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RESEARCH PAPER ON IMPACT OF THE COVID-19 PANDEMIC ON INDIAN FMCG SECTOR: A COMPARATIVE STUDY OF ESSENTIAL AND DISCRETIONARY SEGMENTS

SHARAD

PhD Scholar,IIM Shillong,India. E-mail address: Sharad.vatsey@icloud.com

Abstract:

COVID-19 pandemic, a once in a century event, led to a global GDP loss of 3.4 percent. In this study an attempt has been made to do a segment level comparison in the fmcg sector to investigate the impact of covid-19 pandemic using quantitative techniques on the company financial figures like pat, net sales expenditure and share of wallet. A part of bse fmcg index companies has been considered for the period of qe September 2018 to qe December 2020 for the analysis. Both parametric and non-parametric hypothesis testing methods were used to analyse the segmental impact of the pandemic on FMCG sector. Moreover, no statistical evidence was found in the research to support common perception that during the pandemic essential segment of a sector expanded and non-essential sector contracted. This study would help the investors of the FMCG sector and government in making investment decisions and policy responses respectively.

Key Words: COVID-19, FMCG Sector in India, BSE FMCG index, pandemic, Non-Parametric

JEL: C12, C14, M31, M38

Introduction:

Over the course of human history, only a few events come close to matching the extent of devastation caused by the COVID-19 pandemic. The extent of economic and financial impact of this pandemic is yet to be clearly understood and fathomed, hence it qualifies to be transformative in nature (Fishman, 2020).

The first case of COVID-19 in India was recorded on 20th January 2020 and by the second quarter it crossed five lakh cases. Given the contagious nature, more than one crore people were infected by the end of 2020. Figure-1 shows the progression of COVID-19 in India from March 2020 to December 2020. As the nation was slowly recovering from the health emergency, the second wave hit- leading to more than two crore cases in first and second quarter of 2021 combined.

The exponential rise in the number of cases had led to lockdowns and movement restrictions across the country which caused supply chain disruptions. Due to these disruptions, domestic production and consumption were impacted, leading to a contraction of India's GDP by 7.3 per cent in 2020-21 (RBI Monetary Policy Statement, 2021).

In response to the mounting pressure to return to normalcy and minimize the impact of the pandemic, a central theme emerged strongly not just for India but across the globe. This theme focused on re-prioritization of budgetary allocations, increase in debt and government spending

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to soften the blow for the most vulnerable. In a study of RBI it is observed that 2019-2020 and 2020-2021 stand out in terms of the increases which are largely associated with the pandemic.

It is believed that the restrictions on travel and import-export enforced across the globe caused an escalation in the cost of factors of production which in turn led to a decline in the economic activity and overall output. Further, the contraction in economic activity also induced a change in the customer purchase behavior owing to a dip in the overall disposable income. More than 43% households in India recorded a fall in income from Feb to April 2020, while only 10% of households reported an increase (Statista, 2020).

FMCG sector has always been an interest area for researchers as this sector was impacted by both demand and supply-side shocks. Therefore, the primary goal of the paper is to identify the impact of COVID-19 in FMCG sector of the country. A total number of 62 companies are considered for analysis in the study. Since the FMCG sector in India has a mix of firms with varying product portfolios, the analysis looked at the categorization based on the Price Monitoring Division of the Department of Consumer Affairs.

1. Essentials: This is a must-have or essential category, for example, Flour, Pulses, Salt, Sugar, and Fish etc.

2. Non-Essential Goods: This is a category where consumption is discretionary e.g., Chocolate, Beauty Products etc.

3. Others: OTC medicines like Sualin, Vicks, Chavanprash etc.

The secondary data from CMIE proprietary database is collected for companies of both the categories i.e. essential and non- essential for a period of 10 quarters starting from September 2018 to December 2020. However, the study has considered only the first wave because of the availability of the vaccination during the second wave.

Based on the tests conducted for the financial figures viz. Net sales, Ratio of Net sales, PAT and Expense, it is identified that the FMCG sector was not affected by the Covid-19 pandemic.

The outline of the paper is divided basically into five sections: Section 2 discusses how the construct of the study was developed based on the literature review, Section 3 highlights the theoretical foundation and the hypothesis development, Section 4 describes the quantitative methodology used in the study, Section 5 presents the result of the study and Section 6 concludes.

Materials and Methods

COVID-19 has unleashed a crisis of magnitude which was unheard of earlier. The only event that comes close to this crisis is the Spanish flu. Surprisingly the uniqueness of this crisis is that the preventative and/or containment measures like lockdown, social distancing, weekend curfew, night curfew etc. were also not completely safe from an economic perspective and further compounded the problems. Due to the lack of appropriate medical facilities to tackle the hazard, COVID-19 pushed approximately 60 per cent of the world population under some form of lockdown. It is also found that the pandemic has also caused modifications in consumer

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buying behavior (Sheth, J.020).Debata et al. 2021 mentioned that the prolonged lockdown resulted in resource depletion without corresponding resource generation, which is found to be the most precise and concise description of the crisis we faced. It is found that the FMCG sector is highly affected by the corona virus pandemic due to resourcing constraints including but not limited to the availability of labor force (Jakhotiya, 2020). This would imply that all FMCG production and distribution chain elements were impacted by the pandemic.

However, it has also been observed that "Nifty FMCG", shows growth in its returns as the demand for FMCG products grew during the COVID-19 period (Pathak, 2021). The author attributed this to the bulk purchase and hoarding tendency of customers during uncertain times, which would increase the demand and subsequently the net sales would ultimately have a positive impact on industry performance. On the contrary in a study, it was found that COVID-19 in India made an adverse impact on FMCG sector (Rajamohan et al., 2021).

In addition to this, the performance of the Indian Stock market (BSE) shows that it has recorded higher levels of volatility and looks divorced from the economic realities (Chaudhary et al., 2020). But in a study on loss of life due to COVID-19 and stock market performance (Dow and S&P 500) it was observed that there was no impact on US stock market returns for the first three months of COVID-19 (Onali, 2020).Different studies show that COVID-19 has negatively impacted the FMCG sectors of Indonesia and Bangladesh as well as (Hossain et al., 2020and Herwany et al., 2021). This brings into attention the seminal paper from Werner et al. (1985) which talks about the overreaction hypothesis and confirms the violation of Bayes' rule, i.e., most people "overreact" to unexpected and dramatic news events. We can relate the overreaction hypothesis to the stock price movements and sharp increase in Indian volatility Index and hence conclude that the stock price or index movement would not be a suitable candidate to analyze the impact of the pandemic on the sector and subsequently underlying segments. This is further strengthened by the findings of Turvey et al. (2020) where they have established that high EVA (economic value added) does not necessarily lead to higher shareholder value. Hence, we can conclude that the stock prices or aggregated index levels might be detached from reality and hence cannot be used for segmental analysis.

This study deviates from the extant research which is centered on index or stock price movement and focuses on the financial data of the companies. It also needs to be mentioned that most of the available literature focuses on FMCG sector, but there is little literature available to analyze the segments within the sector i.e., Essentials and Non-essentials.

Theoretical Foundation and Hypothesis development

Patel (2020) in his work on earnings management for Indian FMCG companies has concluded as per De Angelo model that sales are positively related to earnings management. Net sales have also been used by Xiao et al. (2000) to investigate relationship between COVID-19 and firms earning management. Hence Net sales have been used as a demand-side measure. Furthermore, Penunam et al. (2021) have concluded that inventory turnover influences net income through net sales. As inventory turnover data was not available on a quarterly basis, Quarterly Expenditure data of the listed entities has been considered with the assumption that

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if the inventory gets replenished faster, it should account for higher levels of expenditure. There can be a difference in rate of raw material replenishment before and during the pandemic and we intend to test this hypothesis by using expenditure as a proxy for inventory turnover. Hinjra et al. (2014) have argued that PAT has a significant impact on stock prices and previous studies on this subject have focused on stock and Index movement, hence PAT has been considered to test the hypothesis and examine if it was impacted by the pandemic.

It is also found that the pandemic has also caused modifications in consumer buying behavior (Sheth, 2020), this would imply that the pandemic would also cause modification in share of wallet for essentials and non-essentials products. Ratio of Net sales is defined as the ratio of net sales of essential and non-essential segments and is a new variable this study considers to understand if the share of wallet changed significantly due to the pandemic. As per Youn et al., 2021, considering the fear of COVID-19 and its perceived severity, the fashion customers switched shopping channels from online to offline and this is in line with protection motivation theory and theory of planned behavior. This study intends to understand if the same theory can be applied to FMCG customers as well.

Given the backdrop of extant research which discusses both demand-side shocks caused by lesser disposable income or changes in customer preferences and supply-side shocks due to disruption in conventional supply chains, below mentioned table lists out the hypotheses which will be tested in this study. These hypotheses (Table :1) are formulated to understand if the pandemic caused any statistically significant differences in the net sales, PAT, Expenditure and Ratio of net sales across essentials and non-essentials segment of the FMCG sector.

Table-1: Details of Hypothesis tested in this study

Variable	Segment	Hypothesis
Net Sales	Essential	H0(NS-E): Net sales of Essentials segment was not impacted by COVID-19
	Non-Essential	H0(NS-NE): Net sales of Non-Essentials segment was not impacted by COVID-19
Expenditure	Essential	H0(E-E): Expenditure of Essentials segment was not impacted by COVID-19
	Non-Essential	H0(E-NE): Expenditure of Essentials segment was not impacted by COVID-19
PAT	Essential	H0(E-PAT): PAT of Essentials segment was not impacted by COVID-19
	Non-Essential	H0(NE-PAT): PAT of Non-Essentials segment was not impacted by COVID-19
Ratio of Net Sales	Both	H0(R): Ratio of net sales of essentials and non-essentials was not impacted by COVID-19

In the study, 62 companies spanning across both the above-mentioned segments are considered for analysis by way of measuring company data concerning Net Sales, PAT, Expenditure and Ratio of net sales. The financial indicators such as Net sales, Ratio of net sales, PAT and Expense are considered as proxies for company performance.

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As mentioned earlier, the FMCG sector consists of multiple segments namely: Staples, Impulse goods, and others. Price monitoring division under department of consumer affairs (Govt of India) monitors price of 22 essential commodities. This study broadly adheres to the categorization used by Price monitoring division in conjunction with revenue percentage from the segment or product line(s) to divide the companies into essentials and non-essential segment. Commodities considered as essentials are Tea, Coffee, Shrimp, Sugar, Fish, wheat, pulses, rice etc. and commodities considered as non-essentials are Chocolates, Candy, Personal care, creams, and cosmetics etc. The selected companies are a part of the BSE FMCG index, and they have a diverse product portfolio. Considering the continuing volatility of markets and indices, the stock price and index movements have been excluded to gain a balanced view that supports the core theme of analysing the impact of COVID-19 on the FMCG sector in India with the said categorization.

The study has used secondary data from CMIE proprietary database. Data is collected and analysed for a period of 10 quarters i.e., pre-COVID period (on a quarterly basis) from September 2018 to September 2019 and during the COVID-19 period, from December 2019 to December 2020. As the supply chain shocks were more prominent during the first wave of COVID, primarily due to lockdowns resulting in both supply and demand shifts, this period would reflect the actual impact and provide valuable insights.

A total number of 35 companies (Annexure 1) were considered in the essential category and 27 companies (Annexure 2) were considered in the non-essential category.

BSE FMCG index has approximately 80 companies, out of which 18 companies were not included in this study as their product offerings are a mixture of essentials and non-essentials and company level segment data was not available for the same. ITC was excluded, as it is primarily a tobacco/cigarette company (basis segment revenue contribution). Dabur was excluded, as clear demarcation was not available between essentials and non-essentials. Hatsun Agro Products Ltd has also been excluded as data is not available on its segments i.e., Milk, Ice cream and Cattle feed. Mrs Bectors Food has been excluded as the data was not available for the study period.

Consideration has been given to the first wave of COVID-19 as the lockdown restrictions by the government and prominent disruption in the supply chain were observed during the first wave. December 2019 is when the first case was detected in China and subsequently had implications on the global economies ever since. As India started its COVID-19 vaccination program on 16th Jan 2021, we have opted to time box the period of study from December 2019 to December 2020 as a COVID-19 period. This period covers all four phases of lockdown i.e. from March 2020 to May 2020 and seven phases of unlocking i.e. from June 2020 to December 2020. The study has been limited to the first wave of COVID-19 as vaccination was made available by the time second wave hit.

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Results and Discussion:

Test of Normality:

Once the data for said variables was collected, it was tested for normality using following tests:

a) Histograms and Q-Q plots

b) Shapiro-Wilk normality test

For the data, which was not normally distributed, non-parametric test i.e., paired samples Wilcoxon test (Two sided) has been used, on the other hand for normally distributed data parametric tests i.e., t-test has been used. All the tests have been done for before and during COVID-19 period for a span of 5 quarters each.

Shapiro-Wilk normality test was done on the data for every parameter i.e. Net Sales, PAT, and Expenditure etc. for both before and during the pandemic. In addition to the Shapiro-Wilk normality test, histograms and Normal Q-Q plots were also taken into consideration which is detailed in Annexure-3. The findings of normality test can be summarised in (Table: 2).

Table-2: Details of Normality test

Data	Normality Test Result for Before	Normality Test Result for During	Conclusion
Net Sales of Essentials	W = 0.72549, p-value = 2.14e-06	W = 0.72915, p-value = 2.445e-06	Data Not Normal
Net Sales of Non-essentials	W = 0.42042, p-value = 6.689e-09	W = 0.39859, p-value = 4.288e-09	Data Not Normal
Expenditure of Essentials Segment	W = 0.70577, p-value = 7.994e-07	W = 0.71149, p-value = 9.793e-07	Data Not Normal
Expenditure of Non-Essentials Segment	W = 0.43471, p-value = 9.003e-09	W = 0.40974, p-value = 5.373e-09	Data Not Normal
PAT of Essentials Segment	W = 0.54591, p-value = 5.954e-09	W = 0.34166, p-value = 4.786e-11	Data Not Normal
PAT of Non-Essentials Segment:	W = 0.37886, p-value = 2.895e-09	W = 0.37117, p-value = 2.489e-09	Data Not Normal
Analysis of Ratio of Net Sales	W = 0.96148, p-value = 0.8026	NA	Data is Normal

In (Table 3) the results of the study are summarized. From where it can be inferred from the results that there is no significant pandemic impact on the Net Sales, PAT or Company Expenditure for FMCG companies for both essentials and non-essentials segment.

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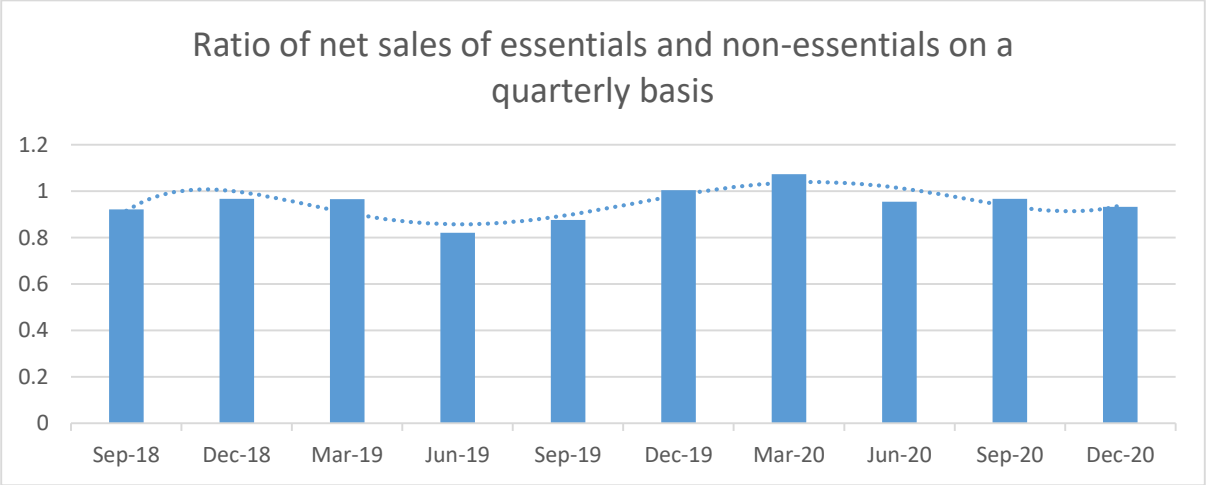
Table-3: Results of Hypothesis testing

Hypothesis	Data Normality	Hypothesis testing at p = .05 (Two Tail)	Result
H0(NS-E) and H1(NS-E)	Data not Normal	V = 203, p-value = 0.2618	No statistically significant difference between before and during
H0(NS-NE) and H1(NS-NE)	Data not Normal	V = 218, p-value = 0.1409	No statistically significant difference between before and during
H0(E-E) and H1(E-E)	Data not Normal	V = 200, p-value = 0.1547	No statistically significant difference between before and during
H0(E-NE) and H1(E-NE)	Data not Normal	V = 226, p-value = 0.09032	No statistically significant difference between before and during
H0(E-PAT) and H1(E-PAT)	Data not Normal	V = 266, p-value = 0.805	No statistically significant difference between before and during
H0(NE-PAT) and H1(NE-PAT)	Data not Normal	V = 160, p-value = 0.9578	No statistically significant difference between before and during
H0(R) and H1(R)	Data is Normal	p = 0.07587748	No statistically significant difference between before and during

As far as the ratio of net sales of essentials and non-essentials is concerned, we observe from figure-1 that it has followed similar cyclist for the entire study period and is not significantly impacted by the pandemic. The results of this study contradict most of the published research as this study focuses on the company financial data rather than the index data.

Figure-1



Conclusion, Implications and Future Research:

The novelty of this study is that it has tried to do a segment level comparison in the FMCG sector to study the impact of the COVID-19 pandemic using quantitative techniques. This study

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could be generalized to any sector and any pandemic like scenario. One of the main deliverables from this study is that the Index level data and actual financial data give different interpretations of the financial performance of a company and the underlying reasons behind this need to be explored and established. Furthermore, the general perception is that during a pandemic essential segment of a sector will expand and the non-essential sector will contract. However, this study empirically negates this perception. This empirical study can be extended further in a stochastic manner so that the perceptive uncertainty surrounding business during a pandemic can be broken beyond doubt.

In this study, four financial parameters were considered, namely Net Sales – which is a proxy for the demand side, Expenditure – which is a proxy for the supply side and factors of production and PAT – which explains the company's performance or profitability. The ratio of net sales of the essentials and non-essentials segments was also evaluated to analyze if the pandemic has caused any change in share of wallet at a segment level within the sector.

We can conclude based on the tests conducted that the Net Sales of the essentials category did not contract due to the COVID19 pandemic. Findings for the Non-Essentials segment as per our analysis are also not different from the essentials segment as there is statistically no significant difference observed in the net sales of this segment pre and during COVID-19. This implies that there was no demand-side shock observed by the FMCG companies due to the pandemic. The study only considers listed entities or branded products. This finding implies that the demand for both essential and non-essential segments in the branded space did not change. Lockdown, movement restrictions and psychological fear of pandemic limited access to brick-and-mortar stores and it can be concluded that the consumers switched to alternate channels like online. This is in line with the research by Song-yi et al (2021) which proposes an extended theory of planned behavior by incorporating the protection motivation theory for Fashion consumers' channel switching behavior. As per Sayulu (1996), it should also be emphasized that the Indian rural consumer is very different from an urban consumer on grounds of literacy rate, purchasing power, awareness towards quality and standards. Furthermore, as per Pawan et al. (2013), the penetration of Big-FMCG is still low in rural India as compared to urban markets One of the limitations and scope of further research is the bifurcation of consumer base into rural and urban to extend this study.

The paper has also analyzed the expenditure to understand the evolution of supply-side dynamics considering the pandemic and found out that the expenditure of both essential and non-essential segments was not impacted by the pandemic. PAT signifies the profitability of a company and is an important metric which connects the expenditure or supply-side and the sales or demand side. Given that there was no statistical difference in Net sales and expenditure, the findings of the analysis of PAT were on the expected lines and it is concluded that the pandemic did not impact PAT of the companies in both segments i.e., essentials and non-essentials. Furthermore, the ratio of net sales of essentials and non-essentials was analyzed to understand if the pandemic has impacted consumption patterns and segmental share of wallet, however, we found out that there is no statistical difference in the ratio of net sales as well, basis which we can conclude that the consumption pattern at a segment level did not change.

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However, these findings need to be correlated with the paradigm shift in consumer behaviour, business models, the evolution of consumer acquisition and retention strategies and pricing strategies by FMCG companies considering the pandemic.

This study categorically viewed net sales, PAT, Expenditure and Ratio of net sales as proxies and this study has completely relied on companies based on the said categorization of essential and non-essential product offerings. The non-availability of SKU level data is also one of the limitations of this study and it presents a potential opportunity to study the segmental or SKU revenue of the companies and then cluster the products into essentials and non-essentials.

This study has three broad implications. On the managerial aspect, the study establishes that the consumption at the sectoral level has not been impacted by the pandemic and in all probability; it is only the consumer channel switching behavior at play. This provides a vital clue to the managers on customer behavior in uncertain times. On the public policy aspect, this study provides a broad understanding which can be used in formulating the sectoral policy responses for any crisis of similar magnitude in the future by the governments. As far as theoretical implication is concerned, this study establishes that the stock prices are not a true reflection of the firm's financial performance.

Declaration of interest statement:

The authors report there are no competing interests to declare.

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APPENDIX-1

Companies in Essentials Category
Apex Frozen Foods Ltd.
Avadh Sugar & Energy Ltd.
B C L Industries Ltd.
Bajaj Hindusthan Sugar Ltd.
BalrampurChini Mills Ltd.
Bannari Amman Sugars Ltd.
Bombay BurmahTrdg. Corpn. Ltd.
C C L Products (India) Ltd.
Chaman Lal Setia Exports Ltd.
D C M Shriram Inds. Ltd.
Dalmia Bharat Sugar &Inds. Ltd.
Dhampur Sugar Mills Ltd.
Dodla Dairy Ltd.
Dwarikesh Sugar Inds. Ltd.
E I D-Parry (India) Ltd.
Eveready Industries (India) Ltd.
G R M Overseas Ltd.
Godrej Agrovet Ltd.
Godrej Consumer Products Ltd.
Goodricke Group Ltd.
Heritage Foods Ltd.
I F B AgroInds. Ltd.
K R B L Ltd.
Kokuyo Camlin Ltd.
L T Foods Ltd.
Mcleod Russel India Ltd.
Parag Milk Foods Ltd.
Rossell India Ltd.
Ruchi Soya Inds. Ltd.
Shree Renuka Sugars Ltd.
Tata Coffee Ltd.
Tata Consumer Products Ltd.
Triveni Engineering &Inds. Ltd.
Uttam Sugar Mills Ltd.
Vishwaraj Sugar Inds. Ltd.

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APPENDIX-2

Companies in Non-essential category
Agro Tech Foods Ltd.
Associated Alcohols & Breweries Ltd.
Bajaj Consumer Care Ltd.
Britannia Industries Ltd.
Cupid Ltd.
D F M Foods Ltd.
Emami Ltd.
G M Breweries Ltd.
Gillette India Ltd.
Globus Spirits Ltd.
Hindustan Foods Ltd.
Hindustan Unilever Ltd.
Jyothy Labs Ltd.
Manorama Industries Ltd.
Marico Ltd.
Mrs. Bectors Food Specialities Ltd.
Prataap Snacks Ltd.
Procter & Gamble Health Ltd.
RadicoKhaitan Ltd.
S H Kelkar & Co. Ltd.
Tasty Bite Eatables Ltd.
Tilaknagar Industries Ltd.
United Breweries Ltd.
V S T Industries Ltd.
Vadilal Industries Ltd.
Varun Beverages Ltd.
Zydus Wellness Ltd.

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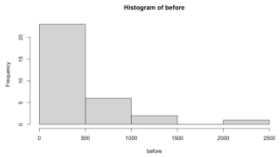
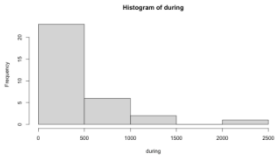
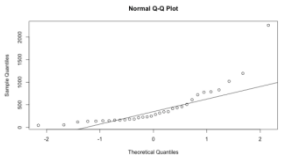
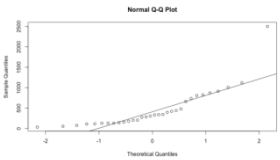
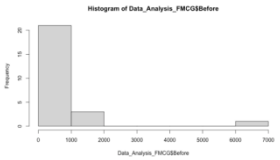
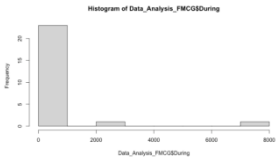
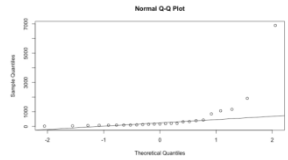
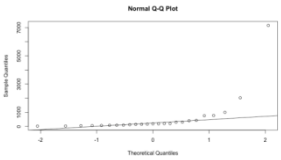
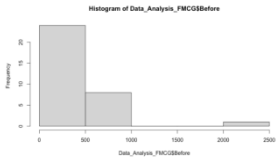
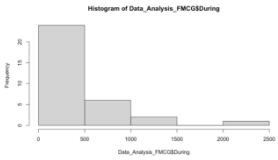
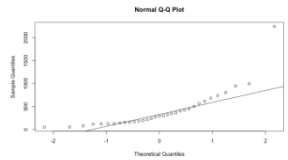
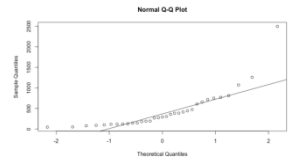
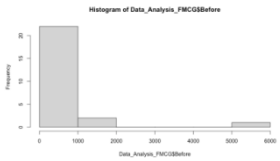
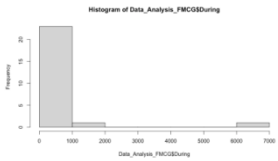
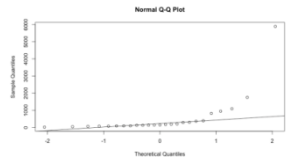
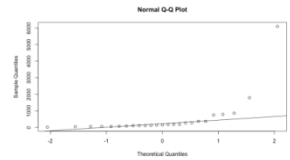
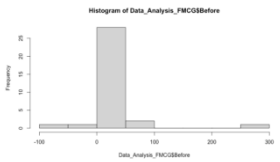
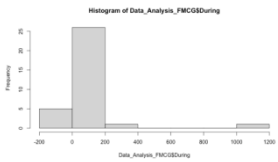
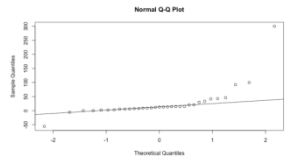
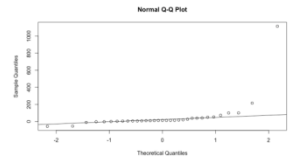
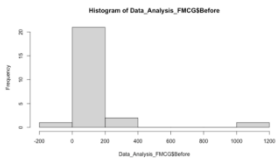
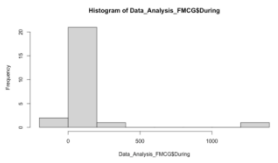
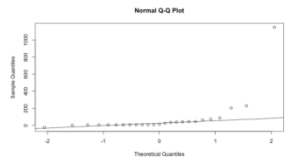
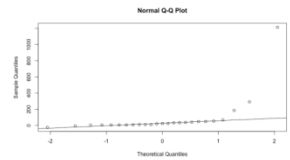
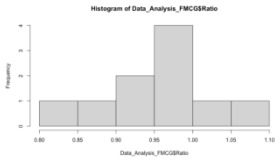
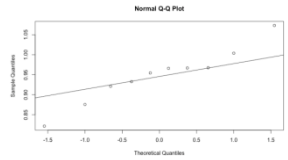
APPENDIX-3

Parameter	Histogram of Before	Histogram of During	Normal Q-Q plot of Before	Normal Q-Q plot of During
Net Sales of essentials				
Net Sales of Non-essentials				
Expenditure of Essentials Segment				
Expenditure of Non-Essentials Segment				
PAT of Essentials Segment				
PAT of Non-Essentials Segment				
Analysis of Ratio of Net Sales		NA		NA