times in FY 2059/60 and it has decreased down to 0.04 times in FY 2062/63, which is the lowest one for the study period due to heavy burden of indirect expenses. It indicates the poor planning of management. Company is not being able to get maximum return. FY 2063/64 shows slight increment in the ratio than of previous year, it is 0.06 times. The average ratio is 0.07 times which is very low and it indicates that company has not strong financial planning and has low efficiency.

9) Turnover Position

i) The current assets turnover position is quite fluctuating. The average ratio is 1.56 times which is minimum than standard. It indicates that the management is not being able to effectively utilize and maintain the overall management of current assets.

ii) The inventory turnover position of Dugar Brothers and Sons is quite fluctuating. It varies from 1.86 to 4.47 times. The average ratio is 3.19 times which is low. Since the ratio is quite

fluctuating, it indicates that the company has not adopted appropriate policy for inventory management.

iii) The average working capital ratio is 3.28 which is very low and is nit favorable. This shows the company is not able to maintain the fixed level of working capital to achieve high volume of sales.

iv) The cash turnover position is highly fluctuating during the study period. It is ranging from 30.28 to 314 times with an average of 191.26 times. It indicates that the sales and cash balance of the company are not matching to each other. So from this it can be analyzed that the company has no fixed policy of cash management in relation to sales.

10) Statistical Analysis

i) The actual position of Net Working Capital is quite fluctuating. But trend value of NWC is in increasing trend. The trend values shows in FY 2059/60 the value of WC is Rs.56.84 million and it has been increased to Rs.112.78 million in FY 2063/64.

Since the standard error is 35.056 which indicates the linear fitted trend $\hat{Y} = 79.7+16.54X$ has a moderately high fluctuation. This may be due to smaller number of the year data are being concerned. Besides the NWC data are erratic.

ii) The actual position of NPAT for different years is quite fluctuating. In FY 2059/60 it is Rs. 21.31 million but it has been decreased down to Rs. 14.11 million. But the trend value of NPAT is in increasing trend. It has increased from Rs. 12.31 million in FY 2059/60 to Rs. 21.47 million in FY 2063/64.

Since the standard error is 9.19 which indicates that the linear fitted trend $\hat{Y} = 16.89+2.29X$ seems to be consistent. It means the trend analysis between the actual value and trend value between the NPAT is constant.

iii) The trend value of sales is in increasing trend. It is Rs. 201.04 million in FY 2059/60 and it has reached to Rs.254.84 million in FY 2063/64. But the actual position of sales for the different year is quite fluctuating.

Since the standard error is 50.11 which indicates the liner fitted trend $\hat{Y}$ = 227.94+13.45X has a moderate high fluctuation. This may be due to smaller number of the year data are being considered; besides the sales are erratic.

iv) The trend value of cash and bank balance is in decreasing trend. It is Rs. 4.024 million in FY 2059/60 and it has been decreased down to Rs. 0.96 million. But the actual position is quite fluctuating. It is Rs. 6.14 million in FY 2059/60 and it has reached to 0.96 million in FY 2061/62. From FY 2062/63, there has been increment in the value of cash and bank balance it has reached to Rs. 1.08 million in FY 2063/64.
Since the standard error is 5.85 which indicates the linear fitted trend $\hat{Y}$ = 2.06+0.982X seems to be consistence. It means the trend analysis between the actual value and predicted value of cash and bank balance of Dugar Brothers and Sons are reliable.

v) There is positive correlation between current assets and total assets which means that there is highly positive correlation between C.A. and T.A.
Since r = 0.98>6PE=0.07, this implies there is positive correlation between C.A. and T.A. during the period of study and is statistically significant at all. It means increase in current assets also leads to increase in total assets.

vi) There is positive correlation between the current assets and fixed assets.
Since, PE =0.17< r = 0.66 < 6PE =1.02, this relation shows the relationship between current assets and fixed assets is inconclusive.

vii)There is negative correlation between cash and bank balance and total assets.
Since PE = 0.18 < r = 063 < 6PE = 1.08, this shows that statistically the relationship between cash and bank balance and total assets is inconclusive.

viii) While calculating correlation between CA and CL, r=0.82>6PE =0.59. This relation shows that there is positive and significant relationship between current assets and current liabilities of

Dugar Brothers and Sons. This positive and significant indicate a relationship between CA and CL such that as values of CA increases, values for CL also increase.

ix) Since PE= 0.27 ≤ r =0.27 < 6PE = 1.62, this relation shows that during the study period the relationship between quick assets and current liabilities is inconclusive. Therefore, this correlation analysis indicates that the company has not been significantly increasing its quick assets accordingly with increment in current liabilities.

x) The correlation coefficient between the sales and inventory (r) =0.74, which shows that there is a highly positive correlation between sales and Inventory.
Since PE=0.13<r=0.74<6PE=0.78, this implies though there exist positive correlation between sales and inventory no conclusion could be derived as to statistically significant/insignificant i.e. inconclusive.

xi) The correlation coefficient between the sales and working capital and inventory is positive. Here, PE=0.15<r=0.69<6PE<0.69, this implies though during the study period there exist positive correlation between working capital and inventory no conclusion could be derived as to statistically significant/insignificant i.e. inconclusive.

xii)While calculating the correlation between the net profit after tax and sales, PE=0.30>r =0.303, it shows that during the study period there is insignificant relationship between net profit after tax and sales of Dugar Brothers and Sons.
xiii) There is a positive correlation coefficient between the Net profit after tax and current assets. Here, PE=0.3> r = 1.049< 6PE =1.8, it shows that during the study period the relationship between net profit after tax and current assets of Dugar Brothers and Sons is inconclusive.
xiv) There is positive and significant relationship between gross profit and total assets of the organization.
xv)There is insignificant relationship between WC and NPAT since PE = 030> r =0.007.
xvi)Since, PE = 0.27 < /r/ = /0.3189/ <6PE = 1.62, this relation between WC and Cash & Bank balance implies that no conclusion could be derived as to statistically significant/insignificant, which means no inconclusive.

xvii) The correlation coefficient between the working capital and sales (r) = 0.52, which shows that there is positive correlation between sales and inventory, here PE = .22 <r -0.52 < 6PE = 1.32 , this implies though there exist positive correlation between working capital and sales, no conclusion could be derived as to statistically significant/insignificant, which means no inconclusive.

xviii) During the 5 years study period, the regression analysis between NWC & NPAT is positive dew to lower value of standard error of estimate for regression and coefficient of determination, The NPAT is no affected by NWC. NWC is not the determinant factor, which makes change in the net profit after tax.

The regression coefficient 'b' between two variables is positive (0.0009) which shows the positive relationship between net profit and net working capital during the five year study period. The standard error of estimate regression is 5066 which is very low , which shows that though there is positive relation impact between NWC and NPAT but is not much dependable due to the very lower value. The coefficient of determination is 0.000049 which is also very low which implies that NPAT is not affected by the NWC. The NWC is not the determinant factor, which makes change in the net profit after tax of Dugar Brothers and Sons.

xix) The regression coefficient between two variables is negative (-0.0182) which shows that the negative relation between cash and bank balance & net working capital during the five year study period. That means the adverse relationship between the NWC and C&BB. Here, the standard error of estimate for regression is 2.5 which is very low which implies that the NWC and C&BB are not dependable. Similarly, the coefficient of determination is 0.101 which means only 10% of working capital is explain by C&BB. The other remaining 90% of the total variation is explained by other factor or remains unexplained.

CHAPTER - 5

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter attempts to summarize the whole study. In this chapter, the effort has been concerned to present summary, conclusion and recommend some concrete suggestion for improvement based on the analysis made.

5.1 Summary

The basic objective of the study is to examine and find out the working capital management adopted by the Dugar Brothers and Sons. The specific objective of the study are (i) to evaluate the financial position in relation to working capital of Dugat Brothers and sons (ii) to identify whether the organization is being able to adopt appropriate working capital policy or not (iii) to examine the impact of the working capital management in liquidity of Dugar Brothers and Sons.

The study has been organized into five major chapters each denotes some aspect of the study of working capital management.

The first chapter focus on the brief introduction which covers the background of the study, industrialization and its role in Nepal, brief history of Dugar Brothers & Sons, introduction of working capital management, purpose of the study. It includes statement of problem, significance of the study and its limitations.

The second chapter deals with theoretical concepts of different literature review for journals, books, dissertation, which will help provide knowledge about the development and progress made by earlier researchers on the concerned topic. The summarization of the period has been done to provide knowledge about the background of the work done by earlier researchers.

In the chapter three, an appropriate research methodology has been applied to fulfill the stated objectives of the study. This chapter includes research design, nature and sources of data, data processing procedures, tools and techniques used. The research design of the study is descriptive

and analytical in nature. The data collected from the secondary sources. Financial ratios such as current ratio, turnover ratio, profitability ratio, liquidity ratio have been used. Similarly, statistical tools like Karl Pearson's coefficient, probable error, trend analysis and regression analysis have been used.

One of the most important chapters of this research is chapter four which is presentation and Analysis of the data which have been used to present, analyze and interpret the necessary data. The necessary data are derived from balance sheet, profit and loss account website of the company for the study period of five years from FY 2059/60 to 2063/64. Besides these, primary data are collected through direct interview and interactions with the concerned persons of the company. The collected data have been presented in tables, figures and comparative interpretation has been made by using various financial and statistical tools.

The size and structure of working capital are analyzed by comparing current assets and its components with different related variables. Liquidity and profitability ratios are calculated to evaluate the efficiency of working capital. Liquidity position was assessed by calculating different liquidity ratios. To find out the growth rate of working capital, sales, NPAT cash and bank balances, the trend analysis is done. Different statistical tools like mean, standard deviation, coefficient of correlation, regression analysis to show impact of one variable to another are done for meaningful interpretation of the data.

5.2 Conclusion

The proper management of working capital is necessary for day to day operation of every organization because it plays vital role in success and failure of the organization. Thus, the role of working capital is more significant for every business organization irrespective to their nature.

i) The working capital position has been analyzed by calculating various ratios. Dugar Brothers & Sons is a trading business house. It has adopted relaxed current ratio investment policy as current assets hold larger portion of total assets. In average it is 0.84 times which shows the company the company holds the relatively large amount of current assets in total assets to support the sales level. In addition, it is clear that the company is motivated to sales by applying

liberal credit policy. Similarly, investment in current assets is higher then that of fixed assets and the average ratio between current assets to fixed assets is 7.8 times. This ratio indicates that the company has no clear vision about the investment in CAs to FAs proportion. There is positive correlation between CA and TA as well as statistically significant and there is no significant difference between variables, it could adverse effect in Dugar Brothers & Sons wealth maximization goal in the long run.

ii) Inventory management is one of the important parts of current assets. So far as liquidity is concerned, inventory is lease liquid in itself. it should be maintained effectively and efficiently. It absorbs 0.83 times of current assets in average which means large funds tie-up in it. But at the last two year of the study, it seems the company has slowly started adopting the policy to hold optimum level of inventory.

iii) The proportion of cash and bank balance quite fluctuating during the study period. Cash and bank balance proportion of the company is satisfactory because it holds only 0.2 times of the current assets which is low. Holding of cash more than required pays no return. Since low ratio indicates effective management, it can be said that Dugar Brother and Sons have been adopting sound management policy of maintaining the level of cash and bank balance. Though the company has become able to obtain low ratio, relationships between cash and bank balance and total assets is negative and highly insignificant.

iv) The liquidity position of Dugar Brother and Sons is satisfactory as it is above the standard level. The average current ratio is 2.84 times which is high than the standard level of 2:1. Similarly quick ratio is 1.03 times which shows the company is being able to make immediate payment of its current liabilities.

v) The overall profitability position of Dugar Brothers and Sons is not so much satisfactory. Return on total assets is very low. The ratio between NPAT and Sales is in decreasing trend. It is 0.27 times in FY 2059/60 and it has been decreased down 0.6 times in FY 2063/64. The average ratio is only 0.13 times which indicates the company is being able to gain only small percentage of return on total asses employed. Similarly, return on current assets is also not much productive

because it is able to gain only 0.15 average ratios which are very low. Net profit margin ratio is also beyond the expectation as it is very low. It is only 0.07 times in average which indicates that the company has the poor financial planning and low efficiency. The Gross profit margin ratio also not productive it is in decreasing trend up to first four year (2059/60-2062/63). In FY 2063/64 there has been slight increment in the ratio and has reached to 0.17 times, the average gross profit margin ratio 0.17 times is very low. The correlation coefficient between NPAT and CA is positive but statistically insignificant. The correlation coefficient between gross profit margin and total assets is positive and also significant.

vi) Turnover ratio of current assets is highly fluctuating which indicates that the management is not being able to effectively maintain the overall management of current assets. Inventory turn over ratio is also highly fluctuating which indicates that the company has not adopted appropriate policy of inventory management. The correlation coefficient between sales and inventory is positive but the value of 'r' is less 6PE which means insignificant relationship between sales and inventory.

vii) The actual position o f Net Working Capital, sales is quite fluctuating. But the trend value of NWC and sales is slowly increasing. This increasing trend values help to predict that the company is slowly moving towards sound condition if management focuses more attention in planning working capital management. The actual position of NPAT and the company is not satisfactory. In FY 2059/60 the company has become to able to gain 21.31 million of net profit but due to lack of proper management is has reached to 9.79 million in FY 2062/63. FY 2063/64 shows there is slight increment in the value of NPAT and the company has become able to gain 14.11 million net profits. The actual value of cash and bank balance is quite fluctuating but the trend value is in decreasing trend.

viii) The standard error of estimate for analysis of NWC is 35.056 which indicate the linear fitted trend $\hat{Y} = 79.7+16.54X$ has a moderately high fluctuation. This may be due to smaller number of the year data are being considered. Besides the NWC data are erratic.

ix) The standard error of estimation for NPAT 9.19, it means the trend analysis between the actual value and trend value between the NPAT is constant.

x) The standard error for regression of sales is 50.11 which indicate the linear fitted trend $\hat{Y}$ = 227.94+13.45X has moderately high fluctuation. This may be due to smaller number of the year data are being considered. Besides the Sales data are erratic.

xi) Since the standard error estimate for regression of Cash and Bank Balance is 5.85 which indicates the lines fitted trend $\hat{Y}$ = 2.06+0.982X seems to be constant. It means the trend analysis between the actual value and predicted value of cash and bank balance of Dugar Brothers and Sons is reliable.

xii) To find out the impact of working capital in liquidity and profitability the regression analysis has been done. During the five year study period, the regression analysis between NWC and NPAT is positive due to the lower value of standard error estimate for regression and coefficient of determination, the NPAT is no affected by NWC is not determinant factor, which makes change in the net profit after tax.

The regression coefficient 'b' between two variables - NWC and NPAT is positive (0.0009) which shows the positive relationship between net profit and net working capital during the five year study period. The standard error of estimate for regression is 5.66 which is very low which shows that though there is positive impact between NWC and NPAT but is not much dependable due to the very low value. The coefficient of determination is 0.000049 which is very low which implies that NPAT is not affected by NWC. The NWC is not the determinant factor, which makes change in the net profit after tax of Dugar Brothers and Sons.

xiii) The regression coefficient 'b' between two variables - working capital and cash and bank balance is negative (-0.0182) which shows that the negative relationship between cash and bank balance and net working capital during the study period that means there is adverse relationship between NWC and C&BB. Here, the standard error of estimate for regression is 2.5 which is very low which implies that the NWC and C&BB are not dependable. Similarly, the coefficient

of determination is 0.101 which means only 10% of working capital is explain by C&BB. The other remaining 90% of the total variation is explained by other factor or remains unexplained. Thus, the company can not neglect the working capital management because it is very essential and most important aspect of financial management having great impact on risk and profitability of the company. The top level management of the company should be very much sensitive and responsible for the better management of working capital. So the top level management should have proper working capital policy as well as appropriate management.

5.3 Recommendations

Based on the analysis and findings of the study, following recommendations are forwarded for the improvement of Dugar Brothers and Sons.

1. Improvement Current and Fixed Assets Policy

Dugar Brothers and Sons should set the standard for the ration of CA to FA it has not any clear vision about the management of CAs and FAs. Thus, the management should have the proper plan to improve its profitability in future.

2. Effective Inventory Management

Inventory plays the vital role in working capital management. Effective inventory plan is helpful for keeping the inventory level adjustable to sales and production and reduce the problem of stocking piling. From the above analysis it was found that the inventory holds the highest portion of CA during the study period. This increases the cost of the company which indicates the idle cash. The company should keep the inventory adjustable to sales. Management should adopt effective inventory control technique in order to control inventory in accordance with their value and importance. Stock should be controlled and categorized on the basis of its value and investment.

3. Improve Turnover Position

It is found the current assets turnover, net working capital turnover is very low. Lower turnover indicates the inefficient utilization of assets. So, to increase company turnover position, the company must utilize their assets effectively. Adequate turnover of company increases profit and performance level. Thus management of the company should focus their attention to maximize

their turnover position. Similarly, the company should focus on maintaining the fixed level of working capital to achieve high volume of sales.

4. Effective working capital plan and policy

There is maximum fluctuation in working capital holding of the company. From this, it can be analyzed that the company is not following certain working capital. The management should determine certain proportion for the component of current assets in order to manage working capital in future. Therefore, Dugar Brothers and Sons should formulate compulsory working capital plan and policy to maintain working capital in certain level. And it is also suggested to adopt appropriate working capital policy by which it can increase its profit level instead of loss. Appropriate working capital policy helps to maintain adequate liquidity position in the company.

5. Improve Financial Planning

The return on total assets, current assets is not much productive and very low. Management should develop effective policy to generate maximum return on total assets employed. The net profit margin ratio is very low and not satisfactory. This indicates that the company has poor financial planning and less effective.

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Appendix-I

Trend Analysis of Net Working Capital

Let the deviation of the Year be 2061/62 = 3 and denoted by (Mid–year) and NWC by Y.

Let's assume fiscal year by 1, 2, 3, 4, 5.

(Rs. In millions)

FY	**X = Year – Mid Year**	**X^2**	**NCW Y**	**XY**	**$(Y - \hat{Y})$**	**$(Y - \hat{Y})^2$**
2059/60 (1)	-2	4	56.84	-113.68	10.22	104.45
2060/61 (2)	-1	1	45.19	-45.19	-17.97	322.92
2061/62 (3)	0	0	108.09	0	28.39	805.99
2062/63 (4)	1	1	52.45	52.45	-43 .79	1917.56
2063/64 (5)	2	4	135.93	271.86	23.15	535.92
Total	**$\sum X = 0$**	**$\sum X^2 = 10$**	**$\sum Y = 398.5$**	**$\sum XY =$ 165.44**	**$\sum(Y-\hat{Y})=0$**	**$\sum(Y-\hat{Y})^2$ =3686.84**

To calculate the trend analysis, we have to solve the following equation which is given by

$Y = a + bX$

Finding the value of a and b,

$$a = \frac{\sum Y}{N} = \frac{398.5}{5} = 79.70$$

$$b \text{ X} \frac{XY}{X^2} \text{ X} \frac{165.44}{10} \text{ X} 16.54$$

Now, Substituting the value of a, b in the equation, we get,

Y= a + bX

$\hat{Y}$ = 79.70 + 16.54X

Substituting the value of X in above equation,

$\hat{Y}$ = 79.7 + 16.54 (-2) = 46.62 (FY 2059/60)

$\hat{Y}$ = 79.7 + 16.54 (-1) = 63.16 (FY 2060/61)

$\hat{Y}$ = 79.7 + 16.54 (0) = 79.7 (FY 2061/62)

$\hat{Y}$ = 79.7 + 16.54 (1) = 96.24 (FY 2062/63)

$\hat{Y}$ = 79.7 + 16.54 (2) = 112.78 (FY 2063/64)

Now, calculating the Standard error of regression estimate,

We have,

Standard error of estimate for regression (SE regression) = $\sqrt{\frac{\sum(Y-\hat{Y})^2}{n-2}}$

or, SE reg = $\sqrt{\frac{(3696.84}{5-2}}$

or, SE reg = $\sqrt{1228.95}$

…SE reg = 35.056

Appendix – II

Trend Analysis of Net Profit After Tax

Let the deviation of the Year be 2061/62 = 3 and denoted by (Mid-year) and NPAT by Y.

Let's assume fiscal year by 1, 2, 3, 4, 5.

(Rs. In millions)

Fiscal Year (FY)	**X = Year – Mid Year**	**X^2**	**NPAT Y**	**XY**	**$(Y - \hat{Y})$**	**$(Y - \hat{Y})^2$**
2059/60 (1)	-2	4	21.31	-42.62	9	81
2060/61 (2)	-1	1	18.31	-18.31	3.71	13.76
2061/62 (3)	0	0	20.95	0	4.06	16.48
2062/63 (4)	1	1	9.79	9.79	-9.39	88.17
2063/64 (5)	2	4	14.11	28.22	-7.36	54.17
Total	**$\sum X = 0$**	**$\sum X^2 = 10$**	**$\sum Y = 84.47$**	**$\sum XY = 22.92$**	**$\sum(Y-\hat{Y})=0.02$**	**$\sum(Y-\hat{Y})^2 =253.58$**

To calculate the trend analysis, we have to solve the following equation which is given by

$Y = a + bX$

Calculating the value of a and b,

$$a \text{ X} \frac{Y}{N} \text{ X} \frac{84.47}{5} \text{ X} 16.89$$

$$b \text{ X} \frac{XY}{X^2} \text{ X} \frac{22.92}{10} \text{ X} 2.29$$

Now, Substituting the value of a, b in the equation, we get,

$Y = a + bX$

$\hat{Y} = 16.89 + 2.29X$

Substituting the value of X in the above equation for five years period,

$\hat{Y} = 16.89 + 2.29\ (-2)\ 12.31$ (FY 2059/60)

$\hat{Y} = 16.89 + 2.29\ (-1) = 14.6$ (FY 2060/61)

$\hat{Y} = 16.89 + 2.29\ (0) = 16.89$ (FY 2061/62)

$\hat{Y} = 16.89 + 2.29\ (1) = 19.18$ (FY 2062/63)

$\hat{Y} = 16.89 + 2.29\ (2) = 21.47$ (FY 2063/64)

Now, calculating the Standard error of regression estimate,

We have,

Standard error of estimate for regression (SE regression) = $\sqrt{\frac{\sum(Y-\hat{Y})^2}{n-2}}$

or, SE reg = $\sqrt{\frac{(253.58)}{5-2}}$

or, SE reg = $\sqrt{84.57}$

… SE reg = 9.19

Appendix – III

Trend Analysis of Sales

Let the deviation of the Year be 2061/62 = 3 and denoted by (Mid–year) and Sales by Y.

Let's assume fiscal year by 1, 2, 3, 4, 5.

(Rs. In millions)

Fiscal Year (FY)	**X = Year – Mid Year**	**X^2**	**Sales (Y)**	**XY**	**$(Y - \hat{Y})$**	**$(Y - \hat{Y})^2$**
2059/60 (1)	-2	4	21.31	-42.62	9	81
2060/61 (2)	-1	1	18.31	-18.31	3.71	13.76
2061/62 (3)	0	0	20.95	0	4.06	16.48
2062/63 (4)	1	1	9.79	9.79	-9.39	88.17
2063/64 (5)	2	4	14.11	28.22	-7.36	54.17
Total	**$\sum X = 0$**	**$\sum X^2 = 10$**	**$\sum Y =$ 1139.72**	**$\sum XY =$ 134.47**	**$\sum(Y-\hat{Y})=$ -0.48**	**$\sum(Y-\hat{Y})^2$ =7532.781**

To calculate the trend analysis, we have to solve the following equation which is given by

$Y = a + bX$

Calculating the value of a and b,

$$a \text{ X} \frac{Y}{N} \text{ X} \frac{1139.72}{5} \text{ X} 227.94$$

$$b \text{ X} \frac{XY}{X^2} \text{ X} \frac{134.47}{10} \text{ X} 13.45$$

Now, Substituting the value of a, b in the equation, we get,

Y= a + bX

$\hat{Y}$ = 227.94+13.45x

Substituting the value of X in the above equation for five years period,

$\hat{Y}$ = 227.94 + 13.45 (-2) =201.04 (FY2059/60)

$\hat{Y}$ = 227.94 + 13.45 (-1) =214.49 (FY2060/61)

$\hat{Y}$ = 227.94 + 13.45 (0) =227.94 (FY2061/62)

$\hat{Y}$ = 227.94 + 13.45 (1) =241.39 (FY2062/63)

$\hat{Y}$ = 227.94 + 13.45 (2) =254.84 (FY2063/64)

Now, calculating the Standard error of regression estimate,

We have,

Standard error of estimate for regression (SE regression) = $\sqrt{\frac{\Sigma(Y-\hat{Y})2}{n-2}}$

or, SE reg = $\sqrt{\frac{7532\ .781}{5\ Z\ 2}}$

or, SE reg= $\sqrt{2510\ .927}$

… SE reg= 50.10915

Appendix – IV

Trend Analysis of cash and Bank Balance

Let the deviation of the Year be 2061/62=3 and denoted by (Mid-year) and C&BB by Y.

Let's assume fiscal year by 1, 2, 3, 4, 5.

(Rs. In millions)

Fiscal Yea (FY)	**X = Year–Mid Year**	**X^2**	**C & B B (Y)**	**XY**	**$(Y - \hat{Y})$**	**$(Y - \hat{Y})^2$**
2059/60 (1)	-2	4	6.14	-12.28	2.116	4.48
2060/61 (2)	-1	1	0.91	-0.91	-2.132	4.54
2061/62 (3)	0	0	0.96	0	-1.1	1.21
2062/63 (4)	1	1	1.21	1.21	0.132	0.017
2063/64 (5)	2	4	1.08	2.16	0.12	0.014
Total	**$\sum X = 0$**	**$\sum X^2 = 10$**	**$\sum Y = 10.30$**	**$\sum XY =$ 9.82**	**$\sum(Y-\hat{Y})=-0.8$**	**$\sum(Y-\hat{Y})^2$ =102.61**

To calculate the trend analysis, we have to solve the following equation which is given by

$Y = a + bX$

Calculating the value of a and b,

$$a \text{ X} \frac{Y}{N} \text{ X} \frac{10.30}{5} \text{ X} 2.06$$

$$b \text{ X} \frac{XY}{X^2} \text{ X} \frac{\text{Z}9.82}{10} \text{ X Z} 0.982$$

Now, Substituting the value of a, b in the equation, we get,

Y= a + bX

$\hat{Y}$ = 2.06 –0.982X

Substituting the value of X in the above equation for five years period,

$\hat{Y}$ =2.06-0.982(-2) = 4.024 (FY2059/60)

$\hat{Y}$ = 2.06-0.982 (-1) = 3.042 (FY2060/61)

$\hat{Y}$ = 2.06-0982 (0) = 2.06 (FY2061/62)

$\hat{Y}$ = 2.06-0.982 (1) = 1.078 (FY2062/63)

$\hat{Y}$ = 2.06-0.982 (2) = 0.096 (FY2063/64)

Now, calculating the Standard error of regression estimate

We have,

Standard error of estimate for regression (SE regression) = $\sqrt{\frac{\sum(Y-\hat{Y})2}{N-2}}$

or, SE reg = $\sqrt{\frac{\sum(102.61)}{5-2}}$

or, SE reg = $\sqrt{34.203}$

… SE reg= 5.85

Appendix – V

Correlation between Current Assets and Total Assets

(Rs. In millions)

FY	**Current Assets(X)**	**$X = X - \bar{X}$**	**Total Assets(Y)**	**$Y = Y - \bar{Y}$**	**X^2**	**Y^2**	**XY**
2059/60	74.63	-54.59	78.15	-77.61	2,980.07	6023.31	4236.73
2060/61	92.44	-36.78	112.74	-43.02	1,352.77	1850.72	1582.28
2061/62	195.11	65.89	231.44	75.68	4,341.49	5727.46	4986.56
2062/63	94.55	-34.67	132.22	-23.54	1,202.01	554.13	816.13
2063/64	189.35	60.13	224.24	68.48	3,615.62	4689.51	4117.70
Total	**∑X=646.08**		**∑Y= 778.74**		**$\sum X^2$ = 13,491.96**	**$\sum Y^2$ = 18,845.13**	**$\sum XY$= 15,739.40**

Mean CA (X) = $\frac{\sum X}{N} = \frac{646.08}{5} = 129.22$

Mean TA ($\bar{Y}$) = $\frac{\sum Y}{N} = \frac{778.79}{5} = 155.76$

Standard Deviation (σ) = $\sqrt{\frac{1}{n}\sum(X - \bar{X})^2}$

Standard Deviation (σ) = $\sqrt{\frac{1}{n}\sum(Y - \bar{Y})^2}$

or, S.D (CA) (σ)= $\sqrt{\frac{13491.96}{5}}$

or, S.D (TA) (σ)= $\sqrt{\frac{(18845.13)}{5}}$

$\therefore S.D\ (CA)(\sigma) = 51.94$

$\therefore S.D\ (TA)(\sigma) = 61.39$

Now, finding the Correlation between the Current Assets and Total Assets,

We have,

or, r = $\frac{\sum XY}{\sqrt{\sum X^2}\sqrt{\sum Y^2}}$

or, $r = \frac{15,739.40}{\sqrt{13,491.96} \times \sqrt{18,845.13}}$

or, r = 0.98

y The Coefficient of Correlation between Current Assets and Total Assets (r) = 0.98

Here, the value of Correlation Coefficient is greater than zero, i.e r > 0, so there is positive Correlation between Current Assets and Total Assets.

Now, finding the Probable Error,

We have,

Probable Error (PE) $= \frac{0.6745(1-r^2)}{\sqrt{N}}$

or, $P.E = \frac{0.6745[1-(0.98)^2]}{\sqrt{5}}$

… P.E = 0.012

The error terms of Current Assets to Total Assets is 0.012

Now, 6xP.E = 6x0.012 = 0.07

Since, PE=0.012<r=0.98>6PE=0.07, we can conclude that there is positive significant relationship between Current Assets and Total Assets.

Appendix – VI

Correlation between Current Assets and Fixed Assets

(Rs. In millions)

FY	Current Assets (X)	$x = X - \bar{X}$	Fixed Assets (Y)	$y = Y - \bar{Y}$	x^2	y^2	xy
2059/60	74.63	-54.59	3.52	-23.02	2,980.07	529.92	1,256.66
2060/61	92.44	-36.78	20.29	-6.25	1,352.77	39.06	229.88
2061/62	195.11	65.89	36.33	9.79	4,341.49	95.84	645.06
2062/63	94.55	-34.67	37.68	11.14	1,202.01	124.10	-386.22
2063/64	189.35	60.13	34.89	8.35	3,615.62	69.72	502.09
Total	**∑X=646.08**		**∑Y= 132.71**		**∑x^2 = 13,491.96**	**∑ y^2 = 858.64**	**∑xy = 2,247.47**

Mean CA ($\bar{X}$) = $\frac{\sum X}{N} = \frac{646.08}{5}$ =129.22 Mean FA ($\bar{Y}$) = $\frac{\sum Y}{N} = \frac{132.7}{5}$ =26.54

Standard Deviation (σ) = $\sqrt{\frac{1}{n}\sum(X-\bar{X})^2}$ Standard Deviation (σ) = $\sqrt{\frac{1}{n}\sum(Y-\bar{Y})^2}$

or, S.D (σ) = $\sqrt{\frac{(13491.96)}{5}}$ or, S.D (σ) = $\sqrt{\frac{(858.64)}{5}}$

…S.D (CA) (σ) = 51.95 …S.D (FA) (σ) = 13.10

Now, finding the Correlation between the Current Assets and Fixed Assets,

We have,

or, $r = \frac{\sum XY}{\sqrt{\sum X^2}\sqrt{\sum Y^2}}$

or, $r = \frac{2,247.47}{\sqrt{13,491.95}\sqrt{858.93}}$

or, r = 0.66

…The Coefficient of Correlation between Current Assets and Fixed Assets is 0.66.

Here, the value of Correlation Coefficient is greater than zero, i.e r > 0, so there is positive Correlation between Current Assets and Fixed Assets of the organization.

Now, finding the Probable Error,

We have,

Probable Error (PE) = $\frac{0.6745(1-r^2)}{\sqrt{N}}$

or, P.E = $\frac{0.6745\,[1-(0.66)^2]}{\sqrt{5}}$

… P.E = 0.017

The error term of Current Assets and Fixed Assets is 0.17.

Now, 6xP.E = 6x0.017 = 1.02

Since, PE =0.17<r=0.66<6PE=1.02, this relation show there is significant relationship between Current Assets and Fixed Assets.

Appendix – VII

Correlation between Cash and Bank Balance and Total Assets

(Rs. In millions)

Fiscal Year (FY)	C & BB (X)	$x = X - \bar{X}$	Total Assets (Y)	$y = Y - \bar{Y}$	x^2	y^2	xy
2059/60	6.14	4.08	78.15	-77.61	16.65	6023.31	-316.65
2060/61	0.91	-1.15	112.74	-43.02	1.32	1850.72	49.47
2061/62	0.96	-1.1	231.44	75.68	1.21	5727.46	-83.25
2062/63	1.21	-0.85	132.22	-23.54	0.72	554.13	20.01
2063/64	1.08	-0.98	224.24	68.40	0.96	4678.56	-67.03
Total	**∑X=10.30**		**∑Y= 778.79**		**∑x^2 = 20.86**	**∑ y^2 = 18834.18**	**∑xy= -397.45**

Mean ($\bar{X}$) = $\frac{\sum X}{N} = \frac{10.30}{5} = 2.06$

Mean ($\bar{Y}$) = $\frac{\sum Y}{N} = \frac{778.79}{5} = 155.76$

Standard Deviation (σ) = $\sqrt{\frac{1}{n}\sum(X - \bar{X})^2}$

Standard Deviation (σ) = $\sqrt{\frac{1}{n}\sum(Y - \bar{Y})^2}$

or, S.D (σ) = $\sqrt{\frac{(20.86)}{5}}$

or, S.D (σ) = $\sqrt{\frac{(18834.18)}{5}}$

… S.D (σ) = 2.04

… S.D (σ) = 61.37

Now, finding the Correlation between the Cash and Bank Balance to Total Assets,

We have,

or, $r = \frac{\sum xy}{\sqrt{\sum x^2}\sqrt{\sum y^2}}$

or, $r = \frac{-397.45}{\sqrt{20.86}\sqrt{18834.18}}$

or, r = - 0.63

…The Coefficient of Correlation between Cash and Bank Balance and Total Assets is -0.63.

Here, the value of Correlation Coefficient is less than zero, i.e r< 0, so there is negative Correlation between Cash and Bank Balance and Total Assets of the organization.

Now, finding the Probable Error,

We have,

Probable Error (PE) = $\frac{0.6745(1-r^2)}{\sqrt{N}}$

or, $P.E. = \frac{0.6745\{1 - (0.63)^2\}}{\sqrt{5}}$

… P.E = 0.18

The error term of Cash and Bank Balance and Total Assets is 0.18.

Now, 6xP.E = 6x0.18 = 1.08

Since, PE = 0.18 > r = -0.63 < 6PE = 1.08, this relation shows that there is insignificant relationship between Cash and Bank Balance and Total Assets.

Appendix – VIII

Correlation between Current Assets and Current Liabilities

(Rs. In millions)

Fiscal Year (FY)	**Current Assets (X)**	**x= X - $\bar{X}$**	**Liabilities (Y)**	**y= Y - $\bar{Y}$**	**x^2**	**y^2**	**xy**
2059/60	74.63	-54.59	17.78	-31.74	2,980.07	1,007.43	1,732.69
2060/61	92.44	-36.78	47.24	-2.28	1,352.77	5.20	83.86
2061/62	195.11	65.89	87.02	37.50	4,341.49	1,406.25	2,470.88
2062/63	94.55	-34.67	42.11	-7.41	1,202.01	54.91	256.90
2063/64	189.35	60.13	53.43	3.91	3,615.62	15.29	235.11
Total	**∑X=646.08**		**∑Y= 247.58**		**∑x^2 = 13,491.96**	**∑ y^2 = 2,489.08**	**∑xy= 47779.44**

Mean ($\bar{X}$) = $\frac{\sum X}{N} = \frac{646.08}{5} = 129.22$

Mean ($\bar{Y}$) = $\frac{\sum Y}{N} = \frac{247}{5} = 49.52$

Standard Deviation (σ) = $\sqrt{\frac{1}{n}\sum(X-\bar{X})^2}$

Standard Deviation (σ) = $\sqrt{\frac{1}{n}\sum(Y-\bar{Y})^2}$

or, S.D (σ) = $\sqrt{\frac{(13491.96)}{5}}$

or, S.D (σ) = $\sqrt{\frac{(2489.08)}{5}}$

… S.D (σ) = 51.95

… S.D (σ) = 22.31

Now, finding the Correlation between the Current Assets and Current Liabilities,

We have,

or, $r = \frac{\sum XY}{\sqrt{\sum X^2}\sqrt{\sum Y^2}}$

or, $r = \frac{4,779.44}{\sqrt{13,491.96}\sqrt{2489.08}}$

or, r = 0.82

…The Coefficient of Correlation between Current Assets and Current Liabilities(r)

= 0.82.

Here, the value of Correlation Coefficient is greater than zero, i.e r> 0, so there is positive Correlation between Current Assets and Current Liabilities of the organization.

Now, finding the Probable Error,

We have,

Probable Error (PE) = $\frac{0.6745(1-r^2)}{\sqrt{N}}$

or, P.E = $\frac{0.6745\,[1-(0.82)^2]}{\sqrt{5}}$

… P.E = 0.098

The error term of Current Assets and Current Liabilities is 0.098.

Now, 6xP.E = 6x0.98 = 0.59

Since, PE = 0.098 < r = 0.82 > 6PE = 0.59, this relation shows that there is positive significant relationship between Current Assets and Current Liabilities of Dugar Brothers and Sons.

Appendix – IX

Correlation of Quick Assets and Current Liabilities

(Rs.In millions)

FY	QA (X)	$x = X - \bar{X}$	CL (Y)	$y = Y - \bar{Y}$	x^2	y^2	xy
2059/60	32.54	-6.89	17.78	-31.74	47.47	1,006.79	218.62
2060/61	27.69	-11.74	47.24	-2.27	137.8	5.15	26.65
2061/62	3.23	-36.2	87.02	37.51	1310.44	1,407	-1357.86
2062/63	40.46	1.03	42.10	-7.41	1.06	54.91	-7.63
2063/64	93.23	53.8	53.43	3.93	2894.44	15.44	211.43
Total	**∑X= 197.15**		**∑Y=247.57**		**$\sum x^2$= 4391.21**	**$\sum y^2$= 2,489.29**	**$\sum xy$= -908.79**

Mean ($\bar{X}$) = $\frac{\sum X}{N} = \frac{197.15}{5} = 39.43$

Mean ($\bar{Y}$) = $\frac{\sum Y}{N} = \frac{247.57}{5} = 49.51$

Standard Deviation (σ) = $\sqrt{\frac{1}{n}\sum(X - \bar{X})^2}$

Standard Deviation (σ) = $\sqrt{\frac{1}{n}\sum(Y - \bar{Y})^2}$

or, S.D (σ) = $\sqrt{\frac{(4391.21)}{5}}$

… S.D (σ) = 29.63

or, S.D (σ) = $\sqrt{\frac{(2489.29)}{5}}$

… S.D (σ) = 22.31

Now, finding the Correlation between the Quick Assets and Current Liabilities,

We have,

or, $r = \frac{\sum XY}{\sqrt{\sum X^2}\sqrt{\sum Y^2}}$

or, $r = \frac{-908.79}{\sqrt{4391.21}\sqrt{2489.29}}$

or, r = - 0.27

…The Coefficient of Correlation between the Quick Assets and Current Liabilities is (r) = -0.27.

Here, the value of Correlation Coefficient is less than zero, i.e r< 0, so there is negative Correlation between Quick Assets and Current Liabilities of the organization.

Now, finding the Probable Error,

We have,

Probable Error (PE) = $\frac{0.6745(1-r^2)}{\sqrt{N}}$

or, $P.E. = \frac{0.6745\{1 - (0.27)^2\}}{\sqrt{5}}$

…P.E = 0.27

Now, 6xP.E = 6x0.27 = 1.62

Since, PE = 0.0.27 > r = -0.27 < 6PE = 1.62, this relation shows that there is insignificant relationship between Quick Assets and Current Liabilities of Dugar Brothers and Sons.

Appendix – X

Correlation of Sales and Inventory

(Rs.In millions)

FY	Sales (X)	$x = X - \bar{X}$	Inventory (Y)	$y = Y - \bar{Y}$	x^2	y^2	xy
2059/60	185.94	-42	42.09	-31.74	47.47	1,006.79	218.62
2060/61	184.93	-43.01	64.64	-2.27	137.8	5.15	26.65
2061/62	302.25	74.31	87.02	37.51	1310.44	1,407	-1357.86
2062/63	241.92	13.98	42.10	-7.41	1.06	54.91	-7.63
2063/64	224.68	-3.26	53.43	3.93	2894.44	15.44	211.43
Total	**$\sum X$= 1,139.72**		**$\sum Y$=419.89**		**$\sum x^2$ =3,941.91**	**$\sum y^2$ = 9,386.22**	**$\sum xy$= 6,990.29**

Mean ($\bar{X}$) = $\frac{\sum X}{N} = \frac{1139.72}{5}$ =227.94

Mean ($\bar{Y}$) = $\frac{\sum Y}{N} = \frac{419.89}{5}$ =83.98

Standard Deviation (σ) = $\sqrt{\frac{1}{n}\sum(X - \bar{X})^2}$

Standard Deviation (σ) = $\sqrt{\frac{1}{n}\sum(Y - \bar{Y})^2}$

or, S.D (σ) = $\sqrt{\frac{(3941.91)}{5}}$

or, S.D (σ) = $\sqrt{\frac{(9386.22)}{5}}$

… S.D (σ) = 28.0

… S.D (σ) = 43.33

Now, finding the Correlation between the Sales and Inventory,

We have,

or, $r = \frac{\sum XY}{\sqrt{\sum X^2}\sqrt{\sum Y^2}}$

or, $r = \frac{6,990.29}{\sqrt{9,341.91}\sqrt{9386.22}}$

or, r = 0.74

…The Coefficient of Correlation between Sales and Inventory is (r) = 0.74.

Here, the value of Correlation Coefficient is greater than zero, i.e r> 0, so there is positive Correlation between Sales and Inventory of the organization.

Now, finding the Probable Error,

We have,

Probable Error (PE) = $\frac{0.6745(1-r^2)}{\sqrt{N}}$

or, P.E = $\frac{0.6745\,[1-(0.74)^2]}{\sqrt{5}}$

… P.E = 0.13

The error term of Sales and Inventory is 0.13.

Now, 6xP.E = 6x0.13 = 0.78.

Since, PE=0.13<r=0.74<6PE=0.78, this implies though there exist positive Correlation between Sales and Inventory, no conclusion could be derived as to statistically significant/insignificant i.e inconclusive.

Appendix – XI
Correlation of Working Capital and Inventory

(Rs.In millions)

FY	WC (X)	$x = X - \bar{X}$	Inventory (Y)	$y = Y - \bar{Y}$	X^2	Y^2	XY
2059/60	56.84	-22.86	42.08	- 41.9	522.58	1755.61	957.83
2060/61	45.19	-34.51	64.74	- 19.24	1190.94	370.18	663.97
2061/62	108.09	28.39	162.85	78.87	805.99	6220.48	2239.12
2062/63	52.45	-27.25	54.09	- 29.89	742.56	893.41	814.50
2063/64	135.93	56.23	96.12	12.14	3161.81	147.37	682.63
Total	**∑X= 398.50**		**∑Y= 419.88**		**$\sum X^2$ = 6423.88**	**$\sum Y^2$ = 9387.05**	**∑XY= 5358.05**

Mean ($\bar{X}$) = $\frac{\sum X}{N} = \frac{398.50}{5} = 79.7$

Mean ($\bar{Y}$) = $\frac{\sum Y}{N} = \frac{419.88}{5} = 83.98$

Standard Deviation (σ) = $\sqrt{\frac{1}{n}\sum(X - \bar{X})^2}$

Standard Deviation (σ) = $\sqrt{\frac{1}{n}\sum(Y - \bar{Y})^2}$

or, S.D (σ) = $\sqrt{\frac{(6423.88)}{5}}$

or, S.D (σ) = $\sqrt{\frac{(9387.05)}{5}}$

… S.D (σ) = 35.84

… S.D (σ) = 43.33

Now, finding the Correlation between the Working Capital and Inventory,

We have,

Or, $r = \frac{\sum XY}{\sqrt{\sum X^2}\sqrt{\sum Y^2}}$

or, $r = \frac{5358.05}{\sqrt{6423.88}\sqrt{9387.05}}$

or, r = 0.69

…The Coefficient of Correlation between Working Capital and Inventory is (r) = 0.69.

Here, the value of Correlation Coefficient is greater than zero, i.e r> 0, so there is positive Correlation between Working Capital and Inventory of the organization.

Now, finding the Probable Error,

We have,

Probable Error (PE) = $\frac{0.6745\,(1-r^2)}{\sqrt{N}}$

or, P.E = $\frac{0.6745\,[1-(0.69)^2]}{\sqrt{5}}$

… P.E = 0.15

Now, 6xP.E = 6x0.15 = 0.9

Since, PE=0.15< r=0.69<6PE=0.9, this implies though there exist positive Correlation between Working Capital and Inventory, no conclusion could be derived as to statistically significant / insignificant i.e inconclusive.

Appendix – XII

Correlation of Net Profit After Tax and Sales

(Rs. In millions)

FY	NPAT (X)	$x = X - \bar{X}$	Sales (Y)	$y = Y - \bar{Y}$	x^2	y^2	xy
2059/60	21.31	4.44	185.93	-42.01	19.72	1764.84	-186.52
2060/61	18.21	1.34	184.93	-43.01	1.79	1849.86	-57.63
2061/62	20.95	4.08	302.25	74.31	16.65	5521.98	303.18
2062/63	9.79	-7.08	241.92	13.98	50.13	195.44	-98.98
2063/64	14.11	-2.76	224.68	-3.26	7.62	10.93	8.99
Total	**$\sum X$= 184.37**		**$\sum Y$= 1139.71**		**$\sum x^2$ = 95.9**	**$\sum y^2$ = 9342.75**	**$\sum xy$= -30.96**

Mean $(\bar{X}) = \frac{\sum X}{N} = \frac{184.37}{5} = 16.87$ Mean $(\bar{Y}) = \frac{\sum Y}{N} = \frac{1139.71}{5} = 227.94$

Standard Deviation $(\sigma) = \sqrt{\frac{1}{n}\sum(X - \bar{X})^2}$ Standard Deviation $(\sigma) = \sqrt{\frac{1}{n}\sum(Y - \bar{Y})^2}$

or, S.D $(\sigma) = \sqrt{\frac{(95.9)}{5}}$ or, S.D $(\sigma) = \sqrt{\frac{(9342.75)}{5}}$

…S.D (σ)= 4.38 … S.D (σ) = 43.23

Now, finding the Correlation between the Net Profit After Tax and Sales,

We have,

or, $r = \frac{\sum XY}{\sqrt{\sum X^2}\sqrt{\sum Y^2}}$

or, $r = \frac{-30.96}{\sqrt{95.9}\sqrt{9342.75}}$

or, r = -0.03

…The Coefficient of Correlation between Net Profit After Tax and Sales is (r) = -0.03.

Here, the value of Correlation Coefficient is greater than zero, i.e r< 0, so there is negative Correlation between Net Profit After Tax and Sales.

Now, finding the Probable Error,

We have,

Probable Error (PE) = $\frac{0.6745(1-r^2)}{\sqrt{N}}$

or, $P.E. = \frac{0.6745\{1 - (-0.03)^2\}}{\sqrt{5}}$

… P.E = 0.30

Now, 6xP.E = 6x0.30 = 1.8

Since, PE = 0.30 > r= -0.03 < 6PE = 1.8, it shows that there is insignificant relationship between Net Profit After Tax and Sales of the origination.

Appendix – XIII

Correlation of Net Profit After Tax and Current Assets

(Rs. in millions)

FY	NPAT (X)	$x = X - \bar{X}$	CA (Y)	$y = Y - \bar{Y}$	x^2	y^2	xy
2059/60	21.31	4.44	74.63	-54.59	19.72	2980.07	-242.38
2060/61	18.21	1.34	92.44	-36.78	1.79	1352.77	-49.28
2061/62	20.95	4.08	195.11	65.89	16.65	4341.49	268.83
2062/63	9.79	-7.08	94.55	-34.67	50.13	1202.01	245.46
2063/64	14.11	-2.76	189.35	60.13	7.62	3615.62	-165.96
Total	**$\sum X$= 84.37**		**$\sum Y$= 646.08**		**$\sum x^2$ = 95.9**	**$\sum y^2$ = 13,491.96**	**$\sum xy$= 56.67**

Mean $(\bar{X}) = \frac{\sum X}{N} = \frac{84.37}{5} = 16.87$

Mean $(\bar{Y}) = \frac{\sum Y}{N} = \frac{646.08}{5} = 129.22$

Standard Deviation $(\sigma) = \sqrt{\frac{1}{n}\sum(X - \bar{X})^2}$

Standard Deviation $(\sigma) = \sqrt{\frac{1}{n}\sum(Y - \bar{Y})^2}$

or, S.D $(\sigma) = \sqrt{\frac{(95.9)}{5}}$

or, S.D $(\sigma) = \sqrt{\frac{(13491.96)}{5}}$

… S.D (σ) = 4.38

… S.D (σ) = 51.95

Now, finding the Correlation between the Net Profit After Tax and Current Assets,

We have,

or, $r = \frac{\sum XY}{\sqrt{\sum X^2}\sqrt{\sum Y^2}}$

or, $r = \frac{56.67}{\sqrt{95.9}\sqrt{13491.96}}$

or, r = 0.049

…The Coefficient of Correlation between net Profit After Tax and Current Assets is (r) = 0.049.

Here, the value of Correlation Coefficient is greater than zero, i.e r> 0, so there is positive Correlation between Net profit After Tax and Current Assets of the organization.

Now, finding the Probable Error,

We have,

Probable Error (PE) = $\frac{0.6745(1-r^2)}{\sqrt{N}}$

or, P.E = $\frac{0.6745\,[1-(0.049)^2]}{\sqrt{5}}$

…P.E = 0.30

Now, 6xP.E = 6x0.30 = 1.8

Since, PE = 0.30 > r= 0.049 < 6PE = 1.8, it shows that there exist positive Correlation but insignificant relationship between NPAT and Current Assets of Dugar Brothers and Sons.

Appendix – XIV

Correlation of Gross Profit and Total Assets

(Rs. In millions)

FY	GP (X)	$X = X - \bar{X}$	TA (Y)	$Y = Y - \bar{Y}$	X^2	Y^2	XY
2059/60	35.82	-1.88	185.94	-42	3.53	1764	78.96
2060/61	33.77	-3.93	184.93	-43.01	15.44	1849.86	169.03
2061/62	45.56	7.86	302.25	74.31	61.78	5521.98	584.07
2062/63	35.46	-2.24	241.92	13.98	5.02	195.44	-13.32
2063/64	37.89	0.19	224.68	-3.26	0.04	10.63	-0.62
Total	**$\sum X$= 188.5**		**$\sum Y$= 1139.7272**		**$\sum X^2$ = 85.81**	**$\sum Y^2$ = 9341.91**	**$\sum XY$= 800.12**

Mean $(\bar{X}) = \frac{\sum X}{N} = \frac{188.5}{5} = 37.7$

Mean $(\bar{Y}) = \frac{\sum Y}{N} = \frac{1139.72}{5} = 227.94$

Standard Deviation $(\sigma) = \sqrt{\frac{1}{n}\sum(X - \bar{X})^2}$

Standard Deviation $(\sigma) = \sqrt{\frac{1}{n}\sum(Y - \bar{Y})^2}$

or, S.D $(\sigma) = \sqrt{\frac{(85.81)}{5}}$

or, S.D $(\sigma) = \sqrt{\frac{(9341.91)}{5}}$

… S.D (σ) = 4.14

… S.D (σ) = 43.22

Now, finding the Correlation between the Gross Profit and Total Assets,

We have,

or, $r = \frac{\sum XY}{\sqrt{\sum X^2}\sqrt{\sum Y^2}}$

or, $r = \frac{800.12}{\sqrt{85.81}\sqrt{9341.91}}$

or, r = 0.89

…The Coefficient of Correlation between Gross Profit and Total Assets is (r) = 0.89.

Here, the value of Correlation Coefficient is greater than zero, i.e. r>0, so there is positive correlation between Gross Profit and Total Assets of the organization.

Now, finding the Probable Error,

We have,

Probable Error (PE) = $\frac{0.6745(1-r^2)}{\sqrt{N}}$

or, P.E = $\frac{0.6745\,[1-(0.89)^2]}{\sqrt{5}}$

…P.E = 0.06

Now, 6xP.E = 6x0.06 = 0.36

Since, PE=0.06<r=0.89>6PE=0.36, it shows that there is positive and significant relationship between Gross Profit and Total Assets of Dugar Brothers and Sons.

Appendix – XV

Correlation of Working Capital and Net Profit After Tax

(Rs In millions)

FY	WC (X)	$x = X - \bar{X}$	NPAT (Y)	$y = Y - \bar{Y}$	x^2	y^2	xy
2059/60	56.84	-22.86	21.31	4.44	522.58	19.71	-101.49
2060/61	45.19	-34.51	18.21	1.34	1190.94	1.79	-46.24
2061/62	108.09	28.39	20.95	4.08	805.99	16.65	115.83
2062/63	52.45	-27.25	9.79	-7.08	742.56	50.13	192.83
2063/64	135.93	56.23	14.11	-2.76	3161.81	7.62	-155.19
Total	**$\sum X$= 398.50**		**$\sum Y$= 84.37**		**$\sum x^2$ = 6423.88**	**$\sum y^2$ = 95.9**	**$\sum xy$= -5.84**

Mean $(\bar{X}) = \frac{\sum X}{N} = \frac{398.50}{5} = 79.7$ Mean $(\bar{Y}) = \frac{\sum Y}{N} = \frac{84.37}{5} = 16.87$

Standard Deviation $(\sigma) = \sqrt{\frac{1}{n}\sum(X - \bar{X})^2}$ Standard Deviation $(\sigma) = \sqrt{\frac{1}{n}\sum(Y - \bar{Y})^2}$

or, S.D $(\sigma) = \sqrt{\frac{(6423.88)}{5}}$ or, S.D $(\sigma) = \sqrt{\frac{(95.9)}{5}}$

…S.D (σ) = 35.84 … S.D (σ) = 4.38

Now, finding the Correlation between the Working Capital and Net Profit After Tax,

We have,

or, $r = \frac{\sum XY}{\sqrt{\sum X^2}\sqrt{\sum Y^2}}$

or, $r = \frac{-5.84}{\sqrt{6423.88}\sqrt{95.9}}$

or, r = -0.007

…The Coefficient of Correlation between Working Capital and Net Profit After Tax is (r) = -0.007.

Here, the value of Correlation Coefficient is less than zero, i.e r< 0, so there is negative Correlation between Working Capital and Net Profit After Tax of the organization.

Now, finding the Probable Error,

We have,

Probable Error (PE) = $\frac{0.6745(1-r^2)}{\sqrt{N}}$

or, $P.E. = \frac{0.6745\{1 - (0.007)^2\}}{\sqrt{5}}$

… P.E = 0.30

Now, 6xP.E = 6x0.30 = 1.8

Since, PE=0.30>r=-0.007<6PE=1.8,it shows that there exist positive Correlation between Working Capital and NPAT but the relationship between WC and NPAT of Dugar Brothers and Sons is insignificant.

Appendix – XVI

Correlation of Working Capital and Cash and Bank Balance

(Rs. In millions)

FY	WC (X)	$x = X - \bar{X}$	C&BB (Y)	$y = Y - \bar{Y}$	x^2	y^2	xy
2059/60	56.84	-22.86	6.14	4.08	522.58	16.65	-93.27
2060/61	45.19	-34.51	0.91	-1.15	1190.94	1.32	39.69
2061/62	108.09	28.39	0.96	-1.1	805.99	1.21	-31.23
2062/63	52.45	-27.25	1.21	-0.85	742.56	0.72	23.16
2063/64	135.93	56.23	1.08	-0.98	3161.81	0.96	-55.11
Total	**$\sum X$= 398.50**		**$\sum Y$= 10.30**		**$\sum x^2$ = 6423.88**	**$\sum y^2$ = 20.86**	**$\sum xy$= -116.76**

Mean $(\bar{X}) = \frac{\sum X}{N} = \frac{398.50}{5} = 79.7$

Mean $(\bar{Y}) = \frac{\sum Y}{N} = \frac{10.30}{5} = 2.06$

Standard Deviation $(\sigma) = \sqrt{\frac{1}{n}\sum(X - \bar{X})^2}$

Standard Deviation$(\sigma) = \sqrt{\frac{1}{n}\sum(Y - \bar{Y})^2}$

or, S.D $(\sigma) = \sqrt{\frac{(6423.88)}{5}}$

or, S.D $(\sigma) = \sqrt{\frac{(20386)}{5}}$

…S.D (σ) = 35.84

… S.D (σ) = 2.04

Now, finding the Correlation between the Working Capital and Cash and Bank Balance,

We have,

or, $r = \frac{\sum XY}{\sqrt{\sum X^2}\sqrt{\sum Y^2}}$

or, $r = \frac{-116.76}{\sqrt{6423.88}\sqrt{20.86}}$

or, r = -0.3189

…The Coefficient of Correlation between Working Capital and Cash and Bank Balance is (r) = -0.3189

Here, the value of Correlation Coefficient is less than zero, i.e r< 0, so there is negative Correlation between Working Capital and Cash and Bank Balance of the organization.

Now, finding the Probable Error,

We have,

Probable Error (PE) = $\frac{0.6745(1-r^2)}{\sqrt{N}}$

or, $P.E. = \frac{0.6745\{1 - (-0.3189)^2\}}{\sqrt{5}}$

…P.E = 0.27

Now, 6xP.E = 6x0.27 = 1.62

Since, PE=0.27>r=-0.3189<6PE =1.62, it shows that there is insignificant relationship between Working Capital and Cash and Bank Balance.

Appendix – XVII

Correlation of Working Capital and Sales

(Rs. In millions)

FY	WC (X)	$X = X - \bar{X}$	Sales (Y)	$Y = Y - \bar{Y}$	X^2	Y^2	XY
2059/60	56.84	-22.86	185.93	-42.00	522.12	1764.00	959.7
2060/61	45.19	-34.51	184.93	-43.01	1190.25	1849.86	1483.845
2061/62	108.09	28.39	302.25	74.31	812.25	5521.98	2117.835
2062/63	52.45	-27.25	241.92	13.98	742.02	195.44	-380.8152
2063/64	135.93	56.23	224.68	-3.26	3161.81	10.63	-183.3098s
Total	**$\sum X$= 398.50**		**$\sum Y$= 1139.72**		**$\sum X^2$ = 6428.45**	**$\sum Y^2$ = 9341.91**	**$\sum XY$= 3997.255**

Mean $(\bar{X}) = \frac{\sum X}{N} = \frac{398.50}{5} = 79.7$

Mean $(\bar{Y}) = \frac{\sum Y}{N} = \frac{1139.72}{5} = 227.94$

Standard Deviation $(\sigma) = \sqrt{\frac{1}{n}\sum(X - \bar{X})^2}$

Standard Deviation $(\sigma) = \sqrt{\frac{1}{n}\sum(Y - \bar{Y})^2}$

or, S.D $(\sigma) = \sqrt{\frac{(6428.45)}{5}}$

or, S.D $(\sigma) = \sqrt{\frac{(9341.91)}{5}}$

…S.D (σ) = 35.85

… S.D (σ) = 43.22

Now, finding the Correlation between the Working Capital and Sales,

We have,

or, $r = \frac{\sum XY}{\sqrt{\sum X^2}\sqrt{\sum Y^2}}$

or, $r = \frac{3997.255}{\sqrt{6428.45}\sqrt{9341.91}}$

or, r = 0.52

…The Coefficient of Correlation between Working Capital and Sales is (r) = 0.52.

Here, the value of Correlation Coefficient is greater than zero, i.e r> 0, so there is positive Correlation between Working Capital and Sales of the organization.

Now, finding the Probable Error,

We have,

Probable Error (PE) = $\frac{0.6745\,(1-r^2)}{\sqrt{N}}$

or, P.E = $\frac{0.6745\,[1-(0.52)^2]}{\sqrt{5}}$

… P.E = 0.22

Now, 6xP.E = 6x0.22 = 1.32

Since, PE = 0.2 <r=.52< 6PE = 1.32, this implies though there exists positive Correlation between Working Capital and Sales, no conclusion could be derived as to statistically significant/ insignificant which means inconclusive.

Appendix – XVIII

To examine the Impact of Working Capital on Profitability

Relationship between Working Capital and Net Profit After Tax

(Rs. In millions)

	WC (X)	**NPAT (Y)**	**XY**	**X^2**	**Y^2**	**$\ddot{Y}$ = 3.51 -0.0182x**	***(Y - $\ddot{Y}$)***	***$(Y - \ddot{Y})^2$***
2059/60	56.84	21.31	1211.26	3230.79	454.12	16.85	4.46	19.89
2060/61	45.19	18.21	822.91	2042.14	331.6	16.84	1.37	1.88
2061/62	108.09	20.95	2264.49	11683.45	438.9	16.89	4.06	16.48
2062/63	52.45	9.79	513.49	2751	95.84	16.85	-7.06	49.84
2063/64	135.93	14.11	1917.97	18476.96	199.09	16.92	-2.81	7.89
Total	**∑X= 398.50**	**∑Y= 84.37**	**∑XY= 6730.12**	**∑X^2 = 38184.34**	**∑ Y^2 = 1519.56**			**ģ$(Y - \ddot{Y})^2$= 95.98**

Mean ($\bar{X}$) = $\frac{\sum X}{N} = \frac{398.5}{5} = 79.7$ Mean ($\bar{Y}$) = $\frac{\sum Y}{N} = \frac{84.37}{5} = 16.87$

Finding out the impact of working capital on profitability using regression analysis,

We have,

Y=a+bX …….. (i)

Where, a and b are constants to be determined to find the position of the line.

The parameters a and b of the equation can be obtained by solving the following two equations:

∑Y=na + b∑X …… (ii)

∑XY = a∑X+b∑X^2 …… (iii)

Substituting the values of n, ∑X, ∑Y, ∑XY, ∑X² in equation (ii) and (iii), we get,

84.37 = 5a + 398.50b …….. (iv)

6730.12 = 398.50a +38184.34b …….. (v)

Multiplying the equation (iv) by 79.7, we get,

6724.29=398.50a+31760.45b

6730.12=398.50a+38184.34.b

5.83=6423.89b

b=0.0009

Substituting the value of b in equation (iv), we get,

a=16.80

Now substituting the value of a and b in equation (i) we get,

Y=16.80+0.0009X

$\hat{Y}$= 16.80+0.0009X

From above analysis we can analyze that working capital of Dugar Brothers and Sons have direct impact on the profitability position.

Now, calculating the correlation for the reliability test between the WC and NPAT,

We have,

$$r = \frac{n\sum XY - \sum X \sum Y}{\sqrt{n\sum X^2 - (\sum X)^2}\sqrt{n\sum Y^2 - (\sum Y)^2}}$$

$$r = \frac{5(6730.12) - (398.5)(84.37)}{\sqrt{5(38184.34) - (398.5)^2}\sqrt{5(1519.56) - (84.37)^2}}$$

r = 0.007

Again, calculating the Coefficient of determination,

Coefficient of determination,$r^2 = (0.007)^2$

…$r^2 = 0.000049$

Now finding the standard Error of the Estimate of Regression,

We have,

Standard error of estimate for regression (SE regression) = $\sqrt{\frac{\sum(Y-\hat{Y})^2}{n-2}}$

Now calculating the value of $\hat{Y}$ for each year,

FY	$\hat{Y}$ **= 16.80 + 0.0009X**	$\hat{Y}$
2059/60	$\hat{Y}$ **= 16.80 + 0.0009(56.84)**	16.85
2060/61	$\hat{Y}$ **= 16.80 + 0.0009(45.19)**	16.84
2061/62	$\hat{Y}$ **= 16.80 + 0.0009(108.09)**	16.89
2062/63	$\hat{Y}$ **= 16.80 + 0.0009(52.45)**	16.85
2063/64	$\hat{Y}$ **= 16.80 + 0.0009(135.93)**	16.92

Standard error of estimate for regression (SE regression) = $\sqrt{\frac{\sum(Y-\hat{Y})^2}{n-2}}$

Now, substituting the value of $\sum (Y-\hat{Y})^2$ in above equations

Or, SE regression = $\sqrt{\frac{(95.98}{3}}$

…SE regression = 5.66

Appendix – XIX

To examine the Impact of Working Capital on Liquidity

Relationship between Working Capital and Cash and Bank Balance

(Rs. In millions)

FY	**WC (X)**	**C and BB (Y)**	**XY**	**X^2**	**Y^2**	$\hat{Y}$ = **3.61 -0.0182x**	$(Y - \hat{Y})$	$(Y - \hat{Y})^2$
2059/6	56.84	6.14	348.99	3230.79	37.69	2.47	3.67	13.47
2060/6	45.19	0.91	41.12	2042.14	0.83	2.69	-1.78	3.17
2061/6	108.09	0.96	103.77	11683.45	0.92	1.54	-0.58	0.34
2062/6	52.45	1.21	663.46	2751.00	1.46	2.56	-1.35	1.82
2063/6	135.93	1.08	146.80	18476.96	1.17	1.04	0.04	0.0016
Total	**∑X= 398.50**	**∑Y= 10.30**	**∑XY= 704.14**	**$\sum X^2$ = 38184.34**	**$\sum Y^2$= 42.07**		**$\sum(Y-\hat{Y})$= 0**	**$\sum (Y - \hat{Y})^2$ = 18.80**

Mean ($\bar{X}$) = $\frac{\sum X}{N} = \frac{398.5}{5} = 79.7$ Mean ($\bar{Y}$) = $\frac{\sum Y}{N} = \frac{10.30}{5} = 2.06$

Finding out the impact of Working Capital on Liquidity using regression analysis,

We have,

Y=a+bX ……..(i)

Where, a and b are constants to be determined to find the position of the line.

The parameters a and b of the equation can be obtained by solving the following two equations:

∑Y=na + b∑X ……(ii)

∑XY = a∑X+b∑X^2 ……(iii)

Substituting the values of n, ∑X, ∑Y, ∑XY, ∑X^2 in equation (ii) and (iii), we get,

10.30 = 5a + 38184.34b ……..(iv)

704.14 = 398.50a +38184.34b ……..(v)

Multiplying the equation (iv) by 79.7, and subtracting equation (v) from (iv) we get,

820.91=398.50a+31760.45b

704.14=398.50a+38184.34.b

b=-0.0182

Substituting the value of b in equation (iv), we get,

a=3.51

Now substituting the value of a and b in equation (i) we get,

Y=3.51-0.0182X

$\hat{Y}$= 3.51-0.0182X

From above analysis we can say that the changes in the value of working capital have positive relation on liquidity of the firm.

Now, calculating the Correlation for the reliability test between the Working Capital and Cash and Bank Balance

We have,

$$r = \frac{n\sum XY - \sum X \sum Y}{\sqrt{n\sum X^2 - (\sum X)^2}\sqrt{n\sum Y^2 - (\sum Y)^2}}$$

$$r = \frac{5(704.14) - (398.50)(10.30)}{\sqrt{5(38184.34) - (398.5)^2}\sqrt{5(42.07) - (10.30)^2}}$$

r = -0.319

Again, calculating the Coefficient of determination,

Coefficient of determination, $r^2 = (-.319)^2$

$\therefore r^2 = 0.101$

Now finding the Standard Error of the Estimate of Regression,

We have,

Standard error of estimate for regression (SE regression) = $\sqrt{\frac{\sum(Y-\hat{Y})^2}{n-2}}$

Now calculating the value of $\hat{Y}$ for each year,

FY	$\hat{Y}$ **= 3.51- 0.0182x**	$\hat{Y}$
2059/60	$\hat{Y}$ **= 3.51- 0.0182(56.84)**	2.47
2060/61	$\hat{Y}$ **= 3.51- 0.0182(45.19)**	2.69
2061/62	$\hat{Y}$ **= 3.51- 0.0182(108.09)**	1.54
2062/63	$\hat{Y}$**= 3.51- 0.0182(52.45)**	2.56
2063/64	$\hat{Y}$ **= 3.51- 0.0182(135.93)**	1.04

Standard error of estimate for regression (SE regression) = $\sqrt{\frac{\sum(Y-\hat{Y})^2}{n-2}}$

Now, substituting the value of $\sum (Y - \hat{Y})^2$ in above equations

or, SE regression = $\sqrt{\frac{(18.80)}{3}}$

$\therefore$SE regression = 2.5