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Measuring Implications of Statutory Compliance Like GST on Sustainability - A Case Study on Automobile Industry

Suneeta Hegde*, Deepti Hegde, Pavithra Salanke*****

Abstract

The pioneering step of implementation of GST in India, has brought initial producer's and service provider's and retailers in one tax regime reducing the burden of all other taxes, including the burden of CENVAT and service tax. GST is a Major step designed to streamline the taxation of goods and services. The changes in the tax structure led to the changes in the prices of goods. These changes were significant in few cases and they impacted the consumer behaviour largely. The objective of this paper is to study the consumer behaviour by analysing the impact of GST/Tax policies on automobile industry. The focus of the study is LMV (cars). The purchase pattern of cars is studied before and after the implementation of GST. The hypothesis-based research method is used and tested. The secondary data for the analysis of the production and sales is obtained from Web-based information, literature so far published in the journals is used to analyse the gap. The analysis is carried out using correlations methods such as t-test and paired t-test. This research should add significant value in understanding the implications of GST on purchase behaviour, the paper further tests possibilities of reduction of carbon footprints as an implication of policy change. The reduced number of vehicles will reduce the carbon footprint whereas the increased number of vehicles will increase the carbon footprint. Shift to electric vehicles and achieving green mobility is at the top of the agenda for developed nations. Countries like USA and China are incentivising green mobility through policy changes. India also supports green mobility by no tax and 5% GST. However, the green mobility policies should be enacted in sync with state and centre government. The results should help to understand LMV (Car) sector sales before and after GST and its implications.

Keywords: Goods and Services Tax, Case Study, Carbon Footprint, Policies, Light Motor Vehicle

Introduction

Tax was charged on the sale and purchase of goods or livestock and were collected irregularly from time to time, from the time of Caesar Augustus approximately 2000 years ago. These levies and taxes, in various forms on commodities and professions, were imposed to meet the needs of governments. The money thus obtained was utilised to meet the common needs of citizens including road maintenance, administration, and other state functions. Taxation was practiced in India from king's era. Manu Smriti has mention of various tax methods.

There are two major types of tax structures in India: direct tax structures and indirect tax structures. Direct taxes can be levied on individuals and corporations, this cannot be deferred. The indirect taxes are divided into two categories income tax and wealth tax. Significant modifications were made to the state tax structure in 2005 by replacing it with brand new Idea called GST. Excise duty, special extra duty, service tax, VAT, and other taxes are replaced by Goods and Services tax. These changes

* Dayananda Sagar University, Bengaluru, Karnataka, India. Email: suneethahegde-rs-mgt@dsu.edu.in
** Dayananda Sagar University, Bengaluru, Karnataka, India. Email: deeptihegde2001@gmail.com
*** Dayananda Sagar University, Bengaluru, Karnataka, India. Email: pavithra.s@dsu.edu.in

in tax structure have significantly affected the prices of goods. The GST has considerably reduced the dilemma of indirect taxes and the dilemma of multitude prices as well as multiple returns.

GST was introduced with a great purpose of one nation one tax solution. Since its introduction, GST has undergone significant changes after the introduction. The CGST and SGST which are charged separately have increased the prices in cases of consumer goods section. The manufacturers started levying GST as a separate component on top of the price and made it additional pay. This resulted in price hike. The luxury Items like cars are not an exception to this. The cars which are seen as a symbol of prestige in Indian families is grouped under luxury items. They do not form a category under the essential items, The different brands of luxury cars have considerable effect after GST implementation. The hike in the price due to GST pinches customers pockets considerably. This research tries to analyse the fact if the price hike due to GST has resulted in customer not buying the vehicle? If the customer is not buying the vehicle that means it is positive environmental. There by achieving reduction in carbon footprint. This research analyses secondary data of most regularly brought cars. The analysis is carried out on different categories of cars such as Sedan, Hatchback and SUV (Indian mid sector cars). The hike in the car price due to GST and the relationship between the price hike and sales is studied with secondary data collected from the website and internet, through google search engine/EBSCO. The results are tabulated and analysed through t-test. The conclusions are drawn by measuring the impact on environment and concluded as effect on sustainability.

Review of Literature

Indian economy is experiencing rapid growth due to energy intensive production and utilisation. This had led to steep rise in pollution. The vehicles which are purchased as status symbol or utility contribute to emission of harmful gases. It is important to control this growth of future emissions which are piling year on year with increase in vehicle population. India is one of the countries experiencing change in climate due to the adverse effect of emissions. This necessitates to integrate economic growth and compliance with pro-environment policies Srivastava, Kumar, Kailthya and Balasubramaniam (2011). Have studied GST scenario up to 2030. This study Calculates the corresponding pollution under the changes in GST policies. This study Simulates scenarios of eco-tax and its impact on macroeconomic environment including revenue and pollution levels. This study identifies set of tax rates which will help to achieve high-growth low-pollution scenarios. The unified economy is a major contributor to the policy changes. The timely compliance implementation can have significant effect on economy and environment Sehrawat and Dhanda (2015). In their study present the GST overview, with an explanation on GST concepts and timeline of implementation. The paper discusses the challenges faced by execution and advantages of GST in India. The paper discusses the GST in the light of unified economy.

Gakhar (2019) discussed the implications of GST on four industrial sectors: cement, steel, automobile, and communication. The impact of GST is studied by comparing before implementation prices to that of after implementation prices. The two quarter sales were analysed. The study analyses the impact of GST on financial performances of the company. It analyses the role of GST in achieving the financial sustainability. Two industrial goods and two consumer goods sectors were analysed in this study. Basavangouda (2020) in his paper analyses the impact of GST on MSME sector, according to this paper MSME contributes to 40% of Indian export industry. The paper discusses taxation policy and its impact on the small and medium industry. Nayyar and Singh I (2018) in their paper analyse the evolution of GST over the period. The paper further provides comprehensive account on various nations GST policy. The study is an elaborate account on implementation and analysis of GST across different nations. The paper provides a comprehensive account on different tax regime in India.

Vasanthgopal (2011) describes GST as a significant leap in the indirect taxation system. This study discusses the indirect taxation system as a unified approach to the taxation. This paper assesses the positive impact of GST on four major sectors MSME, Agriculture, housing, and employment. Gour and Singh (2019) discuss the benefits of entrepreneurship that enhances the growth of economy, which in turn develops the nation. The economic perception of entrepreneurship is focused on the growth and development of economic

gain for societies. The object of the paper is to study the sustainable entrepreneurship with economic gain. The study examine 500 small and medium enterprises from Uttarakhand for economic gains, including Employee welfare, Performance, and business stability. Sarkar (2013) discuss how the Eco-innovations and eco-specific promotions can stimulate the development of sustainable products. The Eco-industries can enhance green growth. The paper discusses the benefit of setting up Eco-industrial models in multi-sectoral areas including Europe and the other parts of the world. This paper provides details of various corporate and entrepreneur initiatives which can help in developing sustainable Eco-industrial business models. The Eco products should be incentivized with tax benefits, electrical vehicles are one of the solutions in automobile sector.

Electric vehicles (EVs) have the potential to solve environmental problems generated due to vehicular exhaust, including air pollution. It can also be a solution to prevent depletion of non-renewable energy sources. Increasing oil prices and difficulty in oil imports can be mitigated by use of electric vehicles. Adoption of EVs faces several challenges due to the over consumption of fossil fuels. However, increasing number of petrol vehicles with internal combustion (IC) engines can worsen the air quality. The Central Pollution Control Board (CPCB, 2010) of India estimated that 75% of cities in the country are at risk for increase of particulate matter pollution, and 50% are approaching the critical level for carbon monoxide (CO) and nitrogen dioxide (NO_x) Kumar and Revankar, 2017, Mohanty and Kotak, 2017 have studied the policies to implement these vehicle consumption, to make it more attractive to the consumers in India. India is falling behind other countries in usage of electric vehicle (EV), this is because of lack of explicit policy or law. This is in contrast with developed nations like USA, where substantial subsidies are offered to upgrade or buy Electric vehicles. This sort of incentives can attract customers and contribute in minimizing air pollution as well as fossil fuel consumption. This study reviews the policies and strategies for the technical considerations of developing Electric vehicles. The paper compares the Indian EV market to global evolution of EVs. This study also considers the development and research status of EVs in India. In addition, the current deployment of EVs in India. This study proposes policy makers, government, and businesses to incentivize the deployment of EVs in India. Which could significantly reduce greenhouse gas emissions.

The fuel combustion is a major contributor to environmental pollution. The transportation sector alone is responsible for 24% CO2 emissions (International Energy Agency, 2020; Singh et al., 2020b) This paper reviews the policies, strategies, and technical considerations for developing EVs. The study is carried out by analysing both the Indian EV market and the global development of electronic vehicles. The study considers the development of Evs and further research in India. In addition to current deployment of EVs in India. It also talks about challenges and opportunities in EV sector. Further policies like GST which aims at one nation one tax regime should be supportive of reducing carbon footprint. Bhattacharjee, 2018 discusses the impact of GST after implementation. The reforms such as removing the 28% tax bracket and shifting towards fewer tax-slabs by merging 12% and 18% rates, this unified Tax system is supposed to build one nation one tax regime. Bringing different sectors like, real estate, and petroleum products under the purview of GST, should simplify filing by eliminating process hurdles of submitting returns to multiple tax offices. The research carried so far focuses on the impact of GST either in MSME sector or in the multiple sectors of consumer good. However, there is considerable room for research to measure the impact of GST in LMV and the effect on sustainability. This research is examining the policy impact and suggests possible remedy through empirical evidences.

Study Objective

The GST replaced all the indirect taxes under a single tax regime. Which resolved and eliminated the cascading tax effect and double-counting issues. The GST has both positive and negative effects on Consumer goods. However, the manufacturers included GST as an additional component which resulted in making the product expensive. This study is an effort to analyse the effect of GST on LMVs and the price changes. Further the research tries to find if these changes in price have resulted in reduced buying of the cars. This study tries to analyse the impact of buyer's interest on environment.

Either through less vehicle population or through the shift towards electric vehicles which might have resulted in

impacting the environment positively. The promotional policies of the EVs are a attractive incentive to buyers, the study also aims at understanding the incentives provided in the form of policies to promote green mobility.

Methodology

This empirical study is based on the secondary data. The quantitative research method is followed to analyse the data. This research uses secondary data from the web search utilising google search engine. The data is collected from cleartax.in, and India automative market. The hypothesis is arrived at by considering study objective and intended results. The resultant data is analysed using paired t-test. Further graphical analysis is done using JMP software. The literature review is carried out at two stages one for understanding the effect of policies, second to understand the current market segment and the policy implications on the sales of the light motor vehicle segment. Using google scholar and EBSCO search engines. The conclusions are drawn from the results obtained. The limitations and future scope for the research are provided along with Conclusion.

Hypothesis

(Ho)- The statutory compliance like GST/Tax policies has no effect on the carbon footprint because the Sales of car is not affected.

(Ha)- The statutory compliance like GST/tax policies can help to reduce the carbon footprint as it significantly affects the sales of car.

(H0)- The tax incentives may not attract to customers even though these policies promote ecofriendly vehicles.

(Hb)- The tax incentives are attractive to the customers; these policies promote ecofriendly vehicles.

Findings

The comparisons on SUV, Sedan, and Hatchback are categorised and analysed. The one apparent difference that emerged in this sector is the previously charged VAT and exercise duty ranged from 26.5%-44%. The GST rates levied were between 0-28%.

Table 1

Overheads	*SUV*		*Sedan*		*Hatchback*	
	Pre GST	*Post GST*	*Pre GST*	*Post GST*	*Pre GST*	*Post GST*
Manufacturing Cost	10,00,000	10,00,000	8,00,000	8,00,000	5,00,000	5,00,000
Duty @30% /@27% /@12.5%	3,00,000	-	2,16,000	–	62,500	–
Production cost	13,00,000	10,00,000	10,16,000	8,00,000	5,62,500	5,00,000
Miscellaneous	10,000	10,000	10,000	10,000	10,000	10,000
Sales charges	25,000	25,000	25,000	25,000	25,000	25,000
Base amount	13,35,000	10,35,000	10,51,000	8,35,000	5,97,500	5,35,000
VAT @14% /GST @28%	1,86,900	2,89,800	1,47,140	2,33,800	83,650	96,300
Cess 15% /@15%/@1%	-	1,55,250	–	1,25,250	–	5,350
Price	15,21,900	14,45,050	11,98,140	11,94,050	6,81,150	6,36,650

*Source: cleartax.in

The Table 1 shows the comparison chart of prices across all the segment of car, immediately after GST implementation in 2017. The cumulative lower tax rates were responsible for reduction of car rates across all the segments of the car. The immediate effect was reduction in cost in case of direct selling, this case is where manufacturer is directly selling to customer through the showroom.

Table 2: The GST Rates of Cars Based on the Engine Capacity Under Different Segments

Category	Model	GST Rate	Compensation Cess
LPG/CNG vehicle, Engine capacity not exceeding 1200cc, Length 4000mm	Volkswagen Polo, Hyundai Grand i10, Maruti Suzuki Swift, etc.	18%	1%
Diesel vehicles engine capacity not exceeding 1500cc, length 4000mm	Honda Amaze, Nissan Kicks, Maruti Baleno	18%	3%
Sedan Petrol Engine capacity greater than 1500cc	Lamborghini Aventador, Bugatti Chiron, Toyota Land Cruiser	28%	17%
SUVs (Engine capacity greater than 1500cc)	Renault Duster, Mahindra TUV, Jeep Compass, Maruti Vitara	28%	22%
Electric vehicles	Mahindra eVerito and Mahindra e20. Electric vehicles owners receive a direct deduction of 7.5%	5%	Nil

*Source: cleartax.in

The Table 2 displays a comparison chart of GST across all the segment of car based on the engine capacity immediately after GST implementation in 2017. The difference in the GST rates is directly proportional to the engine capacity and the levied cess based on the environmental effect. The electric vehicles were not levied any cess.

Further the imported vehicle was levied an extra GST. This initiative was to promote the make in India campaign Import of car attracted IGST. The IGST was charged on assessable value added to basic custom duty. Which increase the value of imported cars considerably after levying goods and service tax. GST for semi knocked down kits of passenger vehicles were increased to 30% from 15% and completely knocked down kits of passenger vehicles increased to 15% from 10%. Thus, it increased the overall value of the product (Table 3).

Table 3: Production and Sale of Automobiles Before and After GST

Year	Before GST		Year	After GST	
	Production	Sales		Production	Sales
2015-2016	23358047	23297717	2017-2018	29092734	29022548
2016-2017	24106068	24112465	2018-2019	30909486	30890201
2017-2018	25329383	29022548	2019-2020	26356187	26306017
Mean	24264499.33	25477576.67	Mean	28786135.67	28739588.67

The graph obtained is linear and shows growth in 2015-2016, 2016-2017, 2017-2018.

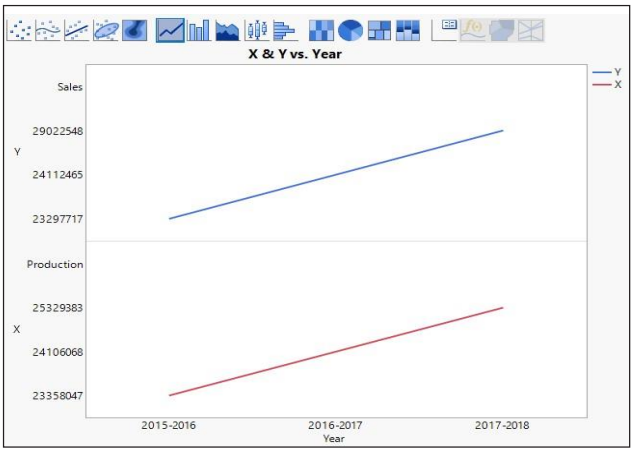

Fig. 1: Graph Showing Production and Sale Comparison Before GST

The graph obtained is nonlinear and shows values in 2017-2018, 2018-2019, 2019-2020.

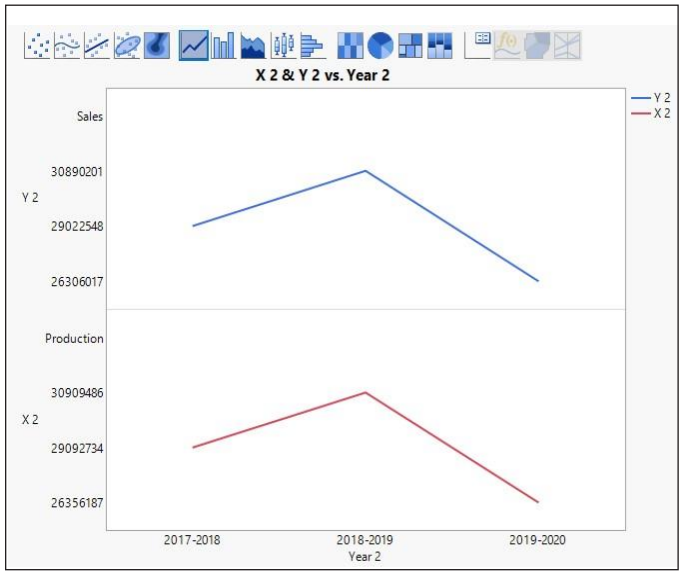

Fig. 2: Graph Showing Production and Sale Comparison After GST

The sharp decrease in the year 2019-2020 (as shown in Fig. 2) is the effect of Carona or lockdown period. The effect of GST does not show significant difference in production and sales.

Results

Paired t-test is carried out for the production data and sales data using mean values before and after GST.

Table 4: Showing Paired T-Test Results for Sales and Production

Paired T-Test Values for Sales	*Paired T-Test Values for Production*
N = 3 Correlation 'r' = -0.8530 Paired Sample t-test = 1.0856 P value of Paired Sample t-test = 0.3910 Arithmetic Mean difference = 3262012	N = 3 Correlation 'r' = -0.7018 Paired Sample t-test = 2.5482 P value of Paired Sample t-test = 0.1256 Arithmetic Mean difference = 4121636

Table 5: Comparison Chart of Automobile Manufacturers/Workers Before and After GST

Year	*Before GST*		*After GST*
	2015-16	*2016-17*	*2017-18*
Number of manufacturers	182 (0%)	238 (30.7%)	210 (-11.76%)
On roll employees	185,779 (-1%)	206,946 (11.3%)	207,213 (-2.67)
Labour/Workers	135,837 (0%)	147,204 (8.3%)	147,586 (0.25)

* Source: India automotive market.

The Effect of GST on vehicle manufacturing is around 10%, however it could not be attributed to GST alone. Analysis of data shows marginal difference in the manufacturing number, shown as arithmetic mean difference of Sales and production before and after GST, In Table 4, the effect on the manufacturing units was not significant as the labour and employee number was not significantly affected. The number of manufacturing units were the same and this cannot be attributed to GST alone. There are certain other dynamics such as socio-economic conditions and political and legal landscape that have significant effect in this, however the effect of GST as a policy change cannot be ignored. The comparison -Table 5, presents the effect on the labour and employees along with manufacturing units.

The difference between the population means P-value is not statistically significant, (Table 4) hence Ho – cannot be rejected, the problem with the data is the skewness (outlier) This cannot be ignored from the analysis. The skewness is attributed to pandemic. After pandemic the manufacturing cost is gone high and the changes in GST do not have significant effect. In this study, the P-value is greater than the significance level. Hence fail to reject the null hypothesis.

The Table 4, tabulates the results of the paired t-test. The correlation comparison between production using paired t-test shows negative value between pre- and post-GST automotive production. Similarly, negative correlation

is seen between automotive sales before and after the implementation of GST in India. It implies the association between automotive production and sales before and after GST which is not significant. It is worth noting that after the incorporation of GST, the mean values of production increased by 400K units (Table 4) and sales grew by 300K units. Even if the value is not significant: null hypothesis is accepted, Hence the statutory compliance like GST had no significant effect on the carbon footprint because the Sales of car (LMVs) is not affected significantly. The price change is not significant as per the table which has not reduced the purchasing power of customer. However, the study on Electric vehicle shows a positive trend because of the policies which are pro production and Pro sales have resulted in increase in the sales of electric vehicle. India is the third largest consumer of automobiles in the world. The tax benefit given on the EV`s should be a attractive proposition for the prospective buyers. The GST levied is only 5% as shown in Table 2. The new policies such as electric mobility promotion scheme-2024 should positively impact the user landscape. EV penetration in 4-wheeler sales shows upward penetration with 53843 units sold for the year 2022-2023. TATA motors is the dominant share holder in this segment (source: Vahan dashboard data 2022-2023).

Discussion

Before the implementation of GST, the products made in India were subject to CENVAT (excise duty). The problems started with product values. The CENVAT is implemented only at the production level, this served as a significant roadblock, for the impartial flow of tax credits. Hence in line with many other nations, India also switched to using GST.

The GST taxation system in India is split between the Central and State Governments. However, many things like patents, copyrights and software are out of the purview of GST. It is at the discretion of the state government to impose tax on any activity taking place inside its borders. While the State government controls Work Contracts, the Central government is authorised to impose tax on services. This structure distorts the way government distributes revenue. In case of many Goods the domestic market bore the brunt of tax burden. In this context this study analyses the taxation and its effect on the automobile market. Though the results are not significant, this can serve as a platform for future study and implication of tax on domestic market and its effect on the immediate environment. Though the tax burden is not seen as an immediate effect, it has significant influence on the long run. Possibility of cutting back on compliance to create demand for certain goods cannot be negated. Strict compliance implementation can result in positive implication on the environment by controlling shopping spree among the customers. This may reduce significant amount of carbon footprint. The electric vehicle segment which is not a popular choice among the customers is slowly picking up. There is a significant increase in EV across all the sectors. The schemes announced by center should be in sync with state. The Karnataka governments recent decision to levy 10% tax on EVs costing more than 25 lakh (DH 18/03/24) This tax marks the shift in the states policy in the green mobility segment. Further the centers new Promotion policy proposes to slash the import duties on EVs to 15% from the present 60-100%. Additional tax by the state government poses threat to EV segment four wheelers in Karnataka. The developed nations strategy in EV segment to achieve carbon neutral mobility by 2050 is governed by robust policies and tax benefits along with subsidies to the manufacturers, incentives for charging infrastructure development etc. The policies in the green mobility sector together can make a significant impact in reduction of carbon footprint in the mobility sector.

Conclusion

GST/Taxes and policies effects are many folds as these tax structure have varied effects on manufacturing sector, and service sector. The study analyses the buyer's response to the price fluctuations and analyses links to the impact on the carbon footprint reduction. The automobile industry has not experienced the tax as burden in the initial years of implementation. However, the analysis after the pandemic is not part of this study as the scope was limited to measuring the immediate effect of GST. The study brings out the facts about the effect of GST which can serve as precursor for many other studies. Further the study analyses the fact that the environmentally friendly motor engines are levied less cess, this gives ample opportunity for further research. Limitation of this study is in the fact that the study is largely influenced by pandemic effect. The GST has influenced the economy

due to tax rate reduction in certain industries and few others suffer due to higher GST rates. The FMCG market is highly influenced by the GST rates which has significant influence on both production and consumption. The automobile industry initially experienced on-road price reduction due to GST implementation. Lower prices were expected to influence sales and expansions. However, the effect was not significant as per this study and analysis. The mean difference indicates the surge in manufacturing and sales. Further, the study is carried out immediately after the implementation of GST. Results may vary if the study is conducted over a larger number of years. The data gets considerably skewed due to pandemic effect. Which is the major outlier of this study. However, neglecting the outlier may result in missing out the major link between pre- and post-GST effects. Further to the pandemic the production cost of the vehicle is gone up that resulted in the higher prices of the vehicle in the market. The policy changes have significant effect on the green mobility and the promotion of green mobility is the need of the hour. There is ample of opportunity for the future research in the sector of green mobility and the impact of the policies in this sector.

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