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INDEX

The Impact of Operating Cycle on Firm's Profitability in the Material Sector in Sri Lanka

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Abstract

The purpose of this study is to examine the impact of an operating cycle on the firm's profitability in the material sector companies in Sri Lanka. The return on assets ratio (ROA) is used as a firm's profitability measure and measure the operating cycle effect by using the inventory holding period and receivable collection period. This study used panel data consisting of 12 material sector companies in Sri Lanka from 2015 to 2019. This research is conducted based on secondary data as well as data will be obtained from the annual reports and websites of the material sector companies in Sri Lanka STATA used to analyse data. The fixed-effect model was chosen to examine the impact of the operating cycle on the firm's profitability. For this research, frequency analysis, descriptive analysis, correlation analysis and simple regression analysis under univariate analysis and multiple regression analysis has been conducted. According to descriptive analysis, operating cycle effect and firm's profitability is high level in material companies of Sri Lanka. Based on the result of the correlation analysis, there is a significant relationship between variables and as per the regression analysis, there is a significant effect of the impact of the operating cycle on a firm's profitability in the material sector companies in Sri Lanka.

Keywords: Operating Cycle, Firm's Profitability, Material Sector Companies

1. Introduction

1.1 Background of the Study

Working capital management is a critical component of corporate finance since it directly impacts the company's liquidity and profitability. Working capital management is critical to the operation of a business. WCM and liquidity management are critical financial choices since they impact the firm's profitability, risk, and market value. Working capital is the lifeblood of every firm; without it, fixed assets are rendered inoperable. Working capital moves throughout the firm, and current assets shift from one form to another. Cash is used to purchase raw materials and store commodities, as well as to pay operational expenditures. It is then turned into work-in-progress, and finally to finished goods. When finished items are sold on credit, receivables balances are established. When the receivables are collected, they are turned back into cash. The demand for working capital emerges as a result of the time lag between the manufacturing of products and their actual realization after-sales. This time lag is known technically as the 'operation cycle' or 'working capital cycle.'

The Operating Cycle has been considered as an important extent of a firm's effective WCM. Furthermore, the Operating Cycle actually, is the most significant part of WCM. On the other side, WCM is an essential dynamic for a firm. Further, Working Capital (WC) is required for day to day transactions of business operating cycle definition specifies how many days it takes to convert inventory purchases into cash revenues from their ultimate sale. It is sometimes referred to as the cash operating cycle, the cash conversion cycle, or the asset conversion cycle. The operating cycle is made up of three parts: payable turnover days, inventory turnover days, and accounts receivable turnover days company's operating cycle is the period between the purchase of goods and the collection of cash from receivables. The operational cycle is the amount of time that elapses between a company's expenditure on raw materials, labour, and other expenditures and the receipt of cash from the sale of goods. The operating cycle is an essential topic in cash management and working capital management.

According to Bhutto et al.(2011) as stated by Eljelly, (2004) there were two ways to appraise the WCM of firms; the first way is by studying current assets and current liabilities and following the concept of financial statement position. The second way is the concept of WCM from the outlook of the Operating Cycle. The Operating Cycle measures the number of days collecting the receivable from the sales of services or products, actual payments on purchasing and inventory turnover period. Researchers have studied WCM in different areas and different

ways, as several studies have been conducted on the relationships among inventory management, account receivables, accounts payable and the Operating Cycle. Operating Cycle has three main components, Payable Turnover Days, Inventory Holding Period, and Receivable Collection Period.

The Operating Cycle is important in classifying assets current assets and fixed assets and liabilities as current or non-current/long term liabilities. The company measures the realization of a transaction by its sales and later by cash conversion of the consideration received into cash. The practical necessity for effective management of a company's current operations makes it critical to keep the current ratio, Cash Conversion Cycle, and return ratio within the company's specified objectives.

Today, owing to the changing global economy, technological advancements, and increased worldwide rivalry among corporations, every company is aiming to increase profits, and companies are making every effort to raise their earnings. Operating cycle at optimum level to increase profitability. According to Boleket et al., (2012), represent two dynamic indicators, economic value added (EVA) and operating cycle. Inhere researchers didn't represent the operating cycle on the dynamic measure of liquidity of the company and the company performance. The researcher was done to reveal the hypothesis relationship between with operating cycle and EVA. The operating cycle can be affected by the EVA system to make firm profitability more efficient.

Operating cycle management is necessary for all businesses including financial institutions, banks, manufacturing firms etc. The researcher selected the material sector for research. Therefore, the material sector is a major contributor to the Sri Lankan economy. The present study is concerned with evaluating and measuring how the changes in the Operating cycle affects the changes in the profitability of the material sector in Sri Lanka.

1.2 Research Problem

Fewer researches are having been done relating to the operating management and profitability of the Material sector. Besides, most of the managers' decisions are depended on firms' financial performance. Therefore they always try to increase profit from many sources. And they ignore the impact of the Operating Cycle on profitability. But they must think that how the changes in Operating Cycle impacts profitability since it is an important component of WCM. According to Mathuwa (2010) as stated by Raheman and Nasar (2007) the final goal

for any firm is to maximize profitability by managing the cash or liquidity. Muturi, (2012) said it is evident of the relationship between the Operating Cycle and the firm's profitability of unlisted tea companies in Meru County. The coefficient between the net cash conversion cycle (NCCC) and profitability was negatively significant. Hence he found the NCCC has a statically negative significant effect on the tea factories' profitability. WCM especially the CCC concept would be needed a balance between the core objectives of the firm. For these purposes, a firm's liquidity should not be high or should not be low. If excess cash indicates the idle funds and the lack of cash indicate the damage of the goodwill.

To fulfil the requirements of the research gap the researcher is expected to do this research. The main issue of this study is to examine up to what extent the Operating Cycle impacts profitability for the material sector at CSE of Sri Lanka. No various studies have been done in the past to check the impact of the Operating Cycle and firm's profitability in the material sector. There are limited studies related to this topic and empirical research. Therefore the problem of this study can be stated as **"How the Operating Cycle affects the profitability of material sector in Sri Lanka?"**

1.3 Research Questions

Based on the problem identified above, the following research questions are raised.

1. What is the relationship between Operating Cycle and firms' profitability?
2. What are the main factors which affect to Operating Cycle of Material sector companies?
3. How do the changes in Operating Cycle affect profitability?

1.4 Research Objectives

Based on this study we are going to achieve the following objectives.

1. To investigate the relationship between Operating Cycle and firms' profitability.
2. To study the Role of the Operating Cycle of a firm's Profitability of the Material sector companies of Sri Lanka.
3. To examine which factors more affect to Operating Cycle as well as the profitability of the firm

1.5 Theoretical Review of the Literature

The time it takes a corporation to acquire items, sell them, and earn income from the sale of these goods is referred to as the operational cycle. In other words, it is the time it takes for a corporation to convert its inventories into cash. The length of an operational cycle varies according to the industry. Understanding a company's operational cycle may assist assess its financial health by predicting whether or not it will be able to pay off any creditors.

For instance, if a company has a short operating cycle, it indicates it will get payments at a consistent pace. The sooner the firm makes cash, the more quickly it will be able to pay off any outstanding obligations or grow its operation.

The following is the flow of a cash operational cycle:

1.   Obtaining the raw material

2.   Producing goods

3.   Having finished goods

4.   Having receivables from making a sale

5.   Obtaining cash

It's also critical to distinguish between an operational cycle and a cash cycle. While both are useful and give vital knowledge, a cash cycle allows businesses to understand how well they manage cash flow, whereas an operational cycle measures the efficiency of the operation.

In summary, in light of the above definition of Operating Cycle, the following discussions present components of working capital management, operating cycle, profitability and liquidity measures, the relationship between liquidity and profitability and the relationship between operating cycle and profitability in an orderly manner.

1.5.1 Working Capital Management

WC is the amount of money a company has available to conduct day to day operations. A firm's WC is a significant indicator of the company's financial stability and its ability to take advantage of growth opportunities. A company without sufficient WC has to focus on meeting short term financial obligations. When this happens, investment and growth opportunities decrease. A company must be able to accurately forecast the minimum amount of cash needed at any given time to cover operating expenses, short term debt and long term debt. Effective

management of WC will grow profitability by increasing the amount of money available for investment. Excess cash not needed for operating expenses can be invested and revenue profits for the company. Decreasing the amount of time to collect on accounts receivable is an important strategy in increasing a company's overall WC. Mathuwa, (2010) said WCM is very important in corporate finance because it directly impacts the liquidity and profitability of the firm. It is which deals with the management of current assets and current liabilities. According to Mathuwa, (2010) as stated by Ejelly, (2004) the WCM of efficiency relates to planning and controlling the Current assets and current liabilities. That eliminates the risk of the inability of a firm to meet due to short term obligations and prevent excessive investment in those assets on the other side.

According to Bolek and Woski, (2012), there has been an exalted interest in liquidity and WCM both in research and business. The polish market, being an improving one is affected by managers' lack of experience and knowledge and different companies are the problem by insufficient liquidity. Companies present more conservatism WCM to maintain liquidity ratios at great levels even if investors represent profitability more liquidity. The study reviewed by Gill, (2011) found that the factors that impact WC requirement related to the Canadian market. He studied that the OC, leverage, ROA, international firm, Tobin's q and firm size impact WC requirements in the manufacturing industry in Canadian and besides. Some findings view that the OC, sales growth, ROA and firm size impact WC requirements in the service industry in Canadian. To comprehend the significance of working capital, one must first comprehend the working capital cycle, which is referred to as the heart of working capital management. According to Arnold, (2008), the working capital cycle encompasses all of the key characteristics of corporate operations. Poor administration of a single account in this cycle might cause significant problems for the non-living entity, possibly leading to its demise. As a result, working capital management and the balance of working capital components are critical for the proper operation of a corporation.

1.5.2 Operating Cycle

According to Bolek and Grosicki, (2012) the management of receivables, cash and liabilities are relative to the unusual market. Therefore liquidity management of companies completed that the differences relative to the management of inventory are related to the special market. Early work was done by Bhutto et al., (2011) as stated by Eljelly, (2004) there were two ways to appraise the WCM of firms, the first way is by studying current assets and current liabilities

and following the concept of financial statement position. The second way is the concept of WCM from the outlook of OC. The OC measures the number of days collecting the receivable from the sales of services or products, actual payments on purchasing and inventory turnover period.

According to Bhutto et al., (2011) that the average cash value of OC, the total current assets (TCA/TA) and total current liabilities (TCL/TA) ratios in the listed companies of Karachi Stock Exchange (KSE). It is completed that there has an important difference between the firms concerning OC, WC financing policy and WC investment policy. As the results of that study view that oil and gas industry exist shortest OC and it differs significantly from any industry. Another significant finding to OC is that the personal goods sector has the longest OC. According to Bolek et al., (2012), OC on the other side is a dimension that relationships liquidity and profitability. Therefore the quicker the conversion of funds, the faster cash released for the next cycle, like this liquidity is increasing. Bolek et al., (2012) as stated by Richards and Laughlin, (1980) examined the conversion cycle is identified as the total of the conversion of inventory and receivables conversion period deduct the period of the late payment obligation.

$$OC = RCP + IHP$$

Where,

RCP = receivables turnover period = 360 / receivables turnover ratio,

IHP = inventory turnover period = 360 / inventory turnover ratio,

Hence: OC = (360AR / Sales) + (360I / CGS)

Where,

AR = Accounts receivable,

I = Inventory.

Bolek, (2013) as stated by Shilling, (1996) explained the cash to cash as the cash conversion cycle which mirrors the OC, measure the gap between the time cash expenses are made to purchase inventory for using the production process and the time funds are received from the sale of the finished goods.

1.5.2.1 Inventory Holding Period

Many investigations have focused on the impact of IHP on profitability. It illustrates the number of periods that the inventories are held in the company before being sold. As the days become lower, it is better to shorten the OC. The inventory value of the ending and beginning of the year are summed and then divided by two, then become the average amount of inventory. By dividing that average amount of inventory by the cost of goods sold to identify the portion of the cost of goods sold comes from the inventory. OC in days is arrived at by multiplying that amount given with the average number of days of a year (Lantz, 2008).

1.5.2.2 Receivable Collection Period

Accounts receivable is one of several accounting transactions that deal with invoicing consumers for products and services received. In most cases, this is accomplished by creating an invoice and mailing or electronically transmitting it to the clients, who must then pay. It is within an established time frame called credit or payment terms. By calculating the day's sale outstanding, a firm can identify their average collection period and it also helps to identify how much time the customer takes to settle or pay their invoices. That index represents the association between the trade receivables and net sales of a year. A higher ratio illustrates that the firm's collection activities are poor or there are some customers with credit problems. On the other hand low ratio represents that the firm follow a rigorous credit policy which affects to hide its sales (Muscettola, 2014)

1.5.3 The Cash Conversion Cycle (CCC)

The cash conversion cycle is the period that elapses between the payment for raw materials and the revenue from the sale of goods. According to Weston and Brigham (1977), corporations often follow a cycle in which they acquire inventory, sell items on credit, and then recover accounts receivable. For a manufacturing firm, it may be defined more accurately as the time spent storing raw materials for processing plus the time required by the manufacturing process. The cash conversion cycle is often used to assess the aggressiveness of working capital policies. Longer cash conversion cycles are seen to correlate to defensive working capital policies, whereas shorter cash conversion cycles are thought to correspond to aggressive working capital policies (Arnold, 2008). To compute the CCC, first determine the average collection period, inventory turnover per day, and average payment period. The formula used to calculate the cash conversion cycle is as follows:

CCC = Average collection Period + Inventory Holding Period − Average Payment Period

In general, depending up on the company policy lowering CCC without increasing cost and reducing sales may be preferable for the firm to have a good position of liquidity.

1.5.4. Firm's Profitability

This is the amount by which the company's revenues surpass its costs. Whether you are documenting previous profitability or estimating future profitability, assessing profitability is the most crucial metric of a company's performance. According to Huynh, (2011) study profitability is the dependent variable in their research. Profit and profitability are different meanings. While profit is the cover of revenue excess revenue expenditure in the calendar year, profitability can be identified of the company to earn profit.

According to Leon, (2013) as stated by Green et al., (2002) firm financing decisions involve a broad variety of policy matters. These decisions affect the capital structure, corporate governance and company development. To get better performance firms can use more current liabilities to finance assets highly. Because current liabilities have low cast than long term liabilities. In growing the number of current assets with total assets improved performance as measured by both ROA and ROE (Mwangi et. al, 2014). Early work done by Muturi, (2015) as stated by IIdiko and Tomas, (2009) profitability is expressed as a ratio measuring the rate of profit which is benchmarked against some basic measurement of reference such as total assets, equity, non- financial assets, gross profit, investment, net capital employed and other appropriate variables. Therefore, profitability was given as 100%. A profitability ratio is a percentage-based measure of the profit earned by a firm, such as a percentage of sales, a percentage of investments, or a percentage of assets. A high percentage of profitability is critical for attracting external capital since creditors, investors, and suppliers would not hesitate to put their money into such a company (Fabozzi and Peterson, 2003). A company's profitability can be measured in a variety of ways. A few profitability metrics are described here:

1.5.4.1. Return on Assets (ROA)

Return on assets (ROA) is one of the profitability ratios and one of the dependent variables which is selected by the researcher. This metric indicates how profitable a firm is before leveraging. The ROA measures the overall effectiveness of management in generating profits with its available assets. According to (Muturi, 2015), as stated by (Biger & Neil, 2010), the

ROA reflects the company's potential to create profit as a result of the productive use of resources and efficient management, and it is utilized as a dependent variable in the evaluation of economic performance. It is calculated as a ratio of net income to total assets. An investment with a higher ROI ratio is a more lucrative option as compared to an investment with a lower ROI ratio. An investment with a negative or lower ROI ratio is most likely to be discontinued by the investors (Bhunia et al, 2011).

1.5.4.2. Return on Equity (ROE)

Return on equity (ROE) is the rate of return on the common stock owners' ownership interest (shareholders' equity). It assesses a company's ability to generate profits from each unit of shareholder ownership (also known as net assets or assets minus liabilities). According to Soumadi and Hayajneh, ROE is defined as the return that shareholders may obtain through management's efficient use of the capital structure. ROE is calculated as the percentage of a fiscal year's net income (after preferred stock dividends but before common stock distributions) divided by total equity (excluding preferred shares).

1.5.4.3. Net profit margin (NPM)

It computes the proportion of each selling dollar that remains after interest, dividends, taxes, expenditures, and charges are deducted. In other words, it computes the proportion of profit a firm earns in relation to its per-dollar sales. The higher the value of the return on sale, the better the performance (Gitman, 1999).

1.5.4.4. Gross operation profit (GOP)

This ratio illustrates how well a corporation uses its operational assets. This ratio computes the company's earnings as a proportion of its operational assets (Weston and Brigham, 1977).

1.5.5. Liquidity

Liquidity ratios, on the other hand, assess a company's short-term solvency and financial situation. These ratios are calculated to remark on a company's short-term paying capacity or its ability to satisfy its existing obligations (Fabozzi and Peterson, 2003), and they are detailed below: Current ratio

The interaction of current assets and current liabilities. It is a measure of general liquidity and is the most commonly used to analyze a firm's short-term financial status or liquidity (Fabozzi

and Peterson, 2003). Entire current assets are divided by total current liabilities to calculate the current ratio.

Current ratio = current asset / current liability

The capacity of a corporation to pay its short-term commitments as and when they fall due is referred to as the acid test ratio or quick ratio. It is defined as the ratio of liquid assets to current obligations.

Quick ratio = Current asset – inventory / Current Liabilities

It is quite beneficial in determining a company's liquidity condition. It is a more stringent liquidity test than the current ratio since it assesses the firm's ability to pay off current commitments quickly. The debt ratio, on the other hand, is a type of financial ratio that is utilized for debt management by various companies. As a result, it is a ratio that displays how much debt a firm has to its assets. The indicator indicates the company's leverage as well as the possible hazards it confronts in terms of its debt-load (Fabozzi and Peterson, 2003). It is computed by dividing total debt by total assets.

1.5.6. Relationship between liquidity and profitability

Finance managers must make a variety of financial decisions, such as investment decisions, financial decisions, liquidity decisions, and dividend decisions, at various times. The finance manager is always confronted with liquidity and profitability challenges in all areas of financial management. He or she must find a happy medium between the two (Eljelly, 2004). Liquidity implies that the company must have enough cash on hand to pay invoices as they come due, as well as enough cash reserves to cover crises and unanticipated requests at all times. Profitability, on the other hand, demands that a firm's finances be used in such a way that they provide the best return. As a result, liquidity and profitability are mutually exclusive options; as one grows, the other falls. More liquidity leads to lower profitability, and vice versa. This is a dilemma that every finance manager must deal with because all financial choices entail both liquidity and profitability.

Creditors of the firm always want the corporation to have a greater level of short-term assets than short-term liabilities to safeguard their money. If current assets exceed current liabilities, creditors will be in a comfortable position. Managers of the firm, on the other hand, do not think in the same manner. Each management wants to pay the mature liabilities, but they also

recognize that an excess of current assets may be an expensive and useless resource that will not provide any return.

Having a large quantity of inventory, for example, will increase warehousing costs. Managers seek to retain the optimal amount of current assets, which is enough to meet current liabilities, rather than keeping excessive current assets (cash, inventory, account receivable). Managers also desire to invest an excessive amount to gain a return. As a result, managers must choose between two extreme positions: long-term investments in non-current assets, such as subsidiaries, with high profitability, i.e. high return and limited liquidity, or short-term investments in current assets, such as stocks. On the other hand, short-term investments with low profitability, i.e. low return and high liquidity, should be avoided. However, the company's creditors prefer managers to invest in short-term assets since they are simple to dispose of, but this diminishes profitability due to the low-interest rate. If, on the other hand, management prefers long-term investments to boost profitability, lenders or creditors will have to wait longer and incur some expenditure to sell these assets in the event of a failure since the liquidity of long-term investments is low. In practice, no management chooses either of these two extremes; instead, they seek a balance of profitability or liquidity that meets their liquidity needs while still providing the appropriate degree of profitability (Arnold, 2008).

2. Methodology

2.1. Operationalization

The capacity to develop or formulate an idea or notion is referred to as conceptualization. The conceptualization phase of a project happens during the early design activity when the project scope and a list of desirable design features and requirements are produced. Conceptual frameworks are made up of a collection of fundamental concepts and theories that assist researchers in appropriately identifying the topic at hand, framing their queries, and locating relevant material (Smyth, 2004). According to the Ncwc (2007), operationalization is the process of taking a conceptual definition and refining it by tying it to one or more particular, tangible indicators or operational definitions, as well as converting variables into quantifiable elements. These are often statistics that represent factual or observable reality. Furthermore, operationalization may be characterized as the creation of particular research processes that

result in actual findings that represent those concepts in the real world (Sekaran & Bougie, 2010). The outcome of operationalization will be indicators that represent that concept.

By evaluating the table 2.1, the variables, their dimensions as well as the indicators specified for each dimensions of the study can be identified.

Variable	Indicator	Measurement
Independent Variable (Operating Cycle effects)	Inventory Holding Period (IHP)	$\dfrac{360}{\text{Inventory Turnover Ratio}}$
	Receivable Collection Period (RCP)	$\dfrac{360}{\text{Receivable Turnover Ratio}}$
Dependent Variable (Firm's profitability)	Return on Assets (ROA)	$\dfrac{\text{Net Income}}{\text{Total Average Assets}}$

2.2. Conceptual Framework

A conceptual framework, according to Adom at el, (2018), is a structure that the researcher feels best explains the natural course of the event under study. It is connected to concepts, empirical research, and significant theories utilized in summarizing knowledge, and it describes how the research topic will be investigated. Based on the research problem which is finding the relationship between OC and firm's profitability of material sector companies following conceptual frame work has been developed. It represents the independent variable and dependent variable of this study. In this study, the conceptualization of the research focuses to identify the impact of the operating cycle on the firm's profitability. Two independent variables have been identified as Inventory Holding Period (IHP) and Receivable Collection Period (RCP) which are effects of the Operating Cycle. Return on Assets (ROA) has been identified as the dependent variable. This conceptual framework can be used to indicate the relationship between the variables which are involved in the study.

Independent Variables   **Dependent Variables**
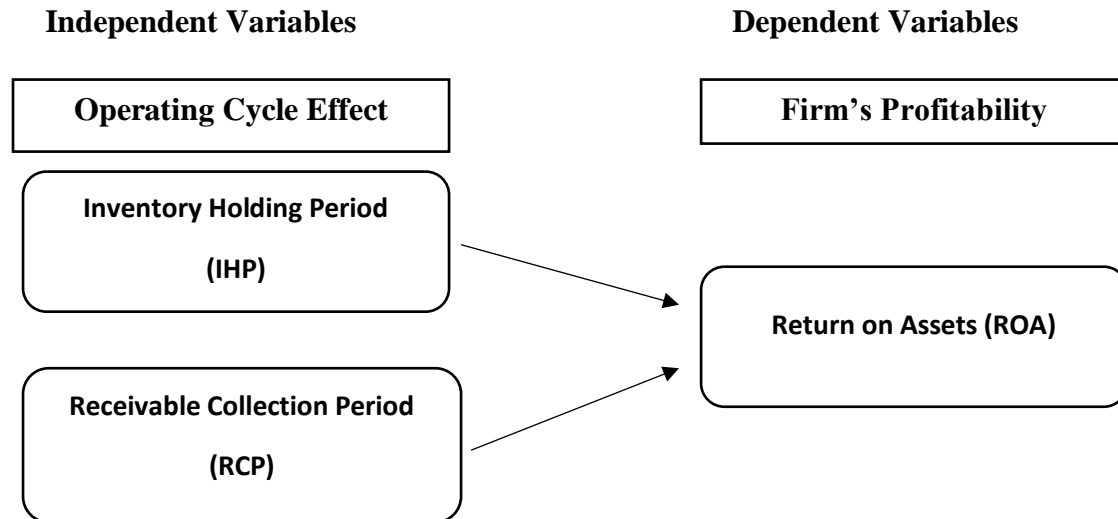
Figure 2.1: Conceptual Framework

Figure 3.1 shows that OC measures affect a firm's profitability. When OC indicators are affecting the efficiency of WCM and it affects the firm's profitability. The firm's performance is measured by profitability, which is normally reflected by higher ROA.

2.3. Development of Hypothesis

In formal logic, the term hypothesis is used to express the antecedent of a proposition, or a hypothesis is a statement of the projected connection between two or more variables. The hypothesis may be a null hypothesis or a research hypothesis. Null hypothesis (H_0) = Statistical hypothesis; predict that no relationship exists between variables. Research hypothesis (H_1) = Alternative hypothesis; state the expected relationship between variables. This research focused on the OC of Material Sector companies and its impact on profitability. The hypotheses are guidelines for the research to deliver its activities. Based on hypotheses research will build up or grow. This research is going to test two hypotheses. As given below.

H_1 -: There is an impact of the operating cycle on a firm's profitability.

H_0 -: There is no impact of the operating cycle on a firm's profitability.

2.4. Research Design

Research design is the "Specification of the most adequate operations to be performed to test the hypothesis under given conditions" (Beri, 2005). The research design, therefore, enabled the researcher to anticipate what the appropriate research decision should be to maximize the validity of results. The choice of research design needed to be appropriated to the subject under

investigation (Beri, 2005). There are several methods to categorize study designs, however, some distinctions are false, and other times, various designs are mixed. Nonetheless, the following list provides several helpful contrasts between various study approaches.

The essence of a research design is selecting a study setting, designing a sampling plan, time horizon, unit of analysis, research approach and designing a data collection method.

2.4.1. Study Setting

"A field study is a collection of data that occurs outside of an experimental or lab setting" (Alston, 2014). This research adopts with quantitative perspective. Further, the study is applied a descriptive survey research design. Descriptive survey research is described as a scientific approach for collecting information without affecting the environment. It comprises surveys and various types of fact-finding inquiries that attempt to get information that reveals existing phenomena (Kumar, 2011).

2.4.2. Unit of Analysis

Considering the objectives of this study, the unit of analysis is the organizational level in Sri Lanka. The study depends on secondary data which was obtained from annual reports of the particular material sector companies of Sri Lanka for the year 2020.

2.4.3. Research Approach

There are two types of research approaches as Deductive and Inductive. This is whether research should use the deductive approach in which you develop theory and hypotheses and design a research strategy to test the hypothesis or the inductive approach, in which you would collect data and develop a theory as a result of data analysis in the research. In this research, it is most appropriate to use a deductive approach. It involves the development of a theory that was subjected to a rigorous test (Sekaran & Bougie, 2010).

2.5. Population and Sampling

The design of the samples is a crucial aspect of the investigation. A sample is a subset of the population chosen for participation in the study. "Sampling is the act of picking a few (a sample) from a larger group (the sampling population) to become the foundation for estimating or predicting the frequency of an unknown piece of information, circumstance, or result about the larger group," writes Kumar (2011). In this study, the sample is selected as 12 companies

in the material sector which are listed in Colombo Stock Exchange Sri Lanka. Under the population and sampling, it discussed the study population, sampling technique and sampling size.

2.5.1 Study Population

Population referred to the entire group of people, events or things of interest that the researcher wishes to investigate (Sekaran & Bougie, 2010). According to Wikipedia (2012) defines, "population is a set of entities concerning which statistical inferences are to be drawn, often based on a random sample taken from the population."

The population is defined by the study's goals. In most cases, the population is too huge for the researcher to poll all of its members. To reflect the population, a small but well-chosen sample might be employed. The sample's characteristics reflect those of the population from which it was drawn (Kumar, 2011).

The study population of this research identifies all the companies which are listed in the Colombo Stock Exchange of Sri Lanka. According to Colombo Stock Exchange (2020), there are 285 companies are listed under twenty business sectors in the Stock Exchange of Sri Lanka. Therefore, the researcher considers this population to determine to what extent the financial performance of the companies is affected by the Operating Cycle on the Firm Profitability is used by them.

2.5.2 Sampling Technique

According to (Philip and Adrian, 2007) sampling is a technical device to rationalize the collection of information, to choose appropriately the restricted set of the object, person or event. However, through the process of sampling, the researcher attempted to estimate what is likely to be the situation in the total study population (Kumar, 2011).

2.5.3 Sample Size

Convenience sampling is primary guided by the convenience to the researcher, whatever this might be easy accessibility, geographical proximity, known contacts, ready approval for undertaking the study, or being a part of the group (Kumar, 2011). According to (Tharmila & Arulvel, 2013) as stated by (Jankowicz, 1994) an overview of a population from data gathered using any sample is based on probability. To be able to simplify the research finding to the population and it is essential to decide enough sample size.

For the study, the Material Sector companies of Sri Lanka listed at CSE are taken as the sample to measure the impact of OC on profitability. 12 companies are selected based on the availability of information for the period of study under review. Firms that have full data for the whole study period of 2016 to 2020 and in their operation are included in the population. 12 samples of firms from the population are selected on a random sampling method from selected industries. This research is relevant to WCM. Inhere very significant are day to day operations in this study. Hence researcher selected randomly companies in the material sector industry that always done day to day operations at any time.

As follows the selected companies:

Table 2.1: Selected Listed material sector companies

Name of the Company	Number of observations (Annual Report)
1. Samson International Plc	05
2. Haycarb Plc	05
3. Laughf Gas Plc	05
4. Alumex Plc	05
5. Abans Plc	05
6. Central Industries Plc	05
7. Printcare Plc	05
8. Swadeshi Industrial Works Plc	05
9. Royal Ceramic Plc	05
10. Teejay Plc	05
11. Acl Cables Plc	05
12. Mtd Walkers Plc	05
Total Observations	**60**

2.6. Methods of Data Analysis

Data analysis is the most important part of a research study. To test the stationary of data views software is used. The following statistical tools and techniques are used in this study. Different methods of statistical processing have been applied to answer the research questions.

- Excel 2010

- STATA - 2015

STATA – 2015 is exclusively applicable to statistical processing is used to process the data. Here correlation and descriptive statistics are used to analyze the data.

2.6.1 Panel Data Analysis

The information for this study was collected from 12 listed companies in Sri Lanka between the period 2015 and 2019. Since the data contains information on cross-sectional units observed across time, this study also adopts a panel data estimation technique. Panel data analysis is a statistical approach for analyzing a given sample of people across time, offering several observations on each person in the sample. It is a data analysis with two dimensions: cross-sectional and longitudinal.

Panel data may be defined as "longitudinal data collected at different points in time." Surveys of consumers and organizations' data at different points of time are examples of panel data. Panel data are usually tested, by using fixed effect and random effect models of regression analysis.

2.6.1.1 Fixed Effect

It is a statistical model specifically applied in regression and ANOVA with the assumption that the independent variable is fixed. Simplification of the outcomes applies to the similar values of the independent variable in the population or other studies. It checks the relationship among explanatory and explained variables within an entity. For analysis of the net effect of the independent variable, time-invariant characteristics are removed by the fixed-effect model. In a fixed effect case, reduced standard errors will most likely be produced.

2.6.1.2 Random Affect

Different statistical models like regression or ANOVA accept random independent variables. This model is usually applied in the situation(s) where the levels of the independent variable

levels are considered a small subset of the possible values which one wish to simplify. In the random effect model, the random distinction among the entities is supposed. Further, it is expected that this dissimilarity is uncorrelated with the independent variable. Time invariant variables like gender are included in the random-effect model. Both of the above tests are applied initially. Whether to focus the results of fixed or random effect it is a prerequisite to use Hausman's test. If the P-value of the Hausman test is less than 0.05 then we will consider Fixed effect otherwise Random effect.

2.6.1.3 Housman Test

The Durbin–Wu–Hausman test is an econometric statistical hypothesis test named after James Durbin, De-Min Wu, and Jerry A. Hausman. The test compares the consistency of an estimate against another, less efficient estimator that is previously known to be consistent.

2.6.2 Unit root test

The unit root test has grown in popularity in recent years for determining whether or not data are stationary. If the time series is not stationary, the result has no economic significance. Non-stationary data will render the conclusion meaningless or incorrect, posing a research difficulty. Before conducting our linear correlation test, we must check for Unit root and ensure that we are working with stationary data. When working with time-series data, it is critical to look for the presence of a unit root in the data series. Hypotheses are as follows:

H0 = variable is non- stationary

H1 = Variable is stationary

There are numerous unit root tests available and the researcher selected the Harris Tzavalis test. Harris-Tzavalis test was applied on all dependent and independent variables in this research to test the stationary of the data series. The null hypothesis for this model is that the series is non-stationary. According to the results show P>0.05, it means series is non-stationary.

Looking at the data, it appears that the p-values for all of the variables included in our study are more than the critical threshold (5 per cent). As a result, we cannot reject the null hypothesis. It denotes that the variables are non-stationary. It implies that need to take the first difference to those variables before running the model.

2.6.3 Univariate' Analysis

Univariate analysis is the most basic type of data analysis. Because "uni" means "one," the data has only one variable. It doesn't deal with causes or relationships (unlike regression) and its major purpose is to describe; it takes data, summarizes that data and finds designs within the data (Stephanie, 2018). Every variable in the research model was analysed using the Frequency and Descriptive Statistical method (Mean Standard deviation, maximum and minimum statistics).

In addition to frequency distribution, Univariate Analysis commonly involves reporting measures of central tendency (location) which is an average of a set of measurements and interpret as (arithmetic) mean, median, mode or another measure of location depending on the context (Park, 2015).

Mean

The most important measure of central tendency is by the arithmetic mean usually denoted by x the arithmetic mean.

Standard Deviation

The standard deviation is an absolute measure of dispersion and it is used to indicate dispersion of variables. The most often used measurements for gauging the level and variety of variables are the arithmetic mean and standard deviation.

2.6.4 Trend Analysis

Trend Analysis is a statistical approach that analyzes previous patterns to predict future movements of a particular variable. In other words, it is a way of predicting future behaviours by analyzing past ones.

2.6.5 Bivariate Analysis

One of the most basic types of quantitative analysis is bivariate analysis. It entails analyzing the two variables to determine the empirical link between them. This analysis is made to determine,

• Whether there is any association between the two variables

• If so, ascertain the strength of the relationship

• Whether one variable of primary interest can be predicted from the observations on the other variable,

This research model contained two main variables, "Accounting Information System Quality" and "Financial Performance". Therefore, in this research, the bivariate analysis is made to determine, whether there is an "Impact of Operating Cycle" on the "Firm's Profitability" of the material sector companies of Sri Lanka.

2.6.6 Diagnostic Test

To check the adequacy of a chosen model, researchers can apply a range of diagnostic tests, each of which is designed to detect a particular form of model inadequacy the correct specification of the model. The purpose of and diagnostic test is to control accurately control the probability of wrongly rejecting the null hypothesis, while at the same time ensuring a high probability of correctly rejecting the null hypothesis. Therefore, various diagnostic hypotheses are available. Such as,

• Normality Test
• Heteroscedasticity Test
• Multicollinearity Test
• Test for Autocorrelation

2.6.6.1 Test of Normality

Normality test was applied to determine whether a data is well-modelled by a normal distribution or not, and to compute how likely an underlying random variable is to be normally distributed the residuals are normally distributed, the histogram should be Bell-shaped, and the Jarque-Bera statistic should be null. The hypothesis of normality distribution is:

H0: Residuals are normal distribution

H1: Residuals are not normal distribution

2.6.6.2 Heteroscedasticity Test

The criterion of the traditional linear regression model requires homoscedasticity between variables. This implies that the variance should be consistent and consistent. The variance of residuals should be constant; otherwise, the criterion for the existence of regression, homoscedasticity, is violated, and the data is heteroscedastic (Brook, 2008). Breusch-Pagan-Godfrey tests were used to check for this.

H0: There is a homoscedastic error term

H1: There is a heteroscedasticity error term

2.6.6.3 Multicollinearity Test

Multicollinearity indicates a linear relationship between explanatory variables which may cause the regression model biased (Gujarati, 2004). If an independent variable is an exact linear combination of the other independent variables, then we say the model suffers from perfect collinearity, and it cannot be estimated by OLS (Brook, 2008). There is overlap or sharing of predictive power when independent variables are multicollinear. This might result in a paradoxical outcome in which the regression model fits the data well yet none of the explanatory factors (individually) has a meaningful impact on predicting the dependent variable (Gujarati, 2004).

2.6.6.4 Test for Autocorrelation

He tests for autocorrelation tested from the number of researches such as Kasman et al. (2011), Muneer (2011), and Tai (2005) found that time-series data could have a high probability of the existence of autocorrelation problem in the residual. The null hypothesis (H0) will be rejected if the autocorrelation. Hypotheses as follows,

 H0: There is no autocorrelation error

 H1: There is an autocorrelation error

2.6.7 Multivariate Analysis

Any statistical approach used to analyze data resulting from more than one variable is referred to as multivariate data analysis. This effectively simulates reality, in which each circumstance, product, or choice involves more than one variable.

2.6.7.1 Multiple Regression Analysis

Data analysis mathematical technique involving more than one form of calculation or observation. In this study, regression analysis was used to assess the functional relationship between the independent variable and the dependent variable. It has two key aspects: the strength of the relationship and the relationship's statistical significance.

Multiple regression analysis is utilized in this study to offer a pattern of association between a collection of predictors and the outcome component (Firm's Profitability). By constructing a

multiple regression equation, regression analysis may also be used to predict the values of a dependent variable given the values of one or more independent variables.

The researcher has obtained balanced panel data refers to the fact that all the firms have data for all years. Fixed effects or random-effects models are commonly used to estimate panel data models. The individual-specific impact in the fixed effects model is a random variable that can be associated with the explanatory factors. The random-effects model is used because, unlike the fixed effects model, the individual specific impact is a random variable that is unrelated to the Explanatory variables in the model. The Hausman test may be used to determine which of these models is most suited. The panel regression model is given below.

The regression equation was of the form;

$$ROA_{it} = \beta 0 + \beta 1 IHP_{it} + \beta 2 RCP_{it} + \varepsilon_{it}$$

Where:

ROA_{it} = Return on Assets $\qquad i$ = Firm $\qquad t$= Time

$\beta 0$ = Intercept of formula

$\beta 1, \beta 2$ = Slope Coefficient

IHP_{it} = Inventory Holding Period

RCP_{it} = Receivable Collection Period

ε_{it} = Error Term

2.7. Hypothesis Testing

One of the most essential components of decision theory is the testing of hypotheses. A hypothesis is a prediction of the relationship between two or more variables. The hypotheses might be null hypotheses or alternative hypotheses, and they serve as guides for the study to carry out its tasks. The formulation of the hypothesis shows the assumptions about how the independent variables and the dependent variable in this study are related. In this research, hypothesis testing is done by forming the alternative hypothesis (H1). The hypotheses of this study are based on the propositions that financial leverage is directly affecting the operating leverage of the listed companies in Sri Lanka.

H0:   There is a significant relationship between Inventory Holding Period and Firm's Profitability

H2:   There is a significant relationship between the Receivable Collection Period and the Firm's Profitability

To evaluate the truth of a hypothesis, conduct a hypotheses test. The output of each hypotheses test has a sig: value (also known as a p-value) which measures the probability of such results occurring by random chance. When the p-value is large (i.e. greater than 5%), as a result of accepting the alternative hypotheses. on the other hand, a small p-value (i.e. less than 5%) accept the null hypotheses.

Therefore, this can be symbolically presented as follows:

If p-value < 0.05 then, reject H0

If p-value > 0.05 then, accept H0

3. Results

3.1. Data Analysis

Univariate and multivariate analyses were used to analyse the data collected from a secondary source to identify the impact of the operating cycle on the firm's profitability of material sector companies in Sri Lanka.

3.1.1. Univariate Analysis

The Univariate analysis has been done for both dependent and independent variables to summarize the data and find out the pattern of the data. The statistical package of STATA was used for this analysis. This includes descriptive analysis such as minimum, the maximum, mean and standard deviation for each variable separately for the sector for the five years from 2016-2020.

3.1.1.1. Descriptive Analysis for Independent Variables

The descriptive analysis has been performed to find out the temporal properties of the data. Table 3.2 displays descriptive statistics of the dependent variable- Return on Assets (ROA) and

independent variables such as Inventory Holding Period (IHP) and Receivable Collection Period (RCP).

Table 3.2 Descriptive Statistics of Independent Variables

Variable	Observations	Mean	Std.Dev.	Min	Max
IHP	60	74.16667	17.35391	42	116
RCP	60	64.83333	20.16135	32	108

(Source: Survey Data)

Table 3.2 displays observation, minimum, maximum, mean and standard deviation for all the Independent variables. There are two independent variables used by the researcher for this study. As per Table 3.2, maximum and minimum values of the Inventory Holding Period (IHP) are respectively 116 days and 42 days. The average Inventory Holding Period (IHP) has a standard deviation of 17.35391 days. It reveals that the presence of the Inventory Holding Period (IHP) vary around the mean 74.16667 days.
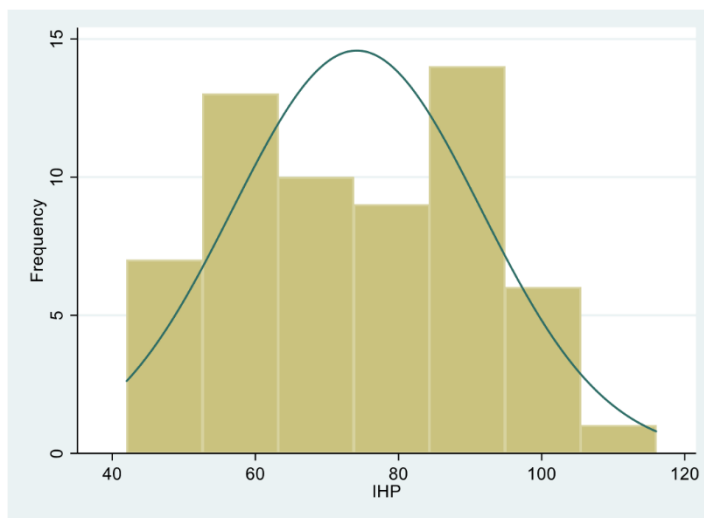
Figure 5.1 Normality Distribution of IHP

According to Table 3.2, maximum and minimum values of RCP are respectively 108 days and 32 days. This RCP has a standard deviation of 20.16135 days. It reveals that the presence of RCP varies around the mean 64.83333 days.
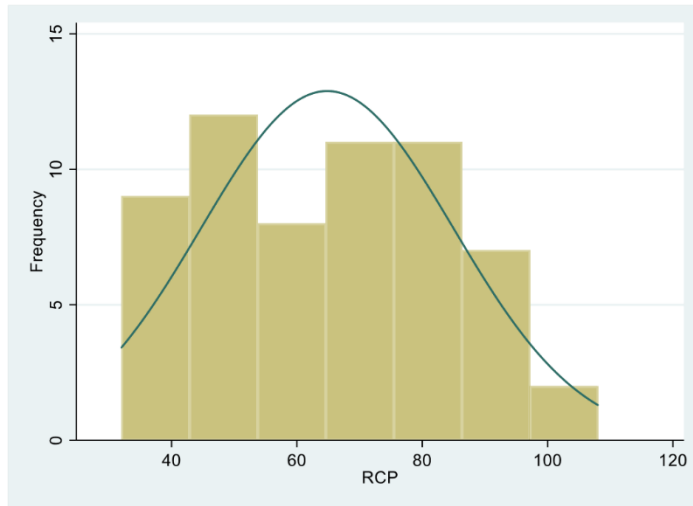
Figure 3.2 Normality Distribution of RCP

Table 3.3 Descriptive Statistics of Independent Variables based on the Year

Year		IHP	RCP
2016	Mean	72.83333	66.91667
	Std.Dev.	15.48509	21.90665
2017	Mean	79.75	67.25
	Std.Dev.	17.53503	24.01562
2018	Mean	75.58333	67.5
	Std.Dev.	18.6862	19.44923
2019	Mean	73.75	62.66667
	Std.Dev.	14.86989	17.94098
2020	Mean	68.91667	59.83333
	Std.Dev.	20.72091	19.329123
Total	Mean	74.16667	64.83333
	Std.Dev.	17.35391	20.16135

(Source: survey data)

According to table 3.3, IHP 2016 shows the highest mean value of 79.75 and the lowest mean value of 68.91667 recorded in 2020. RCP 2018 shows the highest mean value of 67.5 and the lowest mean value of 59.83333 recorded in 2020. In IHP, the highest standard deviation shows

in 2020 of 20.72091. The lowest standard deviation of IHP shows in 2019 of 14.86989. In RCP, the highest standard deviation shows in 2017 of 24.01562. The lowest standard deviation of RCP shows in 2019 of 17.94098. The highest mean of ROA 0.797138 has been recorded in 2019. While the lowest was 0.0595163 in 2018 (According to table 3.4). The highest Inventory Holding Period (IHP) is shown as 79.75 days and the lowest 68.91667 days. When it is considered the RCP, the maximum is 67.5 days in 2018. The minimum recorded as 59.83333 days in 2020.

3.1.1.2. Descriptive Analysis for dependent Variable

In this section, descriptive statistics are given to determine the distribution, central tendency and dispersion of the variable. Return on Assets (ROA) has been selected for the study representing the dependent variable firm's profitability in the material sector.

Table 3.4 Descriptive Statistics of dependent Variables

Variable	Observations	Mean	Std.Dev.	Min	Max
ROA	60	0.0922698	0.0989137	-0.1631	0.31717

Table 3.4 displays observation, minimum, maximum, mean and standard deviation for all the dependent variables. There is an independent variable used by the researcher for this study. As per Table 3.4, maximum and minimum values of Return on Assets (ROA) are respectively

Figure 3.3 Normality Distribution of Return on Assets

0.31717 and -0.1631. The average Return on Assets (ROA) has a standard deviation of 0.0989137. It reveals that the presence of Return on Assets (ROA) vary around the mean of 0.0922698.

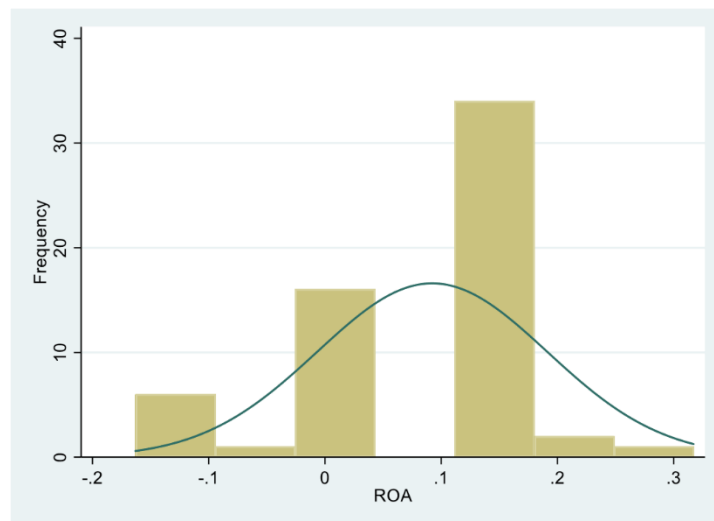*Table 3.5 Descriptive Statistics of Dependent Variable (ROA) based on the Year*

	2016	2017	2018	2019	2020
Mean	0.1143387	0.1335503	0.0595163	0.797138	0.0742297
Std.Dev.	0.1055463	0.0619643	0.1102532	0.1144142	0.0903536

(Source: survey data)

This study analyses Return on Assets (ROA) observations representing material sector companies for the years starting from 2016 to 2020. In the case of material sector companies as a whole, the highest typical value of ROA is recorded as 0.797138 in 2019. Its standard deviation is 0.1144142 the minimum ROA for the period concerned is 0.0595163 and it is recorded in 20178.

3.1.2. Unit Root Test

Unit root tests are tests for stationary in a time series. A time series has stationary if a shift in time doesn't cause a change in the shape of the distribution; unit-roots are one cause for non-stationary. Many tests exist namely the Augmented Dickey-Fuller (ADF) test, Schmidt-Phillips Test and Phillips-Peron (PP) Test. This research use only LeviLin-Chu. The following hypothesis can be developed to conduct the unit root test.

H0: Series is Non-Stationary
H1: Series is Stationary

However those all test statistics are less than the critical value. If p-value < 0.05, it means null hypothesis rejected and alternative hypothesis are accepted. Levin-Lin-Chu test for unit root is conducted to check the stationary. According to the Levin-Lin-Chu test, the results are shown in Table 5.5.

Table 5.6 Summary of Unit-root Test

Variable	Statistic	P-value	Rejection Rule	Result

IHP	-7.7804	0.0000	If p value <0.05 reject H_0	IHP is stationary
RCP	-20.3827	0.0000	If p value <0.05 reject H_0	RCP is stationary
ROA	-4.0e+02	0.0000	If p value <0.05 reject H_0	ROA is stationary

(Source: survey data)

As per table 5.6, P-value is 0.000 for all variables. Therefore, it concluded that Return on Assets, Inventory Holding Period and Receivable Collection Period are stationary variables.

3.1.3. Multivariate Analysis

It involves the analysis of dependent and independent variables to determine their relationship and impact of them. In this study, correlation and regression analysis was used under multivariate analysis to measure the relationship between dependent and independent variables.

3.1.4. Trend Analysis

3.1.4.1. Trend of Inventory Holding Period

This section discusses the trend of the data distribution for all variables. The trend of the variables such as Board of Size, Board committees, Board Meeting ROA is discussed by using the value in each year.
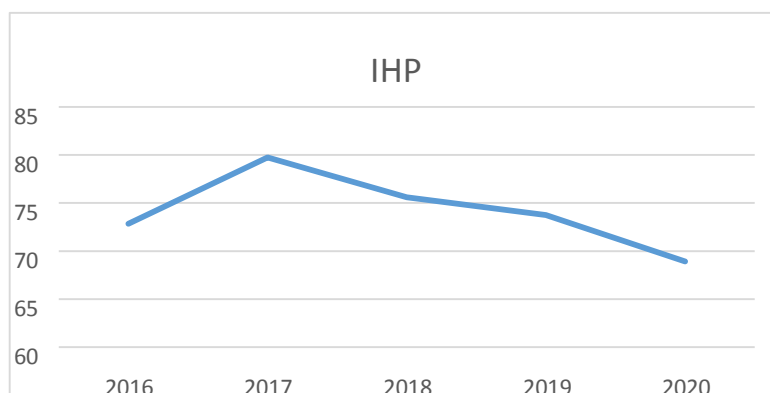
Figure 5.4 Trend of IHP

3.1.4.2. Trend of Receivable Collection Period
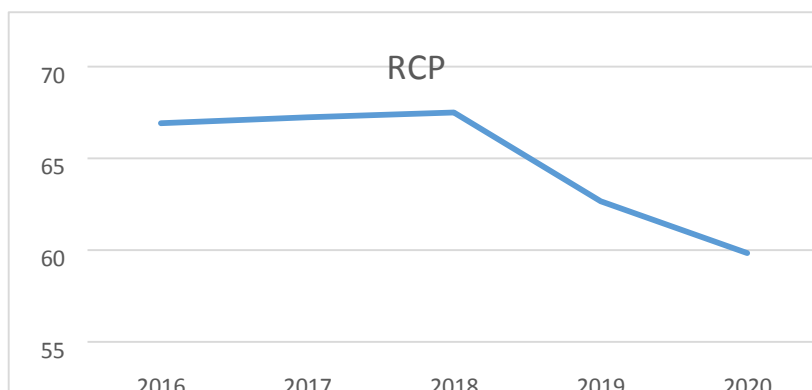
Figure 3.5 Trend of RCP

Indicates the difference occur through the past five year period. It shows continuously low down and suddenly it got the high amount and again comes down. Once again I arise and low down.

3.1.4.3. Trend of Return on Assets
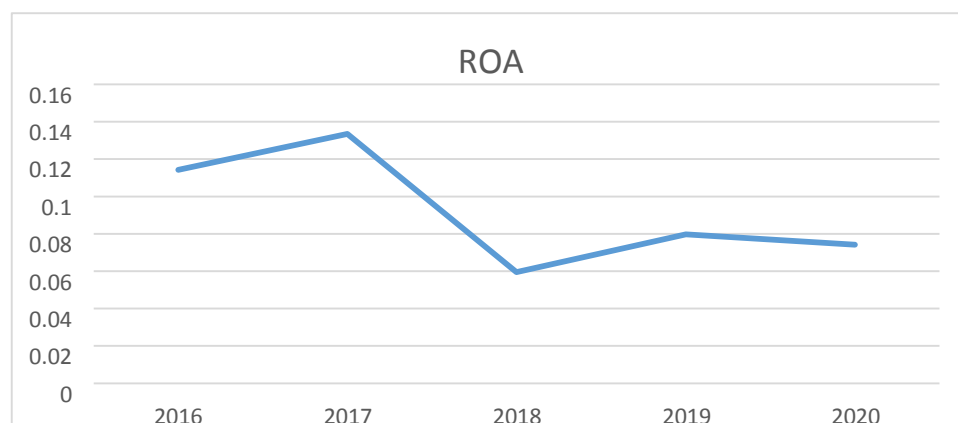
Figure 3.6 Trend of Return on Assets

Figure 3.6 shows the ROA over the five years 2016-2020. The 2016 period shows the highest rates and then declines until 2016 - 2017.

3.1.5. Correlation Analysis

To analyse the association between the dependent and independent variables, a correlation analysis is undertaken and the results are presented below.

Table 3.7 Correlation Analysis

	ROA	IHP	RCP
ROA	1.0000		
	60		
	0.1565	1.0000	
	0.2323		
	60	60	
RCP	-0.4445	0.3283	1.0000
	0.0004	0.0104	
	60	60	60

(Source: survey data)

Table 3.7 displays that there is a statistically significant and negative relationship between ROA with Receivable Collection Period (RCP) at the (p = 0.0004). The correlation coefficient is -0.4445. This implies that. Higher the Board Size will be increased ROA. This table shows that there is no statistically insignificant relationship between financial sector ROA and Inventory Holding Period (IHP) at the level of significance due to the p-value being greater than 0.05. (p=0.2323). There is a positive correlation value is 0.1565.

3.1.6. Diagnostic Test

3.1.6.1. Heteroskedasticity Test

Following the general null hypothesis of Breusch-Pagan tests, the researcher develops the following hypothesis to check the presence of heteroscedasticity.

H0: There is homoscedasticity

H1: There is unrestricted heteroskedasticity

Table 3.8 White's test for Heteroskedasticity

Chi2	8.05
Prob > chi2	0.1536

(Source: survey data)

3.1.6.2. Autocorrelation

H0: There is no autocorrelation

H1: There is autocorrelation

As per the P-value is greater than 0.05. Therefore, there is no sufficient evidence to reject the null hypothesis. It means there are no autocorrelation errors. Therefore, can be concluded that the covariance between residuals is zero, the data is normal and absence of an autocorrelation problem.

3.1.6.3. Multicollinearity

When the predictors have a perfect linear connection, the estimates for a regression model cannot be individually generated. The word collinearity refers to the fact that two variables are almost perfect linear combinations of one another. When more than two variables are involved, the word Multicollinearity is used, however, the two concepts are frequently used interchangeably.

Table 3.9 Results of Multicollinearity Test

Variable	VIF	I/VIF
IHP	1.12	0.892199
RCP	1.12	0.892199
Mean VIF	1.12	

(Source: survey data)

Based on the variance factors (VIF) computation all models have no problem with Multicollinearity. The VIF for all independent variables is less than 9. According to Gujarati (2004), the variables are considered as highly collinear if the VIF exceed 9, consequently, all have not been highly collinear based on this rule of thumb. Therefore, the model of this study is free from the Multicollinearity problem.

3.1.6.4. Normality

Table 3.10 Results of Normality Test

Variable	Pr(Skewness)	Pr(Kurtosis)	Adj chi2	Prob>chi2
ROA	0.0017	0.0981	10.48	0.0053
IHP	0.9199	0.0323	4.62	0.0991
RCP	0.5494	0.0014	9.02	0.0110
TOTAL	0.8659	0.0490	4.08	0.133

Table 5.10, indicates Jarque-Bera Statistic of all variables are 21.71 and p-value of 0.0000 < 0.05. Therefore, there is enough evidence to reject the null hypothesis and conclude that the residuals are not normal.

3.1.7. Multiple Regression Analysis

3.1.7.1. Fixed Effects Model (FEM)

FEM was performed for the panel data of 60 observations (12 companies for 5 years from 2016-2020). The fixed-effects model analyses the impact of variables that vary across time and assume that those time-invariant factors are unique to the entity and should not be correlated with other entity factors.

Table 3.11 Results of FEM

ROA`	Coef.	Std.Err.	t	P> |t|	(95% conf. Interval)	
IHP	.0022878	.0010485	2.18	0.034	.0001773	.0043984
RCP	-.0027416	.0009294	-2.95	0.005	-.0046124	-.0008708
Cons	.1003349	.0941982	1.07	0.292	-.0892763	.2899461

	within	between	overall
R-squared	0.2111	0.5718	0.2970

(Source: survey data)

Table 3.11 displays the output of the FEM for ROA. The output is significant at 95% confidence level and explains 29.7% (.2970) variation of the explanatory variables.

3.1.7.2. Random Effects Model (REM)

The random-effects model is justified because, unlike the fixed effects model, variation between entities is believed to be random and uncorrelated with the predictor or independent variables included in the model. In panel data analysis, if the differences across the firm have some influences on the response variable, then need to go for the REM.

Table 3.12 Results of REM

ROA`	Coef.	Std.Err.	t	P> |t|	(95% conf. Interval)	
IHP	0.0019323	.0010485	2.18	0.034	.0001773	.0043984
RCP	-0.0027267	.0009294	-2.95	0.005	-.0046124	-.0008708
_Cons	.1003349	.0941982	1.07	0.292	-.0892763	.2899461

	within	between	overall
R-squared	0.2096	0.5897	0.3001

(Source: survey data)

The model summaries explain 30% (0.3001) variation in the explanatory variable at 95% confidence level. The output further explains the positive and significant coefficients for Inventory Holding Period (IHP), Receivable Collection Period (RCP) with ROA proportion while the negative and significant coefficient for RCP with ROA.

3.1.7.3. Hausman Test

For the question of whether to use FEM or REM, Hausman (1978) proposed a test which is called the Hausman test. To determine which of the two models should be preferred (i.e., whether the FEM or the REM), the following hypothesis was investigated.

H0: Random Effect Model

H1: Fixed Effect Mode

Table 3.13 Results of the Hausman Test for Correlated Random Effects

Test Summary	Chi-Sq. Statistic	Chi-Sq.d.f.	Prob.
Cross section random-ROA	0.20	2	0.9068

As shown in Table 3.13, it can be observed P = 0.9068 (P>0.05). Therefore, it is failed to reject the null hypothesis and concluded that the preferred model for ROA proportion is the REM. This implies that the REM is more appropriate than the FEM and gives more comfort to this model.

3.1.7.4. Summary Results for Random Effect Model (Multiple Regression)

Table 3.14 Summary Results for Random Effects Model

ROA		
Variable	Coefficient	Prob.
Constant	.1257372	0.017
IHP	.0019323	0.004
RCP	-.0027267	0.000
R^2	**0.3001**	

$ROA_{it} = \mathbf{0} + \mathbf{1}IHP_{it} + \boldsymbol{\beta}\mathbf{2}RCP_{it} + e_{it}$

ROA = 0.1257372+0.0019323 (*IHPit*) - .0027267(*RCPit*)

The above model summary table indicates R square =30.01% that indicate the explanatory power of the independent variables to the dependent variables. It means 30.01% variation of the dependent variable (ROA) is explained by the independent variable (Operating Cycle) in the sector through the selected two variables. The adjusted R square represents when another variable is added to the model, how far it will have explained the dependent variable. The remaining 69.99 % is influenced by factors other than operating cycle effects.

In the model summary $\beta0 = 0.1257$ that means when there is capital assets management the value of ROA proportion is 12.5%.

The β coefficient values indicate the individual contribution of each predictor to the model. As per the results mentioned in table 3.14 with the coefficient of 0.0019 in the Inventory Holding Period (IHP), it can be stated that one per cent increase in IHP, will lead to an increase in ROA by 0.19%.
The β coefficient for RCP is -0.0027. This result explains that if one per cent of RCP decreases, ROA will decrease by 0.2%.

3.2. Testing Hypothesis

For this study, the following hypothesis was tested to identify the impact of the operating cycle on the firm's profitability of material sector companies in Sri Lanka. To examine the combined impact of the operating cycle on a firm's profitability, multiple regression analysis was used.

Hypothesis 1

H_0: There is no significant impact of the Inventory Holding Period on the Return on Assets in material sector companies.

H_1: There is a significant impact of the Inventory Holding Period on the Return on Assets in material sector companies.

Inventory Holding Period p-value is 0.004. This value is less than 0.05 ($p<0.05$). There is enough evidence to reject the null hypothesis. Therefore, the alternative hypothesis is accepted.

And also coefficient is 0.0019323. It is concluded that there is a significant positive impact of the Inventory Holding Period on the Return on Assets in material sector companies in Sri Lanka.

Hypothesis 2

H_0: There is no significant impact of the Receivable turnover period on the Return on Assets in material sector companies.

H_1: There is a significant impact of the Receivable turnover period on the Return on Assets in material sector companies.

The receivable turnover period p-value is 0.0000. This value is less than 0.05 ($p<0.05$). There is enough evidence to reject the null hypothesis. Therefore, the alternative hypothesis is accepted. And also coefficient is -0.0027267. It is concluded that there is a significant positive impact of the Receivable turnover period on the Return on Assets in material sector companies in Sri Lanka.

4. Discussion

The discussion has intended to incorporate the research information in keeping with the data collected from Material Sector Companies in Sri Lanka. Further, this chapter discussed the findings relating to the data collected to investigate the relationship between Operating cycle variables and return on assets in Sri Lanka using yearly data for the period from 2015 to December 2019. According to the study try to identify the relationship of the Operating Cycle on Firms Profitability of Material Sector Companies in Sri Lanka.

4.1. Discussion on Descriptive Analysis

This study examined the profitability of companies and the operational cyclical variable of the company's annual financial statement in the Sri Lanka material sector. Under detailed analysis, it covers independent variables and dependent variables.

4.1.1. Descriptive Statistics for Independent Variable

The independent variable comprises of two Operating Cycles, they are Inventory Holding Period and Receivable Collection Period for the study. According to the data collected, the mean of Inventory Holding Period shows around 74.166 with a standard deviation of 17.353.

Also Receivable Collection Period shows 64.833 mean value with 20.161 deviations. According to Wang and Chunlei, (2014) Inventory Holding Period shows 0.203 and standard deviation amounted 0.350 and the Receivable Collection Period shows 0.075 and the standard deviation amounted 0.089.

4.1.2. Descriptive Statistics for Dependent Variable Financial Performance

The dependent variable is financial performance represented by ROA of the material sector. The ROA is comprised of the industry ROA of material sector companies in Sri Lanka. As per the analyzed data, the ROA for the material sector is mean 0.0922 and it is standard deviation 0.0989.

4.2. Discussion on Multiple Regression Analysis

According to the results of the Hausman test, the REM was applied for the multiple regression analysis. This is discussed by using the results of REM to identify the impact of the Operating Cycle on Firms Profitability of Material Sector Companies in Sri Lanka. Further, the correlation analysis can be useful to identify the relationship between each selected Operating Cycle and Firms Profitability of Material Sector Companies considering those independent variables separately from the dependent variable. The result is inconsistent with the findings of Qian, (2009) and Dechow, (1994) who established that the Operating Cycle had a positive impact on return on Assets. The correlation between the return on assets and all the Operating Cycle Variable are positive. The result of the research was consistent with the studies of Yanchao and Yu Ji (2014) established a significant positive relationship between the Operating Cycle and the firm's profitability of enterprises. Byers and Groth, (1997) determined a positive Operating cycle variable and performance.

4.2.1. Discussion on Relationship between Operating Cycle on Firms Profitability

Every variable in the research model was analyzed by using correlation to find the relationship between each variable. According to the research objective, this section discusses the relationship between the Operating Cycle on Firms Profitability of Material Sector of Companies in Sri Lanka at least five years.

4.2.2. Discussion on Relationship between Inventory Holding Period and Return on Assets

According to the correlation study, there is a significant connection of 0.1565 and an insignificant correlation of 0.2323 between the Inventory Holding Period, which is more than 0.05. As a result, it is possible to conclude that there is a negligible weak positive link between Inventory Holding Period and return on assets in the material industry.

Raheem and Qaiser, (2013) studied listed manufacturing companies and used secondary data from 2007 to 2011. Profitability measured by ROA. The study showed that Inventory Holding Period is positive and significantly affects the profitability of listed manufacturing companies. Based on this finding, the study concludes that Inventory Holding Period plays a key role in determining the profitability of listed manufacturing companies, and a higher level of Inventory Holding Period increase the profitability of listed manufacturing companies in Pakistan. A.K Sharma and Satish Kumar, (2010). Using secondary data (2000-2008) there is a positive relationship between Inventory Holding Period on Return on Assets.

4.2.3. Discussion on Relationship between Receivable Collection Period and Return on Assets

According to the correlation analysis, it shows that there is a significant moderate negative relationship between return on assets and receivable collection period in the material sector. The reason that correlation coefficient for the receivable collection period and material sector ROA significant value of 0.004 it is less than 0.05 and correlation coefficient value is -0.4445 in the sector. As a result, it is possible to conclude that in the material sector, there is a large somewhat negative link between return on assets and receivable collection duration. Tharshinga, (2009) examined the Cash Conversion Cycle on Profitability in Sri Lankan plantation enterprises. Data was collected from annual financial reports for the period of 2008 to 2012. He measured the profitability by ROA and ROE. Results showed a strong negative relationship between profitability and receivable collection period because higher receivable collection period affects to decrease the profitability for the main source of income.

4.2.4. Impact of Operating Cycle on Firms Profitability of Material Sector Companies in Sri Lanka.

As the result of multiple regression analysis indicates that the above model summary table indicates R square 30.01% that indicate the explanatory power of the independent variables to the dependent variables. The adjusted R square represents when another variable is added to

the model, how far it will explain the dependent variable. The remaining 69.99% is influenced by factors other than independent variables. Wang andChunlei (2014) Inflation, Operating Cycle and Cash Holding. Data was collected from annual financial reports for the period of 1998 to 2009. Results showed the significant impact between Operating Cycle and Cash Holding.

4.2.5. Impact of Inventory Holding Period on the Return on Assets

The β coefficient of the Inventory holding period is 0.001932 it is significant (p= 0.004) at 0.05 level of significance towards the ROA in the material sector company. It indicates that inventory holding duration and ROA have a considerable favourable influence. This result confirms other studies, Tharshinga Murugesu (2009) found that the Inventory holding period has positive and significant effects on the return on assets and return on equity. Furthermore, Rathika.S &Nimalathasan.S (2013) confirmed a positive impact Determinants of the Inventory holding period. Samuel Manyo (2017) research, revealed that the performance of Nigerian firms in the country is significantly positively affected by the inventory holding period has a positive return on assets.

4.2.6. Impact of Receivable Collection Period on the Return on Assets

The β coefficient of Receivable Collection Period is -0.002726 is significant (p= 0.000) at 0.05 level of significance towards the ROA in the material sector company. It means that there is a significant impact on the Receivable Collection Period and ROA. Receivable Collections are the variable of working capital management which consider under this study to analyze the impact on firm performance. Results obtained regarding Receivable Collection and firm performance can confirm by the findings the result is the same as the findings of M.Tahir & M.Bint (2016) which describe Receivable Collection established for the purpose over the firm performance. Raheem Anser and Quaisar Ali (2013) found a positive effect of the Receivable Collection Period.

5. Conclusions

This study examines the Operating Cycle, variables, and Return on Assets of Material Sector Companies in Sri Lanka. For this research 12 listed companies used annual data for the period January 2016 to December 2020. The link and influence of Operating Cycle factors and Return

on Assets of Material Sector Companies in Sri Lanka were determined using correlation and multiple regression analysis. Material Sector Companies is played a very important role in the Sri Lankan economy. When considering Firm Profitability of Material Sector Companies there are several factors which are the impact on it. Conclusions are derived by using STATA software.

Objective 01

The first objective of the study was to identify the relationship between Operating Cycle, variables (Inventory holding period and receivable collection Period) and Firms Profitability in the material sector companies. It has been concluded that the receivable collection Period has no relationship effect on the return on assets of companies in the material sector companies and that the Inventory holding period has a positive relationship with ROA.

Objective 02

The second objective is to identify the impact of the Operating Cycle on the Profitability of Material Sector companies in Sri Lanka. The inventory holding period and receivable collection Period have a positive impact on return on assets.

6. Recommendation

The findings of the research recommend the following recommendations in Sri Lanka to enhance the firm's profitability of material sector companies. The study found that the Operating Cycle variable and Firms Profitability has a positive impact. It has been concluded that an increase in the Operating Cycle variable can improve Firms Profitability to make better decisions for greater performance in the material sector company.

There are no published studies that have examined the issue of the impact of the Operating Cycle on Firms Profitability of Material Sector Companies in Sri Lanka. This study can be used as a better understanding of the Operating Cycle on Firms Profitability of Material Sector Companies in Sri Lanka. The inventory holding period and receivable collection Period all contribute to the return on assets in the Material Sector Companies. Investors can get the highest return if they know the behavior of these factors. Policymakers need to be well-versed in this field to achieve better performance as a return on assets. Otherwise, they cannot get a

better return on their investment. If so, investors would like to know the return on assets in the previous year before they decide to invest.

Based on the findings, Operating Cycle has a significant impact on the Firm's Profitability in this sector. Therefore, Operating Cycle volatility should affect the earnings position of this sector. Financial institutions need strategies for their Operating Cycle variable and financial activities. The study recommends that financial institutions be aware of changes in the Operating Cycle variable to improve financial performance and maintain the stability of Firms Profitability.

6.2 Limitations

There were limitations exist in this research study. Only secondary data sources are used and collect data from annual reports which are only available on the relative websites. The study does not consider qualitative information.

The main limitation of this study is the lack of observation of the sample. Furthermore, this research considers only two organizational control variables. There are many other economic factors (GDP, growth rate, etc.) that affect the return on assets in the material sector company.

This study made use of return on assets as a measure of financial performance. There are other measures of financial performance including net interest margin (NIM) and return on equity (ROE). This limitation may be due to the sample size of the study. Unfortunately, the number of samples we can extract is limited to five years. More data than this period was an incomplete set, meanwhile, there was no more data than this time frame.

6.2 Suggestion for Future Research

Future researchers can take several actions to improve this research further, by overcoming the study limitations. Hence, the following suggestions are advised for future researchers for their study directions.

Expand the study by drawing a larger sample from the CSE so that the findings will be further confirmed. Research should be carried out in sector vice to determine whether general results apply in the same manner for every sector in the CSE. Also, the research could be done for government sector organizations as well.

In addition, future studies should examine specific factors as to why institutions are not using various steps to recover the asset. Future research will use daily data series to get more accurate

results from empirical studies. Also, this research covers five years 2015-2019. In future research, the time limit can be extended to cover a longer period and to obtain definite results. Some researchers have found that using daily data for relevant empirical studies is more accurate.

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Appendix 01

Data considered in study obtain to results

		%	Days	
Company	Year	ROA	IHP	RCP
Samson International Plc	2015	0.041759	56	74
Samson International Plc	2016	0.156343	52	45
Samson International Plc	2017	-0.141759	42	66
Samson International Plc	2018	0.128717	48	43
Samson International Plc	2019	0.120922	46	54
Haycarb Plc	2015	0.15866	42	32
Haycarb Plc	2016	0.1631	51	35
Haycarb Plc	2017	0.041759	58	48
Haycarb Plc	2018	0.156343	67	39
Haycarb Plc	2019	0.041759	62	41
Laughf Gas Plc	2015	0.128717	57	43
Laughf Gas Plc	2016	0.220922	87	46
Laughf Gas Plc	2017	0.15866	89	41
Laughf Gas Plc	2018	0.1631	80	45
Laughf Gas Plc	2019	0.041759	63	42
Alumex Plc	2015	0.156343	73	73
Alumex Plc	2016	0.041759	99	97

Alumex Plc	2017	0.128717	95	69
Alumex Plc	2018	0.120922	94	71
Alumex Plc	2019	0.15866	116	83
Abans Plc	2015	0.1631	83	59
Abans Plc	2016	0.041759	83	72
Abans Plc	2017	0.156343	98	48
Abans Plc	2018	0.041759	95	49
Abans Plc	2019	0.128717	87	43
Central Industries Plc	2015	-0.120922	87	98
Central Industries Plc	2016	0.15866	92	96
Central Industries Plc	2017	-0.1631	88	83
Central Industries Plc	2018	0.041759	94	78
Central Industries Plc	2019	0.156343	87	65
Printcare Plc	2015	0.041759	80	79
Printcare Plc	2016	0.128717	87	70
Printcare Plc	2017	0.120922	64	84
Printcare Plc	2018	0.15866	67	55
Printcare Plc	2019	0.1631	84	46
Swadeshi Industrial Works Plc	2015	0.041759	69	92
Swadeshi Industrial Works Plc	2016	0.156343	56	84

Swadeshi Industrial Works Plc	2017	0.041759	87	85
Swadeshi Industrial Works Plc	2018	-0.138717	62	89
Swadeshi Industrial Works Plc	2019	-0.120922	54	82
Royal Ceramic Plc	2015	0.15866	98	78
Royal Ceramic Plc	2016	0.1631	94	95
Royal Ceramic Plc	2017	0.041759	89	108
Royal Ceramic Plc	2018	-0.156343	78	94
Royal Ceramic Plc	2019	0.041759	56	53
Teejay Plc	2015	0.31717	84	57
Teejay Plc	2016	0.20922	86	33
Teejay Plc	2017	0.041759	83	58
Teejay Plc	2018	0.156343	64	65
Teejay Plc	2019	0.041759	67	96
Acl Cables Plc	2015	0.128717	76	84
Acl Cables Plc	2016	0.120922	97	81
Acl Cables Plc	2017	0.15866	57	64
Acl Cables Plc	2018	0.1631	73	57
Acl Cables Plc	2019	-0.041759	46	72
MTD Walkers Plc	2015	0.156343	69	34
MTD Walkers Plc	2016	0.041759	73	53
MTD Walkers Plc	2017	0.128717	57	56

| MTD Walkers Plc | 2018 | 0.120922 | 63 | 67 |
| MTD Walkers Plc | 2019 | 0.15866 | 59 | 41 |

Appendix 02

Output of the Data Analysis

1. Descriptive Statistics

```
. summarize roa ihp rcp

    Variable |        Obs        Mean    Std. Dev.        Min        Max
-------------+--------------------------------------------------------
         roa |         60    .0922698    .0989137      -.1631     .31717
         ihp |         60    74.16667    17.35391          42        116
         rcp |         60    64.83333    20.16135          32        108


           Summary statistics: mean, sd
             by categories of: year (Year)

        year |        roa         ihp         rcp
-------------+--------------------------------
        2015 |   .1143387    72.83333    66.91667
             |   .1055463    15.48509    21.90665
-------------+--------------------------------
        2016 |   .1335503       79.75       67.25
             |   .0619643    17.53503    24.01562
-------------+--------------------------------
        2017 |   .0595163    75.58333        67.5
             |   .1102532     18.6862    19.44923
-------------+--------------------------------
        2018 |   .0797138       73.75    62.66667
             |   .1144142    14.86989    17.94098
-------------+--------------------------------
        2019 |   .0742297    68.91667    59.83333
             |   .0903536    20.72091    19.29123
-------------+--------------------------------
       Total |   .0922698    74.16667    64.83333
             |   .0989137    17.35391    20.16135
-------------+--------------------------------
```

```
Summary statistics: mean, sd, max, min
    by categories of: year (Year)
```

year	ihp	rcp
2015	72.83333	66.91667
	15.48509	21.90665
	98	98
	42	32
2016	79.75	67.25
	17.53503	24.01562
	99	97
	51	33
2017	75.58333	67.5
	18.6862	19.44923
	98	108
	42	41
2018	73.75	62.66667
	14.86989	17.94098
	95	94
	48	39
2019	68.91667	59.83333
	20.72091	19.29123
	116	96
	46	41
Total	74.16667	64.83333
	17.35391	20.16135
	116	108
	42	32

```
Summary for variables: roa
    by categories of: year (Year)
```

year	mean	sd	max	min
2015	.1143387	.1055463	.31717	-.120922
2016	.1335503	.0619643	.220922	.041759
2017	.0595163	.1102532	.15866	-.1631
2018	.0797138	.1144142	.1631	-.156343
2019	.0742297	.0903536	.1631	-.120922
Total	.0922698	.0989137	.31717	-.1631

2. Correlation Analysis

```
. pwcorr roa ihp rcp, sig obs
```

	roa	ihp	rcp
roa	1.0000		
	60		
ihp	0.1565	1.0000	
	0.2323		
	60	60	
rcp	-0.4445	0.3283	1.0000
	0.0004	0.0104	
	60	60	60

3. Unit-root test

Levin-Lin-Chu unit-root test for ROA

```
Levin-Lin-Chu unit-root test for roa
─────────────────────────────────────────────────────────────
Ho: Panels contain unit roots        Number of panels  =    12
Ha: Panels are stationary            Number of periods =     5

AR parameter: Common                 Asymptotics: N/T -> 0
Panel means:  Included
Time trend:   Included

ADF regressions: 0 lags
LR variance:     Bartlett kernel, 5.00 lags average (chosen by LLC)
─────────────────────────────────────────────────────────────
                 Statistic      p-value
─────────────────────────────────────────────────────────────
 Unadjusted t      -4.1e+02
 Adjusted t*       -4.0e+02       0.0000
─────────────────────────────────────────────────────────────
```

Levin-Lin-Chu unit-root test for IHP

```
Levin-Lin-Chu unit-root test for ihp
─────────────────────────────────────────────────────────────────────────
Ho: Panels contain unit roots          Number of panels  =      12
Ha: Panels are stationary              Number of periods =       5

AR parameter: Common                   Asymptotics: N/T -> 0
Panel means:  Included
Time trend:   Included

ADF regressions: 0 lags
LR variance:     Bartlett kernel, 5.00 lags average (chosen by LLC)
─────────────────────────────────────────────────────────────────────────
                    Statistic      p-value
─────────────────────────────────────────────────────────────────────────
 Unadjusted t        -8.1589
 Adjusted t*         -7.7804        0.0000
─────────────────────────────────────────────────────────────────────────
```

Levin-Lin-Chu unit-root test for RCP

```
Levin-Lin-Chu unit-root test for rcp
─────────────────────────────────────────────────────────────────────────
Ho: Panels contain unit roots          Number of panels  =      12
Ha: Panels are stationary              Number of periods =       5

AR parameter: Common                   Asymptotics: N/T -> 0
Panel means:  Included
Time trend:   Included

ADF regressions: 0 lags
LR variance:     Bartlett kernel, 5.00 lags average (chosen by LLC)
─────────────────────────────────────────────────────────────────────────
                    Statistic      p-value
─────────────────────────────────────────────────────────────────────────
 Unadjusted t       -21.6562
 Adjusted t*        -20.3827        0.0000
─────────────────────────────────────────────────────────────────────────
```

4. Normality Test

Skewness/Kurtosis test for Normality

```
        Skewness/Kurtosis tests for Normality
                                         ──────── joint ────────
 Variable  |  Obs  Pr(Skewness)  Pr(Kurtosis)  adj chi2(2)   Prob>chi2
───────────┼─────────────────────────────────────────────────────────
myresiduals|  60     0.8659        0.0490        4.08         0.1303

. sktest roa ihp rcp

        Skewness/Kurtosis tests for Normality
                                         ──────── joint ────────
 Variable  |  Obs  Pr(Skewness)  Pr(Kurtosis)  adj chi2(2)   Prob>chi2
───────────┼─────────────────────────────────────────────────────────
       roa |  60     0.0017        0.0981        10.48        0.0053
       ihp |  60     0.9199        0.0323        4.62         0.0991
       rcp |  60     0.5494        0.0014        9.02         0.0110
```

5. Heteroscedasticity Test

<div align="center">

Results for Heteroscedasticity Test

</div>

```
White's test for Ho: homoskedasticity
        against Ha: unrestricted heteroskedasticity

        chi2(5)       =       8.05
        Prob > chi2   =     0.1536

Cameron & Trivedi's decomposition of IM-test
```

Source	chi2	df	p
Heteroskedasticity	8.05	5	0.1536
Skewness	6.88	2	0.0321
Kurtosis	0.35	1	0.5554
Total	15.27	8	0.0540

1. Results of Fixed Effect Model

```
Fixed-effects (within) regression          Number of obs    =         60
Group variable: company                    Number of groups =         12

R-sq:                                      Obs per group:
    within  = 0.2111                                        min =          5
    between = 0.5718                                        avg =        5.0
    overall = 0.2970                                        max =          5

                                           F(2,46)          =       6.15
corr(u_i, Xb)  = -0.0808                    Prob > F         =     0.0043
```

roa	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
ihp	.0022878	.0010485	2.18	0.034	.0001773	.0043984
rcp	-.0027416	.0009294	-2.95	0.005	-.0046124	-.0008708
_cons	.1003349	.0941982	1.07	0.292	-.0892763	.2899461
sigma_u	.0330613					
sigma_e	.08673833					
rho	.12685411	(fraction of variance due to u_i)				

2. Results of Random Effects Model (GLS regression)

```
Random-effects GLS regression              Number of obs    =         60
Group variable: company                    Number of groups =         12

R-sq:                                      Obs per group:
    within  = 0.2096                                        min =        5
    between = 0.5897                                        avg =      5.0
    overall = 0.3001                                        max =        5

                                           Wald chi2(2)     =      24.44
corr(u_i, X)  = 0 (assumed)                Prob > chi2      =     0.0000
```

roa	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
ihp	.0019323	.0006687	2.89	0.004	.0006218	.0032429
rcp	-.0027267	.0005756	-4.74	0.000	-.0038548	-.0015986
_cons	.1257372	.0524864	2.40	0.017	.0228658	.2286086
sigma_u	0					
sigma_e	.08673833					
rho	0	(fraction of variance due to u_i)				

3. Results of the Test for Correlated Random Effects (Hausman Test)

```
hausman fe re
```

	——— Coefficients ———			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fe	re	Difference	S.E.
ihp	.0022878	.0019323	.0003555	.0008076
rcp	-.0027416	-.0027267	-.0000149	.0007298

```
                 b = consistent under Ho and Ha; obtained from xtreg
        B = inconsistent under Ha, efficient under Ho; obtained from xtreg

  Test:  Ho:  difference in coefficients not systematic

           chi2(2) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                   =         0.20
        Prob>chi2 =       0.9068
```

"Determinants of Consumer Buying Behaviour: A Study of FMCG Sector of India"

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Abstract

Foods & Beverages brands are now facing the major issues in understanding their consumers products needs, because of continues changes in consumer buying behaviour, especially after the COVID-19 pandemic. Major reasons behind changing buying behaviour of the consumers is change in test and preference of the products and eating habits, along with this there are various other factors which plays an major role in influencing the change in the consumer buying behaviours. Thus, this study focuses on finding those factors which influence the change in the consumer buying behaviours for food & beverages products and its overall impact on the FMCG sector. This study aims to find out those factors which influence the change in consumer buying behaviour and increase the understanding of the buying process of consumers with respect to the food & beverages products.

This quantitative study was conducted on 151 respondents following exploratory & descriptive research design using a structured questionnaire. The data is analysed using chi-square testing in order to test the relation between two variables to find the impact of them. The study brings out the fact that there is a positive relationship between personal factors and purchase decision, economical factors and purchase decision, promotions and buying decision and, product innovation and buying behaviour.

Keywords: Food & Beverages products, FMCG, Consumer Buying behaviour, marketing.

Introduction

Products on FMCG sector are consume everyday and usually purchase is happening from small grocery store to hypermarket and the decision of consumer is backed by various things which includes during the purchase of products. FMCG industry has shown exponential growth potentials in the last decades. Total valuation of the India's FMCG sector was valued $ 10 Billion USD. In this study we focus on the food & beverages industry as a part of FMCG sector to understand the consumer buying behaviour towards food & beverages products and its impact on FMCG sector.

This study aims to find out factors which influence the change in consumer buying behaviour and increase the understanding of the buying process of consumers with respect to the food & beverages products.

Literature Review

Considering the multiple aspect on the topic, study on study the impact of demographic variables on consumer buying behaviour and to analyze the relationship between marketing mix on consumer buying behaviour in FMCG Company by Sisodiya & Sharma, 2018, As a result of this study, it shows that consumers' perception of retail marketing mix elements and how these factors influence their buying behaviour. In addition, study by Siddiqui, Johri, Shoeb, Saxena, Siddiqui, & Usmani, 2021 found that that advertisement is the biggest influence factor and television is the most efficient intermediary of advertisement to influence buying preferences of rural consumer. Study by Vijayalakshmi & Gurumoorthy, 2019 includes 7 factors and by applying the chi-square test on the collected data we can easily identify that what is the most preferable buying decision process of the FMCG consumers. Study by Pandya & PANDYA, 2020 concludes that the feeling about shopping and spending among these four factors is the most important factor that has significance over compulsive buying behaviour. study on analyses the different generational behavior from time to time by using different media and markets by Patel, 2020. findings of the study by Arora, Prabha, Sharanagat, & Mishra, 2020 concluded that, inference is that there is immense potential for the probiotic fruit beverage market as a higher proportion of the population was interested in probiotic products delivered with fruits as a base matrix followed by dairy products.

RAYI & ARAS, 2021 found the detailed information about How Product Innovation and Motivation Drive Purchase Decision as Consumer Buying Behavior. Align with this, study by Chaochotechuang & Mariano, 2016 finds the Alignment of new product development and product innovation strategies. Study by Rosli & Sidek, 2013, gives the brief information on Impact of innovation on the performance of small and medium manufacturing enterprises. Along with this, study by Guiné, Florença, Barroca, & Anjos, 2020, gives the brief on link between the consumer and the innovations in food product development. Study by Wulandari & Setyaningrum, find out the product packaging, product exhibition, and consumer tastes of dry food and beverages produced by MSMEs affects on buying interest. Study by PUNITHAVATHI, 2019 concluded that more brand knowledgeable consumers in the rural

area give importance to buying decision process while purchasing food and beverages items when compared to less brand knowledgeable consumers. No researcher has determine the Indian consumer buying behaviour for food and beverages products after the Covid-19 pandemic change the consumer life style, habits and buying behaviour towards various products.

Objectives of Research

This research mainly focuses on the factors which affect the consumer buying behaviour regarding food & beverages products, as there is very little research available on buying process and consumer behaviour related to food & beverages products. The three main objectives of this research are:

1. To study on consumer buying behaviour towards food & beverages products
2. To identify the factors which affecting consumer buying behaviour and decision making process for food & beverages products
3. To determine the scope of food & beverages products

Research Methodology

The research paper expresses the issues as it exists and so demonstrates the use of exploratory and descriptive research method of study. The sample size of 151 was taken for data collection by taking level of significance 5%. For data collection a structured questionnaire was designed, which consisted of 18 questions which were multiple choice relating to all different factors. The data collection followed convenience sampling method. The study has three parameters which is age, gender, & income group. The questions were framed and asked keeping in mind these parameters. Each question asked directly or indirectly related to one of the parameters. This survey has been taken over internet by forwarding mails and messages to colleagues, friends, and families which lives in different states of India. Due to Covid-19 outbreak I am unable to connect with generation Y and generation Y, so that scope of this study limits to only for generation Z.

Hypotheses:

The objective of the study is to get an idea about the consumer buying decision and to study factors affecting their behaviour of buying for food & beverages products. Age of consumer, occupation and income level of consumers as well as gender can affect the buying behaviour of the consumer so this study has 4 hypothesis based on the same:

$H_{o1:}$ There is no impact of personal factors on the purchase of food & beverages products.

$H_{o2:}$ There is no impact of economical factors on the purchase of food & beverages products.

H_{o3}: There is no impact of promotion/ marketing on buying decisions of food & beverages products.

H_{o4}: There is no impact of product innovation on consumer buying behaviour.

The data has been collected from 151 respondents out of which 113 were males and remaining 37 are female respondents. Majority of the respondents were from age group of 18-25 years of age. The respondents were majorly students or having Business or service as their occupation. The questions used to know and understand the factors affecting the buying behaviour as well as understanding buying process of consumers were related to consumers' awareness, their attitude towards food & beverages products and how frequently they purchase those products. To get knowledge about consumers' purchasing pattern there were 14 other questions that they had to answer.

Result and Discussion:

The survey was taken from 151 respondents asking about various behavioural questions related to buying of food & beverages products. The results are as follows:

- Out of the total respondents around 70% of the respondents prefer to buy from local shops and other majors prefer from malls and marts.
- Out of the total respondents around 19% respondents are purchasing daily, 27% respondents are purchasing two days in week, 14% respondents are purchasing three days in week, and 40% respondents are purchasing weekly.
- Out of the total respondents majorly respondents like the product innovation in the food & beverages products, so brands should focus more on innovation side to maintain the position of brand image.
- Majorly consumers find the new product innovation through TV ads and social media, and by visiting the shops. This defines the important of those mediums of spreading the message to the consumers. So that majorly consumers are find the new innovation through TV ads, social media, and by visiting the shops hence brands should focus on these mediums to reach the potential consumers.
- Majorly consumers believes that innovation in the food & beverages products influence buying decision also shows the openness of the consumers to adopt the new products.
- Majorly consumers believes that in depth knowledge of newly launched product by food & beverages brands influence buying decision of the consumers which represent that most consumers are now days willing to know the details of the product which they are using in their everyday life. Hence the disclosure of the information and provide the detailed product demonstration helps in getting sales and trust of the consumers.
- Data represent the chance of capturing the market by different brands, most consumers will put mostly faith in the brand in which they have trust more, where some consumers believe that brand who provide the innovation as well brand who provides

- more discounts, hence there are much potential for new brands as well as existing brands to reach to customers and increase the sales.
- Majorly consumers are believe in that social media and TV ads are the best medium for advertising for consumer to perceive brand message very clearly and impactful, hence brands should focus more on this mediums because of the consumers preference and hence the decision making depends upon this.
- Due to openness and increasing demand for new products consumers are believe that some cost can be occur by the company, hence most consumers are accept this and majorly are allow companies to extend it till certain limits which will help brands to spend on the innovations.
- As clearly derived from the data that, quality of the product is the biggest factor that consumers are look for during the purchase of food & beverages products along with this availability, packaging and price and discounts are also plays an important role. So that brands should focus more on these parameters.

Hypothesis testing:

1) H01: There is no impact of personal factors on the purchase of food & beverages products.

Ha1: There is an impact of personal factors on the purchase of food & beverages products.

Age * How_frequently_you_purchase_food_and_beverages_products Crosstabulation

		How_frequently_you_purchase_food_and_beverages_products					
		Daily	How frequently you purchase food & beverages products ?	Three days in week	Two days in week	Weekly	Total
Age	18-25	32	0	12	41	40	125
	26-35	10	0	2	0	14	26
	Age	0	1	0	0	0	1
Total		42	1	14	41	54	152

Table 1

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	164.849[a]	8	<.001
Likelihood Ratio	31.365	8	<.001
N of Valid Cases	152		

a. 8 cells (53.3%) have expected count less than 5. The minimum expected count is .01.

Table 2

As per the data collect through questionnaire, we can see the major responses shows that there is significant impact of personal factors such as age, which plays an important role in understanding the perceive the brands and product message differently through different mediums because of the ways how the communication broaden now. Along with this by results of hypothesis we can clearly says that significant diffirence between variables are <0.05 hence alternet hypothesis will be approved and we can clearly say that there is an impact of personal factors on purchase of food & beverages products.

2) H02: There is no impact of economical factors on the purchase of food & beverages products.

Ha2: There is an impact of economical factors on the purchase of food & beverages products.

Yearly_Income * How_frequently_you_purchase_food_and_beverages_products Crosstabulation

		Daily	How frequently you purchase food & beverages products ?	Three days in week	Two days in week	Weekly	Total
Yearly Income	2-5 Lakhs	6	0	3	4	2	15
	5-10 Lakhs	0	0	0	1	7	8
	Less then 2 Lakhs	15	0	0	1	4	20
	More then 10 Lakhs	5	0	1	0	7	13
	None	16	0	10	35	34	95
	Yearly Income	0	1	0	0	0	1
Total		42	1	14	41	54	152

Table 3

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	202.403[a]	20	<.001
Likelihood Ratio	66.120	20	<.001
N of Valid Cases	152		

a. 22 cells (73.3%) have expected count less than 5. The minimum expected count is .01.

Table 4

As per the data collect through questionnaire, we can see the major responses shows that there is significant impact of economical factors such as income and profession, which plays an

important role in understanding the purchase and spending patterns and willingness to spend on the new innovation and reaction to increase in the price due to innovation. Along with this by results of hypothesis we can clearly says that significant difference between variables are <0.05 hence alternet hypothesis will be approved and we can clearly say that there is an impact of economical factors on purchase of food & beverages products.

3) H03: There is no impact of promotion/ marketing on buying decisions of food & beverages products.

   Ha3: There is an impact of promotion/ marketing on buying decisions of food & beverages products.

Age * Does_marketing_strategy_influence_purchase_of_food_beveragesCrosstabulation

		Does any marketing strategy for the product, influence of your purchase of food & beverages ?	No	Yes	Total
Age	18-25	0	16	109	125
	26-35	0	2	24	26
	Age	1	0	0	1
Total		1	18	133	152

Table 5

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	152.538[a]	4	<.001
Likelihood Ratio	12.630	4	.013
N of Valid Cases	152		

a. 6 cells (66.7%) have expected count less than 5. The minimum expected count is .01.

Table 6

As per the results of the chi square test we can clearly says that significant diffirence between variables are <0.05 hence alternet hypothesis will be approved, it proves that majorly consumers believes that there a positive impact of the promotion or marketing on buying decisions of consumers towards food & beverages products.

4) H04: There is no impact of product innovation on consumer buying behaviour.

Ha4: There is an impact of product innovation on consumer buying behaviour.

Age *
Do_you_like_product_innovation_in_the_food_beverages_products Crosstabulation

		Do_you_like_product_innovation_in_the_food_beverages_products		
		Do you like the product innovation in the food & beverages products ?	No	Yes	Total
Age	18-25	0	9	116	125
	26-35	0	1	25	26
	Age	1	0	0	1
Total		1	10	141	152

Table 7

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	152.394[a]	4	<.001
Likelihood Ratio	12.485	4	.014
N of Valid Cases	152		

a. 6 cells (66.7%) have expected count less than 5. The minimum expected count is .01.

Table 8

As per the results of the chi square test we can clearly says that significant difference between variables are <0.05 hence alternet hypothesis will be approved, it proves that majorly consumers believes that innovation in product, impacts on buying decisions and buying behaviour of consumers towards food & beverages products .

Conclusion

To conclude this study which has specifically focused on the consumer buying behaviour towards food & beverages products and its impact on FMCG sector in India. For practical implications, FMCG brands which focus more on the generation Z and generation Y should be

consider this factor during making business decisions and specially during marketing and execution phase. Age matters on the influence customer through product innovation, Gender is matters on the influence customer through product innovation, Employment status and yearly income affect the frequency of the purchase, Majorly customers like the product innovation in food & beverages products, Local shops are the major customer direct touchpoints followed by the malls and marts, which should become the major priority at the time of making promotion marketing content or sales promotion or discounts on products, Majorly consumers get to know about the product through TV ads, social media, and while visiting a shop, hence market should more focus while creating a communication message for the new product by the brand, and salesperson should work more on local shops to introduce the product and increase awareness about the product for the dealer or distributor or shop manager.

Majorly consumers accept that, that marketing of the product, influence consumers perception and influence for making a buying decision of the product. Consumers believe that in-depth knowledge about the product can change the consumer buying decision, hence during making the ads, the marketer should try to describe the product, because the increasing literacy and living standards make people more curious to find out what exactly is this and it contains. Trust is still the biggest factor, which consumers are looking for when they make a purchase decision. Majorly consumers believe that product innovation can increase the price of the product due to research, hence majorly consumers will accept the increase in price due to innovation but to a certain limit. Product innovation makes consumers more loyal to brands.

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A study on Use of Digital Marketing strategies by Entrepreneurs post COVID-19 with reference to India

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Abstract

The impact of the COVID-19 pandemic was immense on businesses. This has brought in a lot of changes in the industry. Entrepreneurship was one of the main segments. Due to the changing customer behavior towards the online platform and the increase in the use of online apps, there has been a drastic shift in the marketing practices. There are also various benefits associated to digital marketing which cannot find with traditional marketing. These benefits are being widely recognized and implemented at a growing rate in today's time.

This quantitative study was conducted on 51 respondents following descriptive research design using a structured questionnaire. The study showed that the factors such as changing digital marketing trends, increase in the use of internet, impact of COVID-19 are an influence on the ease of business expansion for Entrepreneurs. Increase in the ease of doing things online did not have an influence. Chi-square testing was used to analyse the influence of various factors such as changing digital marketing trends, increase in the use of internet, impact of COVID-19, increase in the ease of doing things online on the ease of business expansion for Entrepreneurs, online.

Keywords: Entrepreneurship, Digitization, Digital Marketing, Entrepreneurs.

Introduction

One of the most significant transformations in human connection, in today's time has been digitalization. This has drastically changed the human behavior which is based on social web

and has altered the nature of human activity, environment and interaction. During the era of Capitalism and also a little down the line, entrepreneurship was founded and developed when it was declared and identified as the fourth factor of production. This happened because economists realized that entrepreneurship is important for an economy's growth and it will facilitate to be one of the key factors. Internet's contribution and penetration into so many people's lives have definitely altered the way of doing business and it is no more the traditional way of doing business online. After COVID-19, digital marketing has become one of the main ways in which entrepreneurs are able to grow and expand their businesses.

This study aims at studying the various factors that facilitates the growth and efficiency of business for Entrepreneurs through digital marketing specially post COVID.

Literature Review

Research Gap: Some studies found that there still is not a clear understanding relating to the study of entrepreneurs and the challenges associated with use of digital marketing and social media. In addition, most of the studies that were done are secondary studies so real time challenges and trends have not been addressed efficiently. The data that has been spoken about is not current and is not inclusive of all areas.

Research Problem: After the pandemic, there has been a change in the home-grown entrepreneurs and a change in digital marketing as well. We have to study how the change in digital marketing affects entrepreneurship.

Research Questions:

RQ1: Is Entrepreneurship being impacted due to changing Digital Marketing trends?

RQ2: Is Entrepreneurship being impacted due to increase in the frequency of use of Internet?

RQ3: Is Entrepreneurship being impacted due to increase in the ease of doing things online?

RQ4: Is Entrepreneurship being impacted due to COVID- 19 pandemic?

Nambisan (2016) adds to business enterprise writing by demonstrating that the dynamic and liquid constraints of progress have made pioneering forms less constrained than in the traditional economy. As a result, innovative procedures are slow and nonlinear, as advanced relics and stages urge. The digitization of entrepreneurial procedures has aided in reducing the boundaries between the various stages of the pioneering procedure and has overwhelmingly favoured the reduction of creation to advancement hindrances (Anderson, 2014; Steiniger, 2019).

As a result, recent papers on Digital Entrepreneurship focus less on the observable proof of enterprising stages and more on how business visionaries can scale their ideas into viable organisations while utilising computerised innovations to support opportunity recognition, ideation, thought approval and testing, and the development of compelling plans of action. Huang et al. (2017) identify three unexpected systems that support rapid scaling: (I)

information-driven activity; (ii) instant discharge; and (iii) quick change, and show how these components interact in the rapid scaling of computerised adventures.

Today, digitalization is one of the most important issues that businesses and the global economy must address (Laudienet et al. 2018). Anyone interested in current events will have heard of digitalization and, at the very least, be able to address some of the difficulties that come to mind when they think of the phrase. Innovation in the media industry is necessary to attract new consumers who want to be surprised and want the content delivered in her favourite support (e.g. Internet, mobile phone, cable TV, etc.). (Kraus et al. 2018; Ferreira et al. 2019).

Although some far-sighted analysts have long argued the marketing climate is rebounding, the Covid 19 crisis seems to have massively exacerbated the changes, and the planet after the pandemic is going to experience several wounds that heal needless scarves. (Alshaketheep, 2020)

Digitalization creates several chances for entrepreneurial activity, and entrepreneurs must be aware of these prospects in order to be prepared for long-term developments (Richter et al. 2015b). Many academics have already examined trends and identified challenges in the field of digital entrepreneurship. As a result, the majority of them now concentrate their research on the field (Hull et al. 2007; Richter et al. 2015a; Nambisan 2017).

Objectives of Research

This study aims at studying the various factors that facilitates the growth and efficiency of business for Entrepreneurs through digital marketing specially post COVID. Especially after the pandemic and the boom in digitization there has been a lot of changes in the way businesses function and the different means of expansion for a business.

The main objectives of the study are:

1. To study the change in Digital Marketing strategies post COVID.
2. To study the effect of Digital Marketing Strategies on Entrepreneurs and their business.

Research Methodology

The research paper expresses the issues as it exists and so demonstrates the use of descriptive research method of study. The sample size of 51 respondents was taken for data collection. For data collection a structured questionnaire was designed. The data collection followed convenience sampling method. The study has four independent variables; changing digital marketing trends, increase in the use of internet, impact of COVID-19 and increase in the ease of doing things online. The questionnaire was framed keeping these parameters in mind.

Hypotheses:
The objective of the study is to understand the various factors which facilitate the growth and efficiency of business for Entrepreneurs through digital marketing, specially post COVID. Changing digital marketing trends, increase in the use of internet, impact of COVID-19 and

increase in the ease of doing things online are the main factors which are studied hence the four hypotheses are framed around the same:

H_{01}: Impact of COVID-19 influences an entrepreneurs' way of carrying out a business.

H_{02}: Increase in the use of Internet influences an entrepreneurs' way of carrying out a business.

H_{03}: Increase in the customers inclination to ease of doing things online influences an entrepreneurs' way of carrying out a business.

H_{04}: Change in Digital Marketing trends influences an entrepreneurs' way of carrying out a business.

Geographical coverage: The survey has been conducted online by forwarding the questionnaire to friends, colleagues and family members residing all over India who are entrepreneurs, via email and messages.

Limitations: Due to limited access to people and COVID, an even distribution of respondents from all parts of India could not be entirely possible.

Further scope of the Study: With the increasing number of entrepreneurs, the study can be performed on a larger quantity of people and with new trends coming along in Digital Marketing, the effect of the different trends can be studied on the entrepreneurs.

The data has been collected from 51 respondents out of which 26 were males and remaining 25 are male respondents. Majority of the respondents claimed to use Digital Marketing daily for their business and content. The questions used were to understand the influence of various factors on carrying out a business for an entrepreneur in today's day and age.

Result and Discussion:

The survey was taken from 51 respondents asking about the various factors that facilitates the growth and efficiency of business for Entrepreneurs through digital marketing especially post COVID. The results are as follows:

- Out of the total respondents, COVID-19 has affected 96.1% of the respondent's businesses i.e., 49 out of 51 respondents.
- When asked about whether the increase in the use of internet has influenced Digital Marketing, 92.2% of the respondents think increase in use of internet has influenced Digital Marketing i.e. 47 out of 51 respondents.
- Out of the total respondents, 52.9% respondents strongly agree that digital marketing trends impacts the way they do business i.e., 27 out of 51 respondents, 43.1% respondents agree that digital marketing trends impacts the way they do business i.e. 22 out of 51 respondents and 3.9% respondents may or may not agree that digital marketing trends impacts the way they do business i.e. 2 out of 51 respondents.
- Out of the total number of respondents, 78.4% strongly agree that increase in customer inclination towards buying things online has changed the way they carry out their business i.e. 40 out of 51 respondents, 19.6% agree that increase in customer inclination

towards buying things online has changed the way they carry out their business i.e. 10 out of 51 respondents and 2% may or may not agree that increase in customer inclination towards buying things online has changed the way they carry out their business i.e. 1 out of 51 respondents.

- Out of these, it can be observed that the most important thing they do is prioritize Quality over Quantity (51 out of 51 respondents). The second most important thing that most of them do is communicate with clients to get a clear idea (46 out of 51 respondents). Next on the priority list is the respondents ask for references and take a review (41 out of 51 respondents). Last but still holding its importance, the respondents do conduct a survey or research (36 out of 51 respondents).

- Here, it can see that the respondents have the highest agreement when it comes to cost-effectiveness (34 out of 51 respondents). The next parameter that the respondents have the highest agreement on is increased revenue (33 out of 51 respondents). The parameter after that which has the highest agreement is building a brand name (32 out of 51 respondents). People also agree that Digital Marketing has helped achieved a wider reach and geographical expansion (29 out of 51 respondents).

- Out of the total respondents, 60.8% respondents choose Digital Marketing to increase their reach of content i.e. 31 out of 51 respondents. 25.5% respondents choose Digital marketing to increase the number of customer touch points i.e. 13 out of 51 respondents.

Hypothesis Testing:

H_{01}: Impact of COVID-19 influences an entrepreneurs' way of carrying out a business.

Table 1: Cross Tabulation between COVID's impact on business and Overall Satisfaction of being an entrepreneur in today's time

Overall Satisfaction of being an Entrepreneur in todays time * Did COVID-19 an impact on your business?					
		Did COVID-19 have an impact on your business?			Total
		Yes	No	Maybe	
Overall Satisfaction of being an Entrepreneur in todays time	Neutral	0	0	1	1
	Satisfied	11	0	0	11
	Highly Satisfied	38	1	0	39
	Total	49	1	1	51

In Table 1, it can be observed the respondents who claimed to have been affected by COVID-19 also show high satisfaction in being an Entrepreneur today (38). Because COVID has affected many startups, it has also aided many.

Table 2: Chi-Square Test between COVID's impact on business and Overall Satisfaction of being an entrepreneur in today's time

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	51.294[a]	4	0.0001
Likelihood Ratio	10.347	4	0.035
Linear-by-Linear Association	9.284	1	0.002
N of Valid Cases	51		
a. 7 cells (77.8%) have expected count less than 5. The minimum expected count is .02.			

From the above chi-square test (Table 2) it is observed the Asymptotic Significance value, i.e. the p-value here (0.0001) is less than significant value 0.05. Thus, alternate hypothesis will be accepted. Hence, impact of COVID-19 influences an entrepreneurs' way of carrying out a business.

H_{02}: Increase in the use of Internet influences an entrepreneurs' way of carrying out a business.

Table 3: Cross Tabulation between increase in use of internet and Overall Satisfaction of being an entrepreneur in today's time

Overall Satisfaction of being an Entrepreneur in todays time *Increase in use of internet's influence on Digital Marketing

		Do you think increase in use of internet has influenced Digital Marketing		Total
		Yes	Maybe	
Overall Satisfaction of being an Entrepreneur in todays time	Neutral	0	1	1
	Satisfied	10	1	11
	Highly Satisfied	38	1	39
	Total	48	3	51

In Table 3, the respondents who think that increase in the use of internet has influenced Digital Marketing are also the ones who are highly satisfied from being an entrepreneur in today's day (38). This means the self-sufficient Entrepreneurs do agree that the increase in the use of internet has influenced Digital Marketing.

Table 4: Chi-Square test between increase in use of internet and Overall Satisfaction of being an entrepreneur in today's time

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	16.980[a]	2	0.0001
Likelihood Ratio	6.816	2	0.033
Linear-by-Linear Association	7.571	1	0.006
N of Valid Cases	51		
a. 4 cells (66.7%) have expected count less than 5. The minimum expected count is .06.			

From the above chi-square test (Table 4) it is observed the Asymptotic Significance value, i.e. the p-value here (0.0001) is less than significant value 0.05. Thus, alternate hypothesis will be accepted. Hence, increase in the use of Internet influences an entrepreneurs' way of carrying out a business.

H_{03}: Increase in the customer's inclination to ease of doing things online influences an entrepreneurs' way of carrying out a business.

Table 5: Cross Tabulation between increased customer inclination towards using internet and Overall Satisfaction of being an entrepreneur in today's time

Overall Satisfaction of being an Entrepreneur in todays time * Customers increased inclination towards using internet and ordering online, has changed the way a business works.					
		As customers are becoming more inclined towards using internet and ordering online, has that changed the way you do business?			Total
		Strongly Agree	Agree	Neutral	
Overall Satisfaction of being an Entrepreneur in todays time	Neutral	0	1	0	1
	Satisfied	7	3	1	11
	Highly Satisfied	33	6	0	39
	Total	40	10	1	51

In Table 5, the respondents who think that increase in customers inclination towards using internet and ordering online has changed the way a business works also the ones who are highly satisfied from being an entrepreneur in today's day (33). This means the self-sufficient Entrepreneurs do agree that the increase in customers inclination towards using internet and ordering online has changed the way a business works.

Table 6: Chi-Square test between increased customer inclination towards using internet and Overall Satisfaction of being an entrepreneur in today's time

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	8.898[a]	4	0.064
Likelihood Ratio	7.478	4	0.113
Linear-by-Linear Association	5.946	1	0.015
N of Valid Cases	51		
a. 6 cells (66.7%) have expected count less than 5. The minimum expected count is .02.			

From the above chi-square test (Table 6) it is observed the Asymptotic Significance value, i.e. the p-value here (0.0001) is greater than significant value 0.05. Thus, null hypothesis will be accepted. Hence, increase in the customers inclination to ease of doing things online does not influence an entrepreneurs' way of carrying out a business.

H_{04}: Change in Digital Marketing trends influences an entrepreneurs' way of carrying out a business.

Table 7: Cross Tabulation between changing digital marketing trends and Overall Satisfaction of being an entrepreneur in today's time

Overall Satisfaction of being an Entrepreneur in todays time * The changing digital marketing trends impacts business

		Does the changing digital marketing trends impact the way you do business?			Total
		Strongly Agree	Agree	Neutral	
Overall Satisfaction of being an Entrepreneur in todays time	Neutral	0	0	1	1
	Satisfied	5	5	1	11
	Highly Satisfied	22	17	0	39
	Total	27	22	2	51

In Table 7, the respondents who strongly agree and agree that the changing digital marketing trends impacts business are the ones who are highly satisfied from being an entrepreneur in today's day (39). This means the self-sufficient Entrepreneurs do agree that the changing digital marketing trends impacts business.

Table 8: Chi-Square test between changing digital marketing trends and Overall Satisfaction of being an entrepreneur in today's time

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	27.000[a]	4	0.0001
Likelihood Ratio	10.305	4	0.036
Linear-by-Linear Association	4.885	1	0.027
N of Valid Cases	51		

a. 6 cells (66.7%) have expected count less than 5. The minimum expected count is .04.

From the above chi-square test (Table 8) it is observed the Asymptotic Significance value, i.e. the p-value here (0.0001) is less than significant value 0.05. Thus, alternate hypothesis will be accepted. Hence, change in Digital Marketing trends influences an entrepreneurs' way of carrying out a business.

Conclusion

After the COVID pandemic, the entrepreneurs have started using digital marketing almost daily. They did use digital marketing before the pandemic as well, but the frequency of the use of digital marketing has increased. The entrepreneurs do believe that the increase in the use of internet has influenced Digital Marketing. They also believe that changing digital marketing trends impacts the way they do business.

It has been also observed through the hypotheses that Increase in the reach of content is the main reason why entrepreneurs use Digital Marketing. It is followed by Increase in Customer Touch Point. One of the advantages includes Return on Investment, Long term growth and Customer retention. The entrepreneurs have themselves showed belief in the increase in success of a business depends upon Digital Marketing. However, with the increased inclination

towards using Internet, according to the test there is no influence on the way that entrepreneurs carried out their business.

To completely utilize digital marketing and get the maximum return out of it, the entrepreneurs communicate with clients to get a clear idea, prioritize Quality over Quantity, conduct a survey or research and ask for references and take a review. The entrepreneurs believe that Digital Marketing has helped the entrepreneurs to achieve wider reach and geographical expansion, building a brand name, cost-effectiveness, increased revenue and improved Return on Investment. The entrepreneurs also firmly believe it helps in creating a competitive edge for business in today's time.

These findings can help new entrepreneurs understand what is going on in today's world and how the new business owners are leveraging Digital Marketing to get the maximum out of it.

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A Study on Investment and Saving Awareness and Pattern
(With reference to Satna City)

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Abstract

There are both rural & urban economies; by combining they form Indian economy, in which rural part has more dominance. The dominance of rural part can be stated from how agriculture sector serves approximately 17 - 18% to overall Indian economy, on which over 50% of India's population is dependent for their survival. It has seen individuals in rural areas resorting to substitute work opportunities. There are rural individuals who are aware of investment but not about its various tools. So increasing education, knowledge and awareness should be created among them regarding the investment sector. For this, a research was undertaken to find out the demographic variables, awareness & preference of rural & urban households from Satna city. After conducting this survey, it has been found out that majority of Satna citizens are more inclined towards savings specially females, the reason behind this is emergency purpose & more liquidity, so they prefer either savings A/C, home saving or investment through fixed deposit, while they could have earn more if they would have invested through other investment options such as mutual fund, share market, commodity market, etc.

Keywords: Rural Citizen, Income, Saving, Expenditure, Investment, Pattern

Introduction

Financial Planning plays a crucial role in everyone's life. Investor has to be clear about their future goals of being financially independent & strong. For an efficient investment portfolio, investor should have sufficient knowledge, skills & risk averseness regarding investment. Some rural investors are unaware of investment, & those who are aware they believe that all investments are risky. So they think saving is better than investment, their money is safe, without any type of risk. With little amount of interest they believe that their money is increasing, but actually they are unaware that their value of money is decreasing due to inflation rate. The majority of Indians believe that investment is tied to income, which is a common misconception.
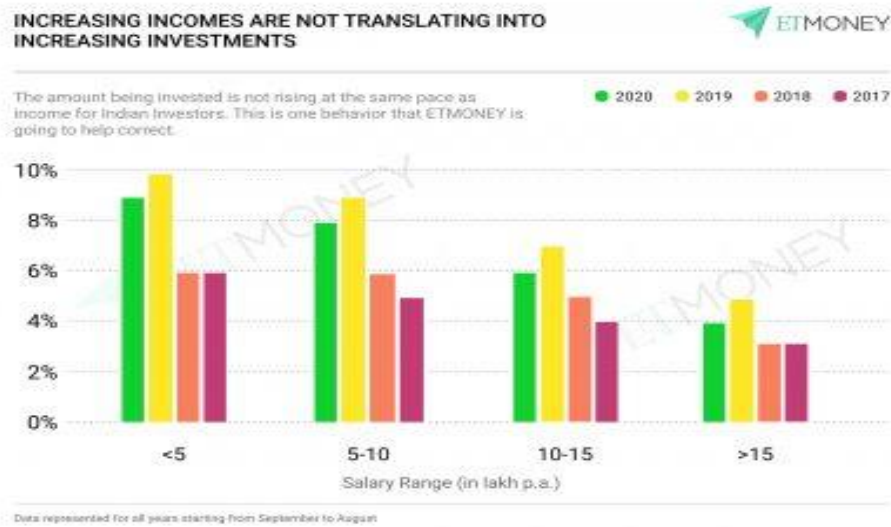
Figure 1: Investment & Income

Source : ET MONEY

From Figure 2 we can say that, Income of Indians is rising but investment is same or decreasing, there is a difference in range of Indians income & increment in their investment. This states that Indians need pay much attention towards investment.
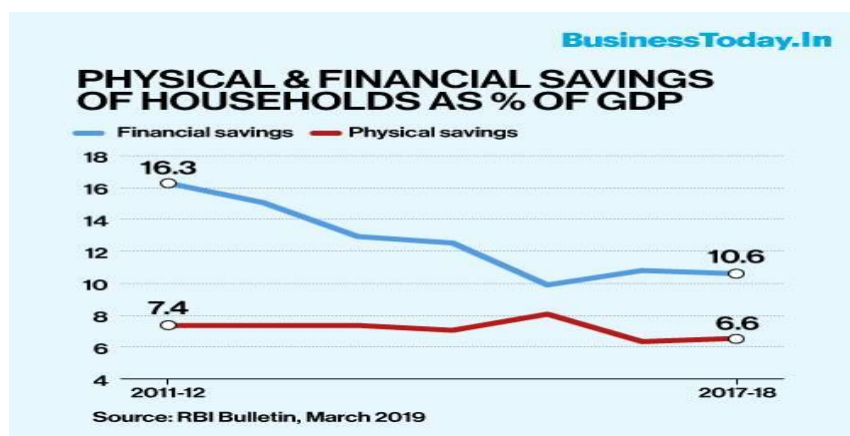
Figure 3: Physical & Financial Saving

From Figure 4 it can be said that, Indians have two phases of saving which include financial saving & physical saving. From 2011 to 2016 financial saving was rapidly decreasing but from 2016 to 2018 it is increasing slowly. Talking about physical saving it was little more in 2016 but again fall by 2018. From this it can be easily judged that in India financial saving was & will be more when compared to physical saving.

Literature Review

Ekong and Effiong (2020), studied that increase rate have an important effect on family consumption spending and savings. Zhu et al. (2020),shows that mainly investment is done to meet the financial need of basic living goods, education, and gifts. Hamsa and Umesh (2020), revealed that farm activities are the main sources of income in both progressive and less progressive areas and non-farm and off-farm activity. Thorat and Sirohi (2018), studied that rural citizens are not able to meet their consumption due to income shortfall.

Zanvar et al. (2016), states that savings are the difference between the amount one earns and the amount one spends. One reason could be that there are few materials goals that they want to save for. Zhu et al. (2020), talks about economic growth by rural consumption, communication technology infrastructures which would inspire rural farmers' gladness& this would be done by enhancing rural income via income diversification tactics and capitalizing on rural data. Sharma et al. (2019), find that India is one of the fastest rising economies globally and has about 65-70% of its economy existing in villages. The strategy to achieve this goal involves better technology, incentive structure, public investments, and facilitating institutions. This study aims at how private financial institutions like NBFCs should aid in attaining this goal. Odoh et al. (2020), examined farmers' revenue and savings behavior in Benue State. The outcome showed that farm size, level

of access to credit, the divergence of income sources, kinds of investment, and risks essential in the business are the main factors of the small-scale farmers' income level.

Revathy et al. (2020), observed that relatively migrants experience a better standard of living along with savings due to more income so they did not have an idea of returning to agriculture. Chaudhary (2020), states that those families whose family members are not in other state are inferior regarding the money as per those with migrant members. Tang et al. (2020), find that rural migratory laborers are generally measured as customers with the least buying power in Chinese cities. The amplified consumption demand and capacity of rural migrants have started to alter Chinese cities' commercial sites, possibly contributing to the country's transformation to a consumption driven economy. Singh (2020) finds that this study provided insights into wealth disparity among India's rural and urban populations. The data showed that disparity is prevalent not only in physical assets but also in financial assets. This disparity is homogeneously present across geographies, that is, rural and urban India. Zanvar et al. (2016), study aimed to comprehend the investment pattern among the investors of Pune (India), investment choices were high returns, tax benefit, and safety. Thorat and Sirohi (2018), studied that the concerned regions, active social risk management tactics are imperative to enhance rural households' socioeconomic status. Rai and Smucker (2016), observed that the limits of an entitlement method to social guard, especially concerning the probable for the empowerment of disregarded social groups.

Tang et al. (2020), find that survey in Jiangsu Province, this study recognizes 4 different customer types among youth rural migrant laborers: conservative, balanced, frustrated, and adventurous. Their diverse consumption behaviors are formed not only by their monetary capacities but also by Fourier family tasks and cultural attitudes. Guérin et al. (2019), confirms the gender dimension of behavior, women's behavior is inhibited by their family relationship, poverty level, and caste, which is much less the case for men. Vicol (2017), stated that, the unsatisfactory power relations among firms and farmers twist the firm's capture of profits and reduce contributing families vulnerable to indebtedness and loss of independence over land and livelihood decisions.

Research Gap

After scanning various research papers, I configured that most of the things are covered but there was something missing in their papers. One is, they are wholly talking about advantages of investment, but they are missing one point that investment will be more beneficial if kept for a longer period of time. The another one is, they have only talked about, investment is good, it is necessary, they haven't talked about both good and bad times of market conditions, which have an impact on investor's purchasing behavior and inclinations.

Research Problem

Saving and investment are integral part of economy. According to World Bank 65.07% are rural populations in India. If we compare the urban and rural population their investment pattern, saving consumption, occupation, financial literacy differs. Majority of investment comes from urban areas in different asset class, contribution of rural investor are very low as per the current facts and figures. From this study researcher want to know the saving and investment awareness & pattern. As rural citizens mainly believe on banks rather than any investment firms so good effort should be emphasize on expanding of banks &banking services for the rural citizens & also paying attention towards gender-sensitive areas. As gaining more number of investor is beneficial for both firms & investor, so more female oriented advertisements should be done.

Doing investment is a good thing; it is basically for meeting your future expectation & needs. But keeping aside some money is also necessary so people save as they believe that savings are their intension to meet emergency and increase their expectation of living. There are many type of investors who face a lot of challenges regarding investment, they start investing but end up in few years or they go for FD, their general belief is, why to save cash when you can earn from them, but here concern is, that they don't have sufficient knowledge regarding financial institutions, so they are not able to stand as per their own expectations.

Research Question

The goal of this research is to figure out why there is a variation in contribution between rural and urban investment. According to facts and data, there is a significant disparity.

Research Objective

- To identify the impact of location and gender on investment or saving decision.
- To identify the reasons behind the saving pattern of rural as well as urban investors.
- To study the awareness of rural investors regarding various investment options available for investment.

Research Methodology

The descriptive Research method was used in order to find the investment and saving awareness & pattern. A survey was done and a questionnaire was used to know about investor's awareness & pattern in terms of investment & saving. As research was conducted in Satna city so convenience sampling was used as the sample method. This study is a part of my project for a period of 2

months. This research is only conducted in Satna city & limited towards other cities. Due to this study the resident of Satna should have more awareness regarding investment & saving pattern & its benefits. The responses of 267 Satna residents were considered. The chi square test was used to determine the association of location and gender with investing and saving decisions.

Result and Discussion

Sr. No.	Demographic Parameter	Category	No. of Respondents	Percentage of Respondents
1	Gender	Male	123	46%
		Female	134	50%
		Other	10	34%
2	Age	Below 15	31	12%
		15 – 30	104	39%
		31 – 45	93	34%
		46 – 60	32	12%
		Above 60	7	3%
3	Qualification	Undergraduate	42	16%
		Graduate	83	31%
		Post Graduate	84	32%
		Ph.d	28	10%
		Professional	30	11%
4	Occupation	Student	86	33%
		Salaried	78	29%
		Farmer	43	16%
		Business Person	28	11%
		Homemaker	20	7%
		Retired	12	4%
5	Income	None or Below 2 lacs	103	39%
		2 lacs – 5 lacs	101	38%
		5 lacs – 10 lacs	53	19%
		Above 10 lacs	10	4%
6	Location	Rural Area	149	56%
		Urban Area	118	44%

Table 1: Demographic profile of respondents

Source: Survey

From Table 2 it can be said that more no. of respondents belong to rural area, from that majority of respondents having an annual income of between 5,00,000 to 10,00,000. From that majority of student are there, their qualification is graduation or post-graduation. Majority of respondents belong to an age group of 15 – 30 & 31 – 45. In this majorly males are involved for responding.
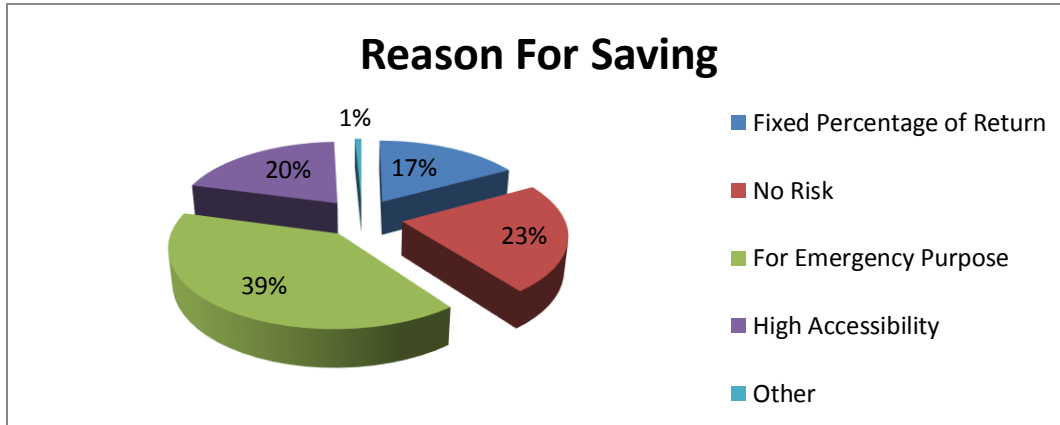

Figure 3: Reason for Saving

Source : Survey

From Figure 3 we can say that 17% respondents reason for saving is fixed percentage of return, 23% respondents reason for saving is no risk, 39% respondents reason for saving is for emergency purpose, 20% respondents reason for saving is high accessibility, 1% respondents reason for saving is other.
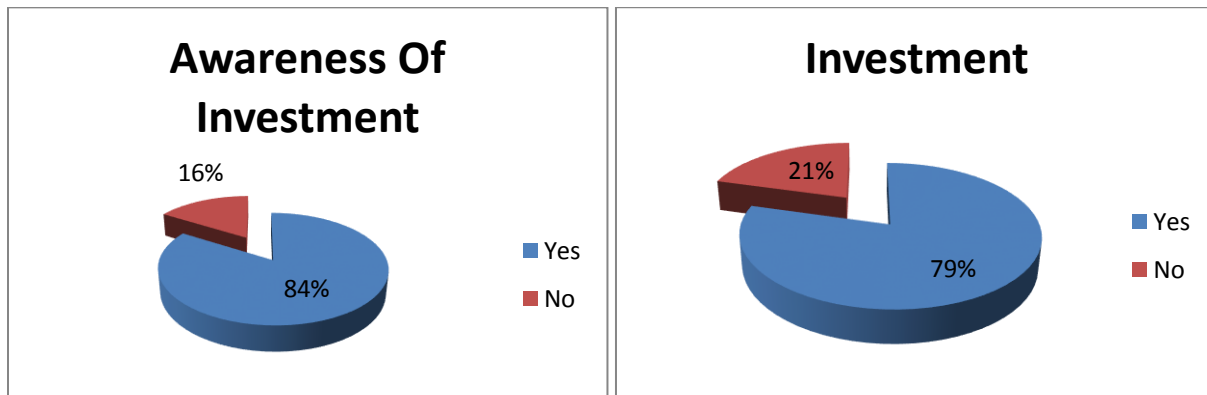

Figure 4: Investment

Source : Survey

From Figure 4 we can say that 84% investor are aware of investment& 16% are unaware of investment, but from that only 79% of investors actually invest while 21% of investors don't invest.

From Figure 4 we can say that there are 5% of people who are aware but are not willing to invest.

An attempt was made to identify the relationship between location and gender on investment/ saving decision through chi square test and following were the results:

Hypothesis	P Value	Result
HO There is no significant association between location and Investment/saving decisions. Ha There is significant association between location and Investment/saving decisions.	0.0299	H0 : Rejected Ha : Accepted
HO There is no significant association between gender and Investment/saving decisions. Ha There is significant association between gender and Investment/saving decisions.	0.47782	H0 : Accepted Ha : Rejected

Table 3 : Chi Square Results

Source : Excel output

Here in Table 4 we have level of significance as 0.05 and degree of freedom as 1. While after calculating P value it can be said that, in case of 'Location of the customers' and 'Investment or Saving decisions', P value is 0.0299 which smaller than 0.05. So here there is an association between Location & Investment or saving decisions. While in case of 'Gender' and 'Saving habit', P value is 0.47782 which greater than 0.05. So here there is no association between Gender & Saving habits of the customer.

Findings, Conclusion and Suggestions

From this literature review on awareness of investment & savings pattern, the residents are required to study the investment and saving pattern for their future goal, this can be concluded.

Here it can be said that a good number of urban citizens are aware of investment & saving pattern & prefer investing, but at the same time, there are number of rural investors who are aware of investment & saving pattern but are willing to invest only in fixed deposit & for rest they go for either savings A/C or home saving specially females. The reason behind this is for emergency purpose & more liquidity.

The resident of Satna should consider things such as they should see beyond fixed deposit, savings A/C & home saving. They should have complete knowledge regarding awareness, pattern, risk, return & tax advantage due to investment. Investment & saving organizations should tie up with various banks, as residents believe higher in banks as compared to direct investment & saving companies.

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Brand performance of HUL on personal care products:

a satisfaction survey

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Abstract

The increased aspiration for grooming among individuals, as well as demographic shifts and habits, profound consumer pockets, increasing press attention, larger product selection, expansion in retailing industry, and greater availability, are the explanations for the sharp rise in demand for personal care products among Indians, particularly the youth. This Study aims to show the satisfaction of consumers for the personal care products of Hindustan Unilever Ltd, the sample size of this research is 385 and the main objective is to know the factors that contribute to the satisfaction of personal care products, and which are the most preferred personal care products. The survey instrument is questionnaire, and the data is only gathered from Ahmedabad residents. This study reveals that Pears is the most preferred brand when it comes to soap, while TRESemme is the most preferred shampoo, and Pepsodent is the most preferred toothpaste brand which fall under Hindustan Unilever Ltd., and Hair & Care which is brand of Marico is the most preferred hair oil for the residents of Ahmedabad.

Keyword: Brand performance, Consumer preference, Satisfaction

Introduction

Fast Moving Consumer Goods (FMCG) are packaged products that are consumed or supplied often and in small quantities. Rising income, & celebrity endorsements and increased urbanization are driving the sector. India's FMCG industry is the fourth biggest in the country's economy. Hygiene products, soaps, cleansers, and cosmetics are just a few examples of FMCG products. Sunsilk, Clear, and Clinic Plus are the most prevalent brands. Unilever's Lux, Dove, Hamam, and Lifebuoy are among the biggest popular brands. Glow & Lovely, Lakmé, and Ponds are three of Hindustan Unilever's most famous trademarks among Female characters. Glow & Lovely is the company's primary skin care brand and was the world's first skin brightening lotion. HUL with its toothpaste brands Pepsodent and Close Up, is major operator. HUL products are used by two out of every three Indians, according to study. The purpose of this study is to determine the favored brand and level of contentment with HUL's personal care products in Ahmedabad.

Literature Review

This is true all around the globe; fast moving consumer goods (FMCG) account for a significant portion of consumer spending. Baumgartner (2002) noticed that customer behaviour is incredibly complicated. Hair care, bath products, skin care and cosmetics, and oral care are all part of India's personal grooming business. Banu Rekha. M and Gokila. K (2005). Hindustan Unilever (HUL) has expanded its share of the shampoo industry while competitors Procter & Gamble (P&G) and CavinKare have seen their market share erode, according to RuchitaSaxena (2008). The company's major goal is to raise awareness about Swadeshi products among Indian consumers. Buyers are well acquainted of herbal cosmetics, according to Rekha and Gokhila (2015). Companies offering FMCG to rural consumers cannot simply apply their general marketing methods to rural markets, according to Md. Abbas Ali1, Venkat Ram Raj Thumiki, and Naseer Khan (2012). Consumer behaviour is defined as the actions people perform when purchasing, using, and discarding goods and services (et.al. Blackwell 2001). Researcher has found that there are various studies conducted on Brand Performance of HUL in Southern India but there are no evidence of study conducted in Western India. There is no specific study that shows the most preferred products of HUL with special reference to Gender.

Objectives of the Study:

- To determine Hindustan Unilever Limited's most preferred personal care product brand.
- To determine the factors that influence consumer satisfaction with personal care products.

Research Methodology

This study used a descriptive methodology. This study is conducted in Ahmedabad and according to the World population review, 2021 population of Ahmedabad is 82.5 lakhs. Considering Morgan's table calculation for any population size above 10 lakhs the sample size proposed is 384.

Hypothesis Testing & Statistical Tool

- Ho1: There is no significant association between age of the respondent and satisfaction towards HUL personal care product.

- Ho2: There is no significant association between Gender of the respondent and satisfaction towards HUL personal care product.

- Ho3: There is no significant association between Occupation of the respondent and satisfaction towards HUL personal care product.

The CHI SQUARE test is used in this study because it demonstrates a relationship between

categorical variables. This refers to whether variables are independent or dependent on one another. And the goal of this research is to discover how consumer satisfaction is influenced by Gender, Occupation, and Age.

Result and Discussion

Descriptive Statics Results:

Gender is an essential demographic component that can be utilized in research. From the 385 respondents who required to fill out the questionnaire, 39.2 % were Males, 60.3 % were Females. Also majority of the respondents fall under 21-30 age range category followed by 31-40 age range category. It was observed that Students and Self-employed covered the major respondents. They respondents agreed that amount they spend on personal care products each month 501-750 rupees price range got the highest response which is 41.6%. Soap has been picked as most preferred personal care product category followed by Shampoo, Toothpaste, and Hair Oil, while Intimate Hygiene personal care product category is least preferred by the respondents.

Out of 385 respondents, 37.9 % i.e., 146 respondents favour HUL's Pears which is most preferred Soap, accompanied by Cinthol which encompasses 22.6 % of the pie chart, and in addition 10.6 % i.e., 41 out of 385 favour Patanjali Soap, whereas Fiama Di Wills is favoured by 6.8 % respondents i.e., 26 out of 385, while Godrej No 1 has got minimum preference with mere 1% i.e., 4 out 385 in the option list. Also out of 385 respondents, 32.5 % i.e., 125 respondents prefer HUL's TRESemme which is most preferred Shampoo, accompanied by Pantene which encompasses 20.3 % of the pie chart, and in addition 18.4 % i.e., 71 out of 385 prefer Sunsilk Shampoo, whereas Dove is preferred by 10.1 % respondents i.e., 39 out of 385, while Patanjali's Kesh Kanti has got minimum preference with mere 3.1% i.e., 12 out 385.

To the response of the factors influence the purchase of HUL personal care products it was observed that Quantity has the maximum tally when questioned about the most essential component when purchasing with 269 Strongly Agree responses and only 3 Strongly Disagree responses, preceded by Packaging with 229 Strongly Agree responses and only 4 Strongly Disagree responses, while Promotion Techniques is the third most important picked factor with 212 Strongly Agree counts and 92 Agree counts, and Quality is the least selected component when purchasing HUL's personal care products with 117 Strongly Agree counts and 24 Agree counts.

Results of Hypothesis Testing

   a. Age * Satisfaction Cross Tabulation

   Ho1: There is no significant association between age of the respondent and satisfaction towards HUL personal care product.

Ha1: There is significant association between age of the respondent and satisfaction towards HUL personal care product.

Table 2

Age * Satisfaction Crosstabulation

Count

		Satisfaction					Total
		Strongly Agree	Agree	Netural	Disagree	Strongly Disagree	
Age	Below 20 Years	9	1	2	0	0	12
	21-30	147	54	9	1	1	212
	31-40	107	28	5	0	2	142
	Above 40 Years	7	8	3	1	0	19
Total		270	91	19	2	3	385

Table 1

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	27.691[a]	12	.006
Likelihood Ratio	20.878	12	.052
N of Valid Cases	385		

a. 12 cells (60.0%) have expected count less than 5. The minimum expected count is .06.

The above chi square test clearly shows that the P value (0.006) is less than significance level 0.05 and hence in this scenario alternate hypothesis is accepted.

b. Gender * Satisfaction Cross Tabulation

Ho2: There is no significant association between Gender of the respondent and satisfaction towards HUL personal care product.

Ha2: There is significant association between Gender of the respondent and satisfaction towards

Gender * Satisfaction Crosstabulation

Count

		Satisfaction					Total
		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
Gender	Male	108	34	6	1	2	151
	Female	161	57	12	1	1	232
	Prefer not to say	1	0	1	0	0	2
Total		270	91	19	2	3	385

HUL personal care product.

Table 3

The above chi square test clearly shows that the P value (0.237) is greater than significance level

Table 4

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.410[a]	8	.237
Likelihood Ratio	5.507	8	.702
N of Valid Cases	385		

a. 9 cells (60.0%) have expected count less than 5. The minimum expected count is .01.

0.05 and hence in this scenario null hypothesis is accepted.

c. Occupation * Satisfaction Cross Tabulation

Ho3: There is no significant association between Occupation of the respondent and satisfaction towards HUL personal care product.

Ho3: There is significant association between Occupation of the respondent and satisfaction towards HUL personal care product.

Table 5

Occupation * Satisfaction Crosstabulation

Count

		Satisfaction					Total
		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
Occupation	Student	94	40	5	0	1	140
	Self-Employed	70	17	6	1	0	94
	Professional	55	13	5	1	0	74
	Government Employee	27	10	1	0	1	39
	Homemaker	24	11	2	0	1	38
Total		270	91	19	2	3	385

Table 6

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.336[a]	16	.574
Likelihood Ratio	15.258	16	.506
N of Valid Cases	385		

a. 14 cells (56.0%) have expected count less than 5. The minimum expected count is .20.

The above chi square test clearly shows that the P value (0.574) is greater than significance level **0.05** and hence in this scenario null hypothesis is accepted.

Findings, Conclusion and Suggestions

The study concludes that satisfaction for personal care products are directly connected to age. Hence for different age group there are different factors that lead to satisfaction, so to cater the broad audience every factor should be kept in mind or else there are chances to failure for companies. Hindustan Unilever Ltd. is market leader when it comes to the products like Soap, Toothpaste, and Shampoo but in Hair Oil segment it faces stiff competition from Marico and other companies and to cater that market Hindustan Unilever Ltd. has to come out with new products. Quantity and Quality are two major factors contributing to the purchase of Hindustan Unilever's Ltd personal care products and they are constantly dedicated towards both the factors but one factor they can consider to even more penetrate the market are offers on the products. Pricing strategies of Hindustan Unilever Ltd has minimal response when asked about the satisfaction level, Hence they can work upon their pricing strategies to get maximum satisfaction from the consumers. Intimate Hygiene is the least preferred personal care product but now as people are becoming possessive with hygiene Hindustan Unilever Ltd. can focus more on their product V-Wash which is having least number of competitors in the category.

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Manufacturing Industry Automation: Scope and Limitation

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Abstract

Manufacturing industries are the chief wealth-generating sectors of any economy. These industries adopt various technologies and methods widely known as manufacturing process management. This study aims to show the limitations and scopes for Industry automation special reference to the Manufacturing Industry. The main objective behind the whole study is to determine the Limitations of Automation in Manufacturing Industry in MSME and to determine the scope of Automation in the Manufacturing Industry post-Covid-19 scenario. The research study includes both a Qualitative approach to finding the scopes and limitations for automation in the manufacturing industry. In-depth Interview method was used for data collection for selected companies in Ahmedabad, Gujarat region. This research shows that the majority of Automation adoption happens because of cost-cutting, time-saving, great accuracy and full efficiency of the production unit of a company. And the reason for a rejection or late adoption is that it involves high capital. The capital required for advanced technology adoption is so high that only big and well-established companies can adopt Industry automation.

Keywords: Automation, Manufacturing Industry, MSME

Introduction

Automation, in the context of manufacturing, is the use of equipment to automate systems or production processes. The end goal is to drive greater efficiency by either increasing production capacity or reducing costs, often both. Automation has become known more as using machines to reduce work performed by humans. It has become associated with electromechanical systems that are programmed to perform many ty pes of processes.

Objectives of the study

- To study and determine the scope of Automation in Manufacturing Industry post Covid-19 scenario.
- To study and determine the Limitations of Automation in Manufacturing Industry in MSME.

Review of literature

Industry 4.0 is defined asthe integration of cyber-physical systems into industrial production systems, which can be compared to General Electric's introduction of the industrial internet in North America (Posada et al., 2015). To be competitive in the volatile and hyper-competitive market, all manufacturers must prepare to accept this potential industrial revolution. (Ghobakhloo, 2018) Solutions for the metal additive manufacturing of components for their exclusive automobiles (Ghobakhloo, 2018). Not only as a result of the shift from analogue to digital, but alsobecause of their dominance in information processing. From the outset of manufacturing automation, the majority of the automation equipment were electrical and digital (P.Kopacek, 2015). One solution is to have a series of stored controller settings, each pertinent to a specific operating zone. Once it is detected that the operating regime has changed, the appropriate settings are switched in. This strategy, called parameter- or gain-scheduled control, has found favor in applications to processes where the operating regions are changed according to a preset and constant pattern. A similar application is described in Kopacek, Schörghuber (2014). (P.Kopacek, 2015). Assembly operations joins two or more components to create a new entity, called an assembly bymeans of permanently (welding, brazing, soldering, and adhesive bonding) or semi permanently (screws, bolts or rivets, press fitting, and expansion fits). (P.Kopacek, 2015). MSMEs are the backbone of economic growth for India1. Also, 120 million people find employment in such MSMEs, and 80% of these entities are based in rural areas (Confederation of Indian Industry Report, 2019). However, there is lot research done on the Industry Automation and what are limitations and scopes for Industry Automation reference to Manufacturing Industries by foreign Researchers. But there is no studied done on the Manufacturing Industry Automation's Scopes and Limitations in Indian MSME sector and mainly the post Covid-19.

Research Methodology

There is a Descriptive Method with Structured Interview used in this research. Non-Probability Sampling Method is utilized, which includes choosing a study dependent on non-irregular boundaries and excluding each individual from the populace. The outstanding non-discriminative snowball inspecting is non-likelihood testing, which implies that the main subject is picked and afterward he/she makes different references. These companies are having their manufacturing units in Ahmedabad region or nearby area. They also export their products in more than one country. They have large production facilities with good technology. They

have large number of workforce and good clientele.   The study was carried out in the industrial area of Ahmedabad and the response is collected in the month of November-December 2021.

Result and Discussion

Automation is nearing a tipping point, thanks to significant advancements in artificial intelligence (AI) and robotics technology. Robots can now conduct a wide range of tasks with little or no human assistance. Automated technologies are not just doing iterative jobs, but they are also greatly increasing labour capabilities. In fact, about half of the worldwide workforce is anticipated to be replaced by automated devices. Automation is being used in a variety of industries, from manufacturing to banking, to increase productivity, safety, profitability, and quality.

In a hyper-competitive ecosystem, automation will improve connection and dependability. Everything will be accessible and readily available in the future of automation, which appears to be encouraging. HCL's COPA, driven by DRYiCETM, goes beyond traditional automation by providing a full suite of integrated robotic process automation for the front, middle, and back office elements of a process.

Industry 4.0 is the consequence of the intermingling of numerous mechanical turns of events. This new worldview, which should be profoundly computerized and financially savvy while likewise producing customized things in a high-volume climate, can possibly change the capacity of conventional mechanical production systems by modifying the status quo made and benefits are given. The center given to this next modern transformation, named Industry 4.0, has started different discussions about the thought and its undertones, just as the advances that will be created and the outcomes of their effective sending. The focal point of the paper was on the idea of Industry 4.0, which empowers savvy, reasonable, productive, compelling, customized, and altered assembling at a sensible cost. Quicker PCs, more astute apparatus, sensors, and minimal expense information stockpiling and transmission may assist with making machines and merchandise more brilliant. The transformation is characterized by quick innovation leap forwards that are spanning the physical and virtual universes by combining people, savvy machines, shrewd things, apparatuses, fabricating frameworks, and cycles. Be that as it may, two essential powers are forming Industry 4.0: Cyber Physical Systems (CPS) and Internet of Things (IoT) and Internet of Services (IoS) (IoS). New review fields, for example, organized inventory network and modern administration, information gathering from creation units and information enhancement for the utilization of viable and proficient hardware, and ideal support booking, ought to be recognized as industry 4.0 reception develops. A complete arrangement for changing existing things into shrewd items ought to likewise be set up. Every one of the six principle components are imperative for the compelling execution of Industry 4.0 since they are interconnected, and undertakings ought to think about every one of them while embracing Industry 4.0.

Conclusion and Suggestions

Figure 1

Conceptual Framework for the Manufacturing Industry Automation
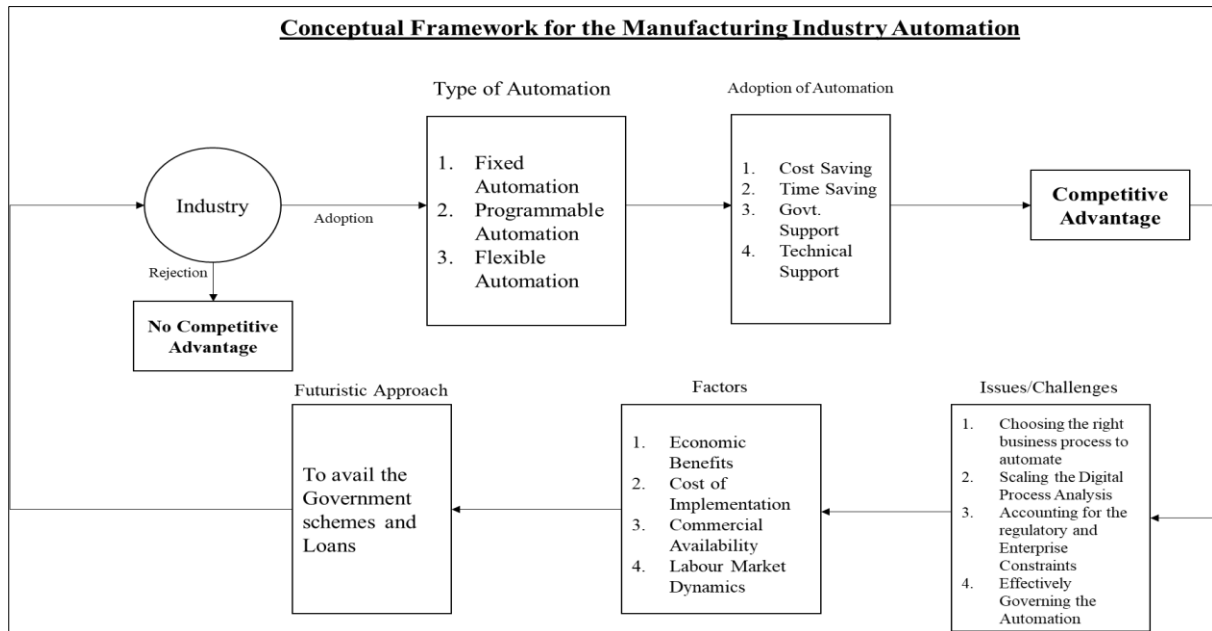
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List of companies:

Table 1

Sr. No	Name of the Company	Type of Company
1	Mahendra Manufacturing Company	Manufacturing
2	G. P. Industries, Ahmedabad	Manufacturing
3	Rajdeep Plastic Bag Manufacturing Company	Manufacturing
4	Ocean Valves Manufacturing Company	Manufacturing
5	Bhumi Industries	Manufacturing
6	Girnar Machinery Manufacturing Company	Manufacturing
7	Siddhivinayak Industries	Manufacturing
8	Kiri Chemical Industries Limited	Manufacturing
9	Aaron Industries Ltd	Manufacturing
10	Gemi - Gujarat Equipments Manufacturing Industries	Manufacturing

Structured Interview Questions

1. What is your Company name?

2. Type of your Industry.

3. What kind of product you manufacture?

4. What is your business model?

5. Are you using any kind of Industry Automation? If yes, then the Automation used in your company.

6. Reasons for adoption or rejection for automation

7. Exact automation techniques and its advantages

8. Effectiveness of automation

9. What are the major issues you faced in your company?

10. What are the scopes for automation tool in your company?

11. All the companies are adopting automation, what are the factors that stopping you to adopt industry automation?

12. What are the limitation of automation in your company?

13. What can be the futuristic approach for your company?

14. Competitive advantage

15. Cost of technology adoption or upgradation in terms of product quality, labour workforce, and market availability.

16. Government schemes, loans and advances for technology upgradation.

Connect between make in India and technology automation?

Financial Analysis of Public and Private Sector Banks in Pre and Post Covid Era

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Abstract

The banking sector plays a systematic role in economic development of a country. Banks are examine as backbone of any economy for financial growth and stability. Private sector banks in India play main role along with public sector for overall financial sector reforms. The institution of global private sector banks in India increased the competition in Indian Banking Industry. The goal of this study is to evaluate and analysis the performance of private banks before Covid Pandemic. CAMEL Model is one such rating system that proved to be better for performance measurement, judgement and strategic planning for future growth and development of the Indian banks in the light of changing necessary of this sector. In present study take total10 banks for this study in that 5 private sector banks and 5 public sector banks. HDFC Bank, ICICI Bank, Axis Bank, Kotak Bank, Induslnd Bank and Bank of India, Central Bank of India, State Bank of India, Canara Bank, Union Bank respectively. In addition, In present study analyse the data through paired t-test. The present study found that there is a significant difference between post Covid analysis and pre Covid analysis. As a whole, selected private sector banks perform better than selected public sector banks in terms of financial performance and performance consistency.

Keywords: CAMEL, Pre Covid, Post Covid, Public Sector Banks, Private Sector Banks

Introduction

The Indian banking sector plays a major role in economy growth of the country and its most controlling components of the financial sector. Banks help channel savings to expenditures and inspire economy growth by distributing savings to expenditures that have possible to yield higher returns.

The CAMEL model mostly examine for the object to know performance of the different public sector and private sector banks with the multiple tools like capital adequacy, asset quality, management efficiency, earning quality and liquidity to examine financial health of the selected private sector and public sector banks in India.

A comparison of private and public banks financial results from 2019 to 2020 will aid in a deeper understanding of the effect of Covid-19 on financial performance and how it affect to the overall baking industry. According my findings private sector banks financial performance overall sound good comparatively with public sector banks.

Objectives of the study

1. To study the performance analysis of private and public banks by using CAMEL model under pre Covid era.
2. To study the performance analysis of private and public banks by using CAMEL model under post Covid era.
3. To measure the financial performance of selected public and private banking sectors by using CAMEL Model.

Review of Literature

(Ruchi, 2014) has estimated the performance of public sector banks in India using CAMEL model. Like other sectors, banking sector plays a veritably important part for development of country. This study give idea the performance of public sector banks in India using CAMEL for a five-time period. Experimenter plant that the overall performance of public sector banks is different from time to time. **(Das & Gusto, 2012)**, in their study dissect the banking performance in India using CAMEL approach for the period 2004-2008. The results CAMEL ranking plant that there's no significant changes between public and private/ foreign banks, but the upward trend was more visible for private/ foreign banks over that of public sector banks.

(Lopez & Hirtle, 1999) look at the value of once CAMELS appraisals in assessing banks' present conditions. They detect that, contingent on current open data, the private administrative data contained in once CAMELS appraisals gives farther knowledge into bank current conditions, as outlined by current CAMELS evaluations. **(Kumar, Harsha, & Dhruva, 2012)**, with a thing is to examine the prosecution of 12 open and private area banks over a time of eleven times (2000-2011) in the Indian managing an account division. For this reason,

CAMELS approach has been employed and it's erected up that private area banks are at the precedence on the rundown, with their exhibitions regarding soundness being the stylish. **(Echekoba, Egbunike, & Kasie, 2014)**, in their study measures the impact of CAMEL variables on the Nigerian banks profitability during 2001-2010 using OLS retrogression. The result plant that liquidity is significantly affecting the bank's profitability, while other rates are having insignificant impact. **(Alemu, 2015),** aims at assessing the relation between capital acceptability and performance of 8 Ethiopian banks during 2000-2013 using CAMEL rate. The result reveals that utmost of the sample banks are plant to maintain sound position during the study period. The result of retrogression analysis indicates the actuality of positive relationship between capital acceptability and performance of banks.

(Mahesh etal, 2019), conducted a relative study between private and public banks in India through the camel standing system. Axis and Kotak Mahindra Banks from Private Sector and Bank of Baroda and State Bank of India from the public sector was taken for this study. Needed Data of all separate banks have been collected for five times i.e. 2013-14 to 2017-18. To analysis the dada CAMEL standing system has been applied. The study concluded that Public and Private Banks are performing well in maintaining the Capital acceptability. There's no big difference between public and private banks on the base of liquidity parameters. **(Anurag&Priyanka, 2012)** conducted a relative study of fiscal performance between SBI and ICICI bank. The purpose of the study is to estimate the fiscal performance of SBI (Public sector bank) and ICICI Bank (private sector bank). This study was descriptive and logical in nature. Experimenter conducted this study to compare the fiscal performance of SBI and ICICI Bank on the base of colorful rates similar as credit deposit, net profit periphery etc for the period of five times (2007-08 to 2011-12). This study expressed that loan means from deposits are advanced in case of ICICI than SBI. The experimenter plant that SBI is performing well and financially sound than ICICI Bank other than deposits and expenditure**. (Malhotra & Bhawna, 2017)** A CAMEL model analysis of private banks in India. Study analyse performance and financial soundness of selected private banks. Result indicates rank under camel model first rank ICICI bank, Kotak at third Srank and HDFC at fourth rank last position Induslnd bank. **(Erol, 2014),** compared the performance of Islamic banks against conventional banks in Turkey by using CAMEL model. The results showed that Islamic banks performed more in profitability and asset operation rates compared to conventional banks but slow in perceptivity to request threat criterion.

Research Gap

I gone through many research paper most of all the papers have fulfil the research gap but in my present study I found during my research one-research gap that no research papers publish on the post Covid crisis on bank with using CAMEL approach. Therefore, we can do research in future specifically on post Covid crisis with using CAMEL approach.

Research Problem

The CAMEL model ratios have various ratio under each head so systematically all parameters of the bank can be study out at one glance and proper suggestion or guidance can be made. It is also important to find the relation between CAMEL ratio and the Profits of the bank, which is also important to find which category of ratio has significant impact on profits. In India, profit earned by private bank is more than the public sector bank. Hence, the study is undertaken to analyse the performance and position of the pre and post Covid performance private and public sectors banks.

Research Questions

Present study analyse how to the performance analysis of private and public banks by using CAMEL model pre and post Covid? To know the rank the banks under the study based on performance.

Objectives of the study

1. To study the performance analysis of private and public banks by using CAMEL model under pre Covid era.
2. To study the performance analysis of private and public banks by using CAMEL model under post Covid era.
3. To measure the financial performance of selected public and private banking sectors by using CAMEL Model.

Research Methodology

The present study covers only 5 private sector banks and 5 public sector banks. This study only based on CAMEL model so we can also use financial ratios. In the Stastical tool, applied paired t-test because present study compared different time of the era like Pre Covid and Post Covid. Paired t-test reduce one test and easy to compare. Here in present study used non-probability sampling method. In non-probability sampling method, used convenience method.

Hypothesis:
H_0: There is significant difference between the performance analysis of private and public banks of pre and post Covid.
H_a: There is no significant difference between the performance analysis of private and public banks of pre and post Covid.

Result and Discussions

Here, 1 means Highest and 5 means lowest rating

Table 1

Bank Names	Post Covid		Pre Covid	
	Measurement Ratio	Capital adequacy	Measurement Ratio	Capital adequacy
HDFC Bank	18.80%	2	19%	2
ICICI Bank	19.12%	2	16%	2
Axis Bank	19.12%	2	17.53%	2
Kotak Bank	22.26%	1	18%	2
Induslnd Bank	17.38%	2	15.04%	2
Bank of India	14.93%	3	13%	3
Central bank of India	14.81%	2	11.72%	3
State bank of India	13.74%	3	13.13%	3
Canara Bank	13.18%	3	14%	3
Union Bank	12.60%	3	13%	3

Capital adequacy is the ratio of a bank's reserves in relation to its current liabilities and risk weighted assets. This ratio high means bank has low risk of failure and bank's financial health sound good. According to, above data Kotak bank's financial health sound good.

Table 2

Bank Names	Post Covid		Pre Covid	
	Measurement Ratio	Asset quality	Measurement Ratio	Asset quality
HDFC Bank	0%	1	0%	1
ICICI Bank	2%	2	2%	2
Axis Bank	1%	1	2%	2
Kotak Bank	1%	1	1%	1
Induslnd Bank	1%	1	1%	1
Bank of India	3%	2	4%	2
Central bank of India	6%	3	8%	4
State bank of India	2%	4	2%	4
Canara Bank	4%	2	4%	2
Union Bank	5%	2	5%	3

Asset quality measures existing and potential credit risk associated with the loan and portfolios. Rating of this ratio 1% means asset has a low risk and good quality. According to, above data HDFC bank, Kotak and Induslnd bank's has a low risk and good quality for asset and loans portfolios.

Table 3

Bank Names	Post Covid		Pre Covid	
	Measurement Ratio	Management Efficiency	Measurement Ratio	Management Efficiency
HDFC Bank	2,591,035.71	1	2,244,771.35	1
ICICI Bank	1,639,765.48	1	798,519.16	1
Axis Bank	841,368.03	1	219,478.74	1
Kotak Bank	1,347,163.75	1	1,188,628.09	1
Induslnd Bank	956,269.85	1	1,440,279.32	1
Bank of India	419,809.69	1	-594,145.96	5
Central bank of India	-274,496.55	5	-334,921.99	5
State bank of India	830,869.25	1	580,806.85	1
Canara Bank	289,931.96	1	-381,313.21	5
Union Bank	371,597.29	1	-776,509.06	5

Management efficiency is important for profitability. It is important for growth and continuity of organization. As more management efficiency as bank's financial health sounds good. According to above data Central bank of India's management efficiency as well financial health sounds not good.

Table 4

Bank Names	Post Covid		Pre Covid	
	Measurement Ratio	Earning Quality	Measurement Ratio	Earning Quality
HDFC Bank	3.33%	1	3.33%	1
ICICI Bank	3.10%	1	2.67%	1
Axis Bank	2.70%	1	2.68%	1
Kotak Bank	3.32%	2	2.86%	1
Induslnd Bank	3.34%	1	3.62%	1
Bank of India	1.53%	3	1.80%	2
Central bank of India	1.27%	3	1.27%	3
State bank of India	1.64%	3	1.79%	2
Canara Bank	1.78%	2	1.32%	2
Union Bank	1.85%	2	1.70%	2

A bank's potential to make earning to capable of carry its activities spread, remain competitive are key factors in analysis continued feasibility. As more Earning quality as bank's financial

health sounds good. According to above data Private Banks has more Earning quality compare to Public banks.

Table 5

Bank Names	Post Covid		Pre Covid	
	Measurement Ratio	Liquidity position	Measurement Ratio	Liquidity position
HDFC Bank	7.29%	4	6.29%	4
ICICI Bank	4.94%	5	4.58%	5
Axis Bank	7.32%	4	13.27%	2
Kotak Bank	4.46%	5	3.62%	5
Induslnd Bank	6.98%	4	6.77%	4
Bank of India	9.68%	4	5.26%	4
Central bank of India	9.75%	3	9.57%	4
State bank of India	5.79%	4	5.14%	4
Canara Bank	4.26%	5	3.61%	5
Union Bank	4%	5	4.46%	5

Liquidity analyze to know bank's interest risk sensitivity, ability to convert assets into cash easily, dependence on short-term unstable financial resources. As more Liquidity ratio as bank's financial health sounds good.

Paired T-test

Table 6

[DataSet0]

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre	13.0000	10	4.16333	1.31656
	Post	11.6000	10	2.41293	.76303

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre & Post	10	.973	.000

Paired Samples Test

		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	Pre - Post	1.40000	1.89737	.60000	.04271	2.75729	2.333	9	.045

If analyse the result < 0.05 it means here result is 0.045 then there is a significant difference

Between post Covid analysis and pre Covid analysis.

Conclusion

According to the present study, the performance of private banks and public banks differ significantly in terms of time, profitability, credit risk, asset quality, return generating capability, and other factors. The financial output of banks was greatly influence during this Covid-19. A comparison of private and public banks' financial results from 2019 to 2020 will aid in a deeper understanding of the effect of Covid-19 on financial performance and how it affect the overall baking industry.

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