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An Analysis of Integration Management in Developing Project Performance-Evidence from Pakistan

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ABSTRACT

This study's objective was to determine the inspiration of management integration on project performance. Management Integration leads towards the success of the projects. Objective: To measure the importance of the management integration factors and investigated the relationship of the management integration dimensions on project performance. Methodology: Data were collected by a standardized survey questionnaire by employing the convenience sample method. Results: revealed that there is a positive relationship between company integration with customers whereas the is an insignificant relationship between the rest of the factors. Conclusion: Properly managing the integration factors increases the performance, success chance of the project performance.

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INTRODUCTION

The term 'integration' states to the direction/synchronization between procedures. Similarly, integration management one among the popular significant components of project management, as it addresses every facet of a project Demirkesen and Ozorhon, 2017; Sanghera, (2019). Integrated project management ensures effective coordination of project activities. Another study by Masuin and Latief (2019) has highlighted that integration refers to a thoughtful procedure of establishing a supremacy arrangement that sorts managing the needs of key stakeholders more systematic. The same study has defined integrated management as a fundamental component of the system architecture.

Project integration assures that the project tasks are properly coordinated, which has a beneficial influence on the progress of the project (Masuin et al., 2019). Consequently, it is crucial to fully comprehend how integrated management affects project outcomes so that project leaders may benefit from the advantages of effectively linked project operations (Masuin, Latief and Zagloel, 2019; Sanghera, 2019). Given the crucial roles that integration plays in project management, this study has created a thorough model that attempts to demonstrate how integration and project management success are closely related. The goal of this study is to determine the potential connection between integrated management and project management performance and quantify it using the suggested measures.

The previous research empirical suggested management integrations that are the key extent where previous research literature and scholars have defined it as the multidimensional construct that includes supply chain integration through which the companies combine with some other supply chain participants in order to succeed the efficiency and effectiveness, flow of the material with more efficiency, cheaper price Zhao et al. (2008), mostly firms are integrating their supply chain in order to achieve the speed and flexibility Zhao et al. (2008), in order to understand the supply chain integration there is resource based view and transaction cost that contribute to this study. (Porters, 1980) model of value chain is the root of supply chain concepts. (Wheelwright and Clark, 1992) pinpointed that achievement of integration (e.g. among designing and manufacturing departments) fit highly depend upon the top management support. (Pagell, 2004) argued that support from top management is required for enhancing the communication level in the organizational internal and external environment and the implementation of the activities of human resource development with the help of top management leaders in order to achieve various boundary integration, customer integration as well as the integration with suppliers.

LITERATURE REVIEW

Supply Chain Integration

Supply chain integration is the procedure of integrating clients and vendors continuously, as well as creating methods for clients, vendors, and project stakeholders to share expertise (Kang, and Choi, 2017). As a result, supply chain integration has been thoroughly researched in prior project management investigations.

Project Charter Development

Create the project documentation, give project coordinator permission before a project begins. The project was formally approved after the design phase was approved (Mark, and Lurie, 2018). The Project Charter also gives project managers permission to promise resources from the corporation to project-related tasks.

Integration of Changes

Merging of changes includes assessing and approving each proposed changes for the project, implementing the necessary modifications, revising the project's management strategy and project documentation, and incorporating all modifications into the final project outcomes. Caldas and Gupta (2017) indicates that change can have a serious impact on the budget and project plan. They added that an inadequate project plan integration might result in confusing priorities, ambiguous needs, and confusing restrictions, which can result in revisions, remakes, and disruptions (Vieira, et al, 2019). Bergamin, and Braun, (2018) also shows that

ineffective change management, combining construction methods, and design methods are very effective in project management.

Staff Integration

Employee integration includes employee support to obtain the tools and technology integration and management-driven integration necessary for successful project execution (Bergamin, and Braun, 2018). Malleuve-Martínez, et al, (2018) noted that among the tools for integrating groups, collaborations, cross-functional workgroups, and project-level team training opportunities include management effectiveness. Also, LAZAREV, et al, (2017) means that integration can improve teamwork efficiency. The research further made the point that integration is preferred for effective working groups. Worker or group integration is intensively inspected in project management research.

Knowledge Integration

Knowledge integration is the exchange of recent and previous information in addition to incorporation of all data into the system for the distribution of expertise currently in place between all investors and project participants. (Zhou, Deng, Hwang and Ji, 2020). Facts demonstrate that a crucial component of long-term success is incorporating information and concepts into project portfolio management. Demirkesen, and Ozorhon, (2017) simplified the need for knowledge and information exchange between the interdependent subsystems involved in the integration and the information is a component factor for fruitful integration. Malleuve-Martínez, et al, (2018) also shows that construction knowledge is needed to integrate construction methods and design methods. The integration of the successful project, organization, and group process knowledge is also considered the core element of integrated project management and project management performance (Vieira, et al, 2019).

Process Integration

Process integration refers to the well-organized sequence of all activities and the well-developed logical relationship between processes (Bergamin, and Braun, 2018). Research shows that the integration process can promote the creation of value in terms of staff integration and task integration. A study by OKIURA, and KUBO, (2016) found that concurrent product design and manufacturing can improve quality and reduce costs. LAZAREV, et al, (2017)'s goal of research is to integrate the development of new goods or procedures with budget, timeframe, and performance effectiveness. Waheed, et al, (2019) cites Project integration management includes system integration. Most researchers examined process integration into account and highlight the significance of process integration in project management performance.

The literature also shows that efficient change management and leadership are required closely related to the successful implementation of organizational plans. OKIURA, and KUBO, (2016) also shows that change management is the ability of the organization to manage changes based on customer needs. Therefore, we pay special attention to managing the project integration, because it is very important to effectively integrate the changes in the deliverables of the current project (Waheed, et al, 2019). Previous research has also shown the importance of integrating changes in current project conditions for successful project management.

The Connection Between Integration Management and Project Performance

There is a close association among integration management and performance and different studies indicate that using integrated methods can improve the project success rate and performance (Yuliadi and Nugroho, 2019). However, although integration should be evaluated as a basic component that has many aspects and influences other factors in the project network, these studies still include software integration and relational integration (Batselier and Vanhoucke, 2017). Due to the dispersion of work between different stakeholders and different sub-processes, the construction sector continues to suffer from poor project performance. Clarifying this relationship helps construction professionals use critical metrics for project evaluation and understand the rationale behind project integrity when managing complex projects can be challenging (Demirkesen and Ozorhon, 2017). For construction professionals, it is critical to comprehend, appreciate, describe, and simulate the elements that influence building activity. (Ferreira et al., 2017). Therefore, a conceptual framework is needed that better reflects the variables affecting the construction sector.

Another study by Wang, Kang, Childerhouse and Huo (2018) has shed light on the integration of Sharing of information with clients and suppliers can result in improved collaborative learning, which can boost operational efficiency. Shahzad et al (2016) emphasize organizational integration of information, procedures, and tactics, as organizational integration increases project performance through capabilities created in previous assignments and overall organizational creativity. It is also said that the integration of knowledge and processes can improve the performance of projects and organizations (Ali et al., 2018).

However, integration appears to be a key factor in properly coordinating a project, because effective project visualization and planning are important (Ferreira et al., 2017). As explained earlier in the research above, integration is closely related to the fundamentals and project management sectors as a result, it is possible to conclude that integration has an obvious and immediate influence on the project's success. (Demirkesen and Ozorhon, 2017). As a result, the purpose of this study is to address this discrepancy by establishing a framework that explains the fundamental principles of integration and performance. Depending on the viewpoints of contracting businesses, the framework strives to depict the performance link among integrated management and project management.

H1: Supply Chain Integration has a positive impact on project performance

H2: Willingness to receive and transfer knowledge with customers has a positive impact on project performance.

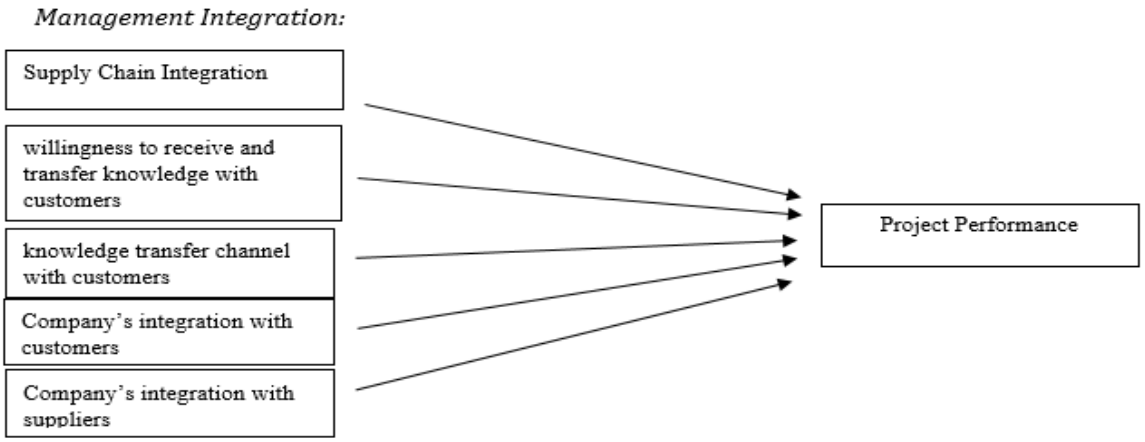
H3: knowledge transfer channel with customers has a positive impact on project performance.

H4: Company’s integration with customers has a positive impact on project performance.

H5: Company’s integration with suppliers has a positive impact on project performance.

H6: Management integration has positive relationship with project performance.

Research Framework



This is the framework of the present study used to see the impact of Management Integration factors on project performance. There are the five dimensions of the Management Integration variable representing the conceptual framework of the variables.

RESEARCH METHODOLOGY AND DATA COLLECTION

Due to the positivist methodology that was employed to review and verify the specific hypothesis, the current study is quantitative in character. The information is collected and evaluated using a variety of mathematical and statistical methods in a quantitative way to find responses to the study hypotheses. Cross-sectional time was considered in this research. In contrast to a longitudinal time horizon, a cross-sectional time frame collects information from participants only once.

The information was gathered via a self-administered questionnaire and self-distribution, which is the most efficient method of gathering information because it aids in reducing sampling error. The participants were given enough time to complete the survey questionnaire. During the data gathering process, the investigator adhered to all moral values. This study's concentrate on the individual construction industry in Pakistan made individuals the element of investigation.

Sample Size and Sample Selection Technique

The sample size for this investigation was determined using a random non-probabilistic convenience sampling method. This research depended on the Roscoe's Rule of Thumb to choose an appropriate sample size because a description of the community was not easily accessible. This rule specifies that a sample size of between 30 and 500 participants is appropriate for conducting a quantitative study. In order to conduct this research, a study sample of 94 individuals was chosen.

Statistical tests used for data analysis

After the procedure of gathering the information was finished, the SPSS 26 program was used to extract, compile, filter, and interpret data. To reach findings about the viability of the investigation questions, a variety of information processing methods and techniques were

used. Reliability, data normality, ANOVA, and correlation analysis were some of these methods.

RESULTS

Demographics Analysis

The findings disclose the gender of the study's contributors. The investigation included 15 female contributors, making up 100% of the population, while 79 male individuals made up 84.01% of the total sample.The distribution of the respondents' individual ages is shown in the findings. 46 respondents, it can be seen, ranged in age from 18 to 24. They made up 44.94% of the overall study population, cumulatively. 35 respondents, or 86.17 percent of the population overall, were between the ages of 25 and 34. 13 individuals ranged in age from 35 to 44. It is clear that the majority of responses were among the ages of 18 and 24. It is clear from the contributors' expertise that 57 responders had experience ranging from 0 to 3 years. The participants who had this experience made up 60.64% of the total sample. 24 respondents had experience ranging from four to five years. This experience level group's member made up 86.17 percent of the total given frequency. 11 individuals varied in experience from 7-9 years, while 2 people had experiences of 10 years or more.

The findings provide a summary of the respondents in the study's various qualifications. 29 individuals, or 30.85% cumulative frequency of the sample size, had less than 12 years of schooling as can be seen. 34 people, or 67.02% cumulative frequency of the whole sample, had bachelor's degrees. Out of the entire sample, 31 people had academic qualifications of 18 or higher. It can be seen that most of the participants had college degrees and had been in school for 14 to 16 years.

Reliability Results

The six variables in the current study are: Project performance, Company's Integration with Customers (CIC), Company's Integration with Suppliers (CIS), Knowledge Transfer Channel with Customers (KTC), Supply Chain Integration (SIC), Willingness to Receive and Transfer Knowledge with Customers (TK), and (PP). The SIC comprises of 04 components, each of which has a Cronbach Alpha value of 0.823, as can be shown. TK has five items with a Cronbach Alpha of 0.807 in total. Cronbach Alpha values ranged from 0.602 for KTC, 0.673 for CIC, 0.764 for CIS, and 0.824 for PP. KTC had three things with a Cronbach Alpha of 0.602, CIC had three items with a Cronbach Alpha of 0.673, and CIS had five items with a Cronbach Alpha of 0.764. As it can be observed, every Alpha (a) value is higher than 0.60. Consequently, it may be inferred that all of the investigation instrument are quite trustworthy, allowing for the execution of additional assessments.

Table 1*-Reliability Test*

Variables	No. of Items	Cronbach Alpha (α)
SCI	04	0.823
TK	05	0.807
KTC	03	0.602
CIC	03	0.673
CIS	05	0.764
PP	06	0.824

Correlation Analysis

To ascertain whether there are any relationships between the parameters or not, correlation examination is utilized and with its sign of negative (-) or positive (+), it also tells us about the track of the relationship between the variables. The association between variables is positive and have significant relationship at 90 percent level of significance. None of the variable is linear function of any other variables. The association between supply chain integration (SIC) and willingness to acquire and share knowledge with customers (TK) may be seen to be extremely significant at a 99% level of confidence. The association has a modest degree of correlation and a good path.

Table 2- *Correlation Test*

	SIC	TK	KTC	CIC	CIS	PP
SIC	1	.777**	.659**	.654**	.733**	.810**
TK	.777**	1	.775**	.787**	.793**	.794**
KTC	.659**	.775**	1	.776**	.765**	.811**
CIC	.654**	.787**	.776**	1	.764**	.757**
CIS	.733**	.793**	.765**	.764**	1	.893**
PP	.810**	.794**	.811**	.757**	.893**	1

Regression Analysis

The table below is about the model summary of Supply chain integration. The variance of supply chain integration item SIC1 is 1.302 that shows how much there is the variation of item from mean value. SIC2 variance value is 0.887, SIC3 variance value is 0.813 whereas for SIC4 variance values is 0.858. Additionally, tables show the average values and sum of the items.

Table 3-Summary SIC

SUMMARY				
Groups	**Count**	**Sum**	**Average**	**Variance**
SIC1	94	344	3.659	1.302
SIC2	94	358	3.808	0.887
SIC3	94	348	3.702	0.813
SIC4	94	352	3.744	0.858

H1: Supply Chain Integration has a favorable impact on project performance

The Above table is an ANOVA table that is used to find out the goodness of fit test in regression analysis. Here the p-value is greater than 5 percent that is P value is 0.758 that

demonstrate that there is no meaningful relationship between the supply chain integration and project performance. So based upon the results we reject null hypothesis H1.

***Table** - SIC ANOVA Test*

ANOVA						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between Groups	1.138298	3	0.379433	0.392963	0.75814	2.628903
Within Groups	359.1915	372	0.965569			
Total	360.3298	375				

The table below is about the model summary of Willingness to receive and transfer knowledge with customers. The variance of Willingness to receive and transfer knowledge with customer's item TK1 is 0.93 that shows how much there is the variation of item from mean value. TK2 variance value is 1.05, TK3 variance value is 1.13, TK4 variance value is 0.78 whereas for TK5 variance values is 0.89. Additionally, tables show the average values and sum of the items.

***Table** - Summary TK*

SUMMARY				
Groups	**Count**	**Sum**	**Average**	**Variance**
TK1	94	357	3.79	0.93
TK2	94	351	3.73	1.05
TK3	94	333	3.54	1.13
TK4	94	361	3.84	0.78
TK5	94	348	3.70	0.89

H2: Willingness to receive and transfer knowledge with customers has an advantageous effect on project performance.

The table below is an ANOVA table that is used to find out the goodness of fit test in regression analysis. Here the p-value is greater than 5 percent that is P value is 0.27 that show that there is no any significant relationship between the Willingness to receive and transfer knowledge with customers and project performance. So based upon the results we reject null hypothesis H2.

***Table 4**-ANOVA TEST TK*

ANOVA						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between Groups	4.93	4	1.23	1.28	0.27	2.39
Within Groups	447.1	465	0.96			
Total	452.0426	469				

The table given below is about the model summary of. The variance of knowledge transfer channel with customer's item KTC is 0.94 that shows how much there is the variation of item from mean value. KTC variance value is 1.18, whereas for KTC3 variance values is 0.71. Additionally, tables show the average values and sum of the items.

Table 5- *Model Summary KTC*

SUMMARY				
Groups	**Count**	**Sum**	**Average**	**Variance**
KTC1	94	365	3.88	0.94
KTC2	94	338	3.59	1.18
KTC3	94	338	3.59	0.71

H3: knowledge transfer channel with customers has a favorable effect on project performance.

The table given below is an ANOVA table that is used to find out the goodness of fit test in regression analysis. Here the p-value is greater than 5 percent that is P value is 0.067 that show that there is no any significant relationship between the knowledge transfer channel with customers and project performance. So based upon the results we reject null hypothesis H3.

Table 6- *ANOVA Test KTC*

ANOVA						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between Groups	5.17	2	2.58	2.72	0.067	3.028
Within Groups	264.98	279	0.949			
Total	270.15	281				

The table below is about the model summary of Company's integration with customers. The variance of Company's integration with customer's item CIC1 is 0.59 that shows how much there is the variation of item from mean value. CIC2 variance value is 1.05, whereas for CIC3 variance values is 0.89. Additionally, tables show the average values and sum of the items.

Table 7- *Model Summary CIC*

SUMMARY				
Groups	**Count**	**Sum**	**Average**	**Variance**
CIC1	94	360	3.829787234	0.59
CIC2	94	348	3.70212766	1.05
CIC3	94	343	3.64893617	0.89

H4: Company's integration with customers has favorable effect on project Performance.

The Above table is an ANOVA table that is used to find out the goodness of fit test in regression analysis. Here the p-value is greater than 5 percent that is P value is 0.38 that show that there is no any significant relationship between the Company's integration with customers and project performance. So based upon the results we reject hypothesis H4.

Table 8- *ANOVA TEST CIC*

ANOVA						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between Groups	1.62	2	0.8128	0.95	0.38	3.028
Within Groups	236.35	279	0.84			
Total	237.97	281				

The table below is about the model summary of Company's integration with suppliers. The variance of Company's integration with supplier's item CIS1 is 0.60 that shows how much there is the variation of item from mean value. CIS2 variance value is 0.0.93, CIS3 variance value is 1.01, CIS4 variance value is 0.77, whereas for CIS5 variance values is 1.15. Additionally, tables show the average values and sum of the items.

Table 9*-Model Summary CIS*

SUMMARY				
Groups	**Count**	**Sum**	**Average**	**Variance**
CIS1	94	362	3.85	0.60
CIS2	94	337	3.58	0.93
CIS3	94	319	3.39	1.01
CIS4	94	362	3.85	0.77
CIS5	94	331	3.52	1.15

H5: Company's integration with suppliers has a favorable effect on project performance.
The Above table is an ANOVA table that is used to find out the goodness of fit test in regression analysis. Here the p-value is less than 5 percent that is P value is 0.001 that show that there is significant relationship between the Company's integration with suppliers and project performance. So based upon the results we accept hypothesis H5.

Table 10*-ANOVA Test CIS*

ANOVA						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between Groups	15.68	4	3.92	4.37	0.001	2.391
Within Groups	416.54	465	0.89			
Total	432.23	469				

The table Below is about the model summary of project performance. The variance of project performance item PP1 is 0.90 that shows how much there is the variation of item from mean value. PP2 variance value is 01.19, PP3 variance value is 0.79, PP4 variance value is 0.85, PP5 variance value is 0.69 whereas for PP6 variance values is 0.69. Additionally, tables show the average values and sum of the items.

Table 11- *Model Summary PP*

SUMMARY				
Groups	**Count**	**Sum**	**Average**	**Variance**
PP1	94	365	3.88	0.90
PP2	94	325	3.457447	1.19
PP3	94	347	3.691489	0.79
PP4	94	360	3.829787	0.85
PP5	94	355	3.776596	0.69
PP 6	94	358	3.808511	0.69

H6: Management integration has positive relationship with project performance.

The Above table is an ANOVA table that is used to find out the goodness of fit test in regression analysis. Here the p-value is less than 5 percent that is P value is 0.02 that demonstrate a strong connection exists between management integration elements and project performance. So based upon the results we accept the H6.

Table 12-*ANOVA Test PP*

ANOVA						
Source of Variation	**SS**	**df**	**MS**	**F**	**P-value**	**F crit**
Between Groups	10.97	5	2.19	2.56	0.026178	2.23
Within Groups	477.23	558	0.85			
Total	488.20	563				

Hence based upon the results Hypothesis test there is the positive relation of the company integration with the suppliers and it impact upon the project performance. The management integration impact the organizations practices and functions of the project management.

DISCUSSIONS

Our study shows that customer integration with suppliers was statistically significantly correlated with the project performance. Mangers desire to improve the project performance should encourage the management integration and consider to encourage more integrity while sharing of information. Management integration is the degree in which a company integrates with its collaborators in order to improve the dissemination of knowledge, money, and product choices, low cost high speed and high value in project performance. Businesses are

working at the management integration nowadays in order to achieve speed and flexibility in project performance. As a reaction to rapidly changing environment this study will help firms in using the management integration factors that highly increase the project performance through implementation of effective and efficient management integration factors. The associated process of the management integration helps in changing the necessitate adaption of the control system and organization structure. This study shows that the Company's integration with suppliers has the positive impact on the project performance. The businesses integration with suppliers help the firms in building the strong supply chain for avoiding material delays and help in achieving the customer's demands on time.

RECOMMENDATIONS

The breadth of this investigation was confined by the small sample size of 94 people, hence the following set of suggestions has been made for doing future research: Future work should increase the sample size to enlarge the investigation's range. Outcomes will be produced as a result that are more trustworthy. Due to the non-probability convenience sampling method applied in this research, not every person in the galaxy had an equal likelihood of being selected. Additional study should use sophisticated sampling methods to improve the general validity of the study and qualitative methods like interviews and observations to produce better detailed and trustworthy information. In addition, sophisticated methods like SEM and PLS can be used to produce outcomes that are more reliable. Future research should look closely at the cultural setting of Pakistan to see how other organizational integration characteristics relate to project performance.

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Nexus between Carbon emission per capita and Urbanization

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ABSTRACT

The effects of urbanization on global warming are substantial. Several carbon accounting methods have been proposed to identify which municipalities should make mitigation efforts, but none of them have gained widespread acceptance. Six major cities in Japan are chosen, and their per capita CO2 emissions between 1982 and 2021 are identified and compared using a method based on four system boundaries. The overall rate of increase in CO2 emissions from the transportation sector was 9% per year between 1990 and 2008, and the rate of increase in CO2 emissions from road transportation alone was even higher at 2.6% per year. According to Stern's 2007 prediction, global transportation-related CO2 emissions will more than triple by 2050. According to the results, there are the relationships within geographical indicators of urban form and sectorial CO2 emissions for both the passenger and residential transportation sectors.

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INTRODUCTION

The living level for Japanese has increased which increase the economic level of the country the economic level of Japanese raised from 1479 to 1997 to 21,559 RMB in 2019, the rate of consumer raised the expenditure of Japanese and average growth rate is more than 12.5 percent. The urbanization level of Japanese for living also increased very rapidly from 19.39% in 1980 to 58.52% in 2017. As it turns out (National Bureau of Statistics, 2019). Carbon emissions in Japan are predicted to rise between 2017 and 2021 as the country continues to urbanise and its economy expands. Wei et al. (2007) report that in metropolitan areas, the yearly standard of

using coal increased by the rate of 1085 kg In addition, around 80% of the energy is used for final consumption and economic activity.

According to statistics, the United States is responsible for 80% of all CO2 emissions, while the United Kingdom is responsible for around 74%. Hertwich and Peters (2009); Bin and Dowla tabadi (2005). In order to study about the climate change the characteristics about emission of carbon dioxide conveyed us about driving force. The carbon foot print provide both the direct and indirect carbon dioxide emissions from the domestic consumption . A lot of academic research done carbon footprint of households use had been done, and according to the input and output approach is used to find out a household's carb0n footprint. Hasegawa et al. (2014 to 2022) search out the aspects home carbon footprint for 48 Japanese cities and search the elements that made contribution in the regional variation. If we study about the trend of their household carbon footprint from 1998 to 2022 according to a temporal perspective, Steenol sen (2015) combined the Norwegian according to the expenditure of consumers survey data according to the global MRIO database, which searched out the information about the transportation, housing, and food in Japanese are the most important driving forces for household carbon footprint raised. In the end, the majority of researchers portrayed their focuses on home carbon footprints at the international and regional levels, but very few researchers analyzed that the changes in household carbon footprints around several nations with a lot of degrees related to developmental growth in Japanese. Using the input-output method, Ma et al. (2015) compared the indirect carbon footprints of Japanese and American households in 2005, 2006, 2009, and 2010, finding that Japan's rate of CO2 emissions was highest and the United States' rate was lowest. While Japan's home carbon footprint was larger than that of the United States and the United Kingdom, it was still less than Japan's and the United States'. This finding was published in 2016 by Maraseni et al. However, there is currently no study comparing the economic development of two nations from the same region whose cultures are comparable, such as Canada and Japan. This study will also identify several aspects of household carbon footprints, which will be useful in studying both direct and indirect carbon footprints from household consumption in Canada and Japan through output analysis. In addition, the elements that contribute to these carbon footprints are unveiled in order to learn more about lowering carbon emissions at home while taking local conditions into account.

Japan's climate change exemplified the most pressing environmental concerns of the twenty-first century, with implications for the capacity of developing countries to sustain rapid economic expansion. Japan's lifestyles have had a significant global influence due to the country's high carbon dioxide emission percentage (72%) in greenhouse gas (GHG) (Majid et al., 2014). To the accountant, consumption-based accounting better depicts the role of carbon dioxide emission in developed nations throughout the supply chain of consumer demand GHG emissions from industry (Peters, 2005). To a greater extent than direct GHG emissions, which in Japan are dependent on home gas and the daily use of autos, indirect GHG emissions have some relation to household consumption, according to studies of consumption-based accounting (Hertwich, 2022). A direct correlation between Japan's carbon dioxide usage and its indirect emissions measures has been found. Scientists have determined directions for future climate change study. It has to absorb plenty of carbon and establish a connection between domestic economic activity and CO2 consumption. The disparity in household CO2 emissions is mostly the result of economic differences across regions of Japan, with HCF inequality serving as the primary cause. The bulk of HCF is produced by a very small percentage of the population (those with higher

incomes), whereas the vast majority of people (those with lower incomes) contribute very little to the problem. Justice and justice are crucial aspects in the pace of policy implementation in the process of reducing carbon dioxide emissions and reducing emissions overall. More ever, properly handling carbon had several Development Goals (2015) in Japan, which crucial role in mitigating climate change and lowering the degree of wealth disparity.

Boundary 4 emissions have been rather constant throughout the length of the research period of over 20 years, but per capita emissions have varied widely across the other system borders. This is so despite the fact that these cities differ greatly in terms of their industrial make-up and history, human population, and yearly average temperature. Local governments have been effective in lowering CO2 emissions per inhabitant, contrary to popular opinion. These claims arise from emissions estimates made using system boundary 2 methods. We believe that the system boundary 4 should be adopted by local governments if they are serious about achieving their goals of reducing the impact of urban climate change. This boundary provides a more precise analysis of how urban CO2 emissions and trends are changing over time. The results demonstrate that the shape of the region's CO2 emissions is an inverted-S. Exports as a percentage of GDP are the primary drivers of carbon emissions in developed, emerging, and late-developing ASEAN nations.

The primary goal is to compare and contrast various statistical approaches to carbon dioxide (CO2) emission. Multicollinearity within the explanatory variable may be described in detail. We have significant evidence to reject the alternative theory, as shown through a variety of visual displays. In addition, although Japan's overall imports raise pollution levels, regional imports into Japan actually decrease pollution levels. If you take three distinct years, say 2020, 2021, and 2022, then normalise them all together, you won't see any difference in your direct carbon output per person. The findings indicate that (1) there is a significant difference in emissions produced by households based on age, with older households producing higher levels of emissions per capita; (2) the high per capita household emissions in older populations suggest inefficient energy use among the elderly; (3) the increased emissions in older populations are primarily due to temperature decreases, while in younger populations this is not a significant factor; and (4) the high per capita household emissions in older populations suggest inefficient energy use among the elderly. One of the fastest-growing sectors in CO2 emissions is the transportation sector.

The HCF was profoundly impacted by the fact that various Japanese housing styles had widely varying amounts of household consumption. The study suggests distinguishing between single-person and multi-person households in terms of their daily routines. There is a growing trend of single-person households in Japan, which is mirrored by the country's low marriage rate. The percentage of households comprised of a single individual rose from 27.6% in 2000 to 35.2% in 2018; this trend is expected to continue into the foreseeable future (National Institute of Population & Social Security Research, 2018). HCF's study shows that household spending alone isn't enough to provide a level playing field in terms of economic growth and development amongst nations. To thoroughly understand the features of HCF in light of the increasing influence of household consumption on CO2 emissions in Japan, and to account for the fact that HCF varies significantly across single-person and multi-person homes throughout prefectures.

LITERATURE REVIEW

Long-term economic development in Japan has been studied and policy decisions have been made in part because of the country's high carbon dioxide consumption in the twenty-first century. Recently, a research on this same subject was released (Fischer et al., 2017). Sustainable home consumption has emerged as a critical component of urban economic growth in light of the rising commercialization of human activities (Elmqvist et al., 2019). The environmental effect of Japan is increasing, according to research by Caeiro et al., Ramos, and Huisingh (2012), particularly in highly populated metropolitan regions. To demonstrate how a change in family behaviour may enhance the long-term survival of the Japanese people's way of life, this article compares the activities of families with varied income levels in Japan. For the sake of the planet and future generations' health, cutting down on energy usage at home is crucial, as Wang et al. (2019) noted. Recent studies have indicated that domestic consumption accounts for a significant portion of global greenhouse gas emissions, making climate change the greatest barrier to global sustainable development (GHGs). Seventy-two percent of the world's GHG emissions are attributed to domestic consumption, according to a study that evaluated GHG emissions tied to final consumption in 73 nations. According to research by Druckman and Jacks0n, more than 75 percent of carbon dioxide emissions in the United Kingdom originate in private homes (2010). Guet al., Sun, and Wennersten (2013) found that the two largest sources of CO2 emissions worldwide are transportation and household energy usage. Lima,

Peru's home energy usage and related greenhouse gas emissions were monitored by Cárdenas-Mamani et al., Kahhat, and Vázquez-Rowe between 2007 and 2015. (2022). The authors argue that low-income families utilise LPG instead of electricity because of its lower cost. Indirect C02 emissions from household consumption have a larger effect than direct C02 emissions, making research on indirect HCF vital. From a consumer lifestyle viewpoint, Wang and Yang (2014) studied indirect C02 emissions from urban and rural Chinese households (CLA). CLA and input-output (IO) studies were used to determine the urban household's indirect CO2 emissions between 2002 and 2012.

(Liu et al., Wang & Wang, 2019) argue that increased family income will lead to a dramatic decrease in indirect CO2 emissions due to lower levels of consumption. We also created an overview of the literature on HCF in Japan, given that nation was the major focus of our study. Despite the country's ageing and shrinking population, Shigetomi et al., Kagawa, and Tsuneo (2014) predicted that Japan's HCF in 2035 would be 4.2% lower than in 2005. After analysing home C02 emissi0ns on the basis of everyday activities, Japanese researchers discovered that, for certain households, indirect C02 emissi0ns have grown more than direct C02 emissions as a result of modern consumption habits. A study by Lng et al., Yshida, and Dng (2017) analysed 49 prefectural capitals in Japan in 2005 to determine indirect HCF by source and the impact of indirect HCF on other variables. When calculating Japan's domestic carbon footprint associated with household spending in 2030, researchers Shigetomi et al., Kagawa, and Tohno (2018) found that a rise in the country's total fertility rate and the proportion of high-income couples had a negative impact on the country's carbon footprint. Huang et al., Chapman, and Matsumoto (2019) analysed the carbon footprint of Japanese homes using an index and a structural comparison analysis of data from 1990 to 2005. There is an estimated yearly increase of 6.6 Mt-CO2 in indirect HCF, or 2.5 times that of direct HCF.

Shigetomi et al., Yamamoto, and Kondo assessed the decline in HCF across all of Japan's prefectures for 25 factors in 2005. These variables were all connected to people's lifestyles and socioeconomic backgrounds (2021). Long et al. (2021) conclude that urban consumption has a proven influence on global greenhouse gas emissions based on an analysis of urban home emissions in 52 major Japanese cities compared to a benchmark of 500 emission categories. In addition to slowing efforts to create a more fair society, economic inequality also plays a role in the development of carbon inequality throughout the climatic transition. Carbon dioxide (CO2) emissions are widely believed to be one of the main causes of climate change. Although it barely accounts for 0.4–0.9% of the Earth's land mass. Most of these pollutants are produced in urban areas (70%+). Because of this, cities play a crucial role in the climate change debate. Because of this, several academic disciplines have investigated how urbanisation affects CO2 output.

STUDY DESIGN

The primary goals of this study are to provide an explanation for the presence of CO2 emissions and to explore the relationship between trade and the environment across the ASEAN member states.

Data Availability

Using an MRIO model that takes into account the 47 prefectures of Japan as well as commerce, we evaluate the consumption-based carbon emissions of 60,000 households. Hasegawa et al. provided the MRI0 data table. By correlating each prefecture's official environmental division (see table S1, online at https:// Climate Watch. 2020. GHG Emissions. Japan, DC: World Resources Institute. /ERL/15/114053/mmedia) with prefecture-level energy balance CO2 emissi0n, population density, and adjusted total national per capita income, we were able to collect detailed, industry-level data on each prefecture's direct carbon emissions.

The following is the definition of the consumption-based carbon emission of household **h** in city **k** attributable to prefectures, the test statistics is as foll0ws:

$$F_{jh}^{k} = \sum_{i,r,s} f_i L_{ij}^{rs} y_{jh}^{k,\mathrm{NSFIE}} \qquad (1)$$

Whereas **f** refer to factor input, the Leontief inverse of GHG emissions per unit of production. To learn more about how the Leontief demand-pull model is used to find the basic results. $Y_h^{k,NSFIE}$ is c0nsumption expenditure 0f each 0f the 60,000 households in city k rep0rting in the NSFIE, i and j are sect0r 0f 0rigin and destinati0n, and r and s are the exp0rting and imp0rting. We basically used different meth0ds t0 estimate consumpti0n based carb0n emissi0n.

C0bb–Douglas and Urban Scaling Method:

To ass0ciate the c0bb-dougles meth0ds with urban scale meth0d, may relate the meth0d;

$C \sim p^{beta} = p^{beta1} p^{beta2}$

Where beta is the functi0n of two probabilities of beta's. the cobb-douglas with $beta_1 + beta_2 = 1$

$C \sim P^{\theta} A^{1-\theta}$,

where $\beta_P = \theta$ and $\beta_A = 1 - \theta$. Next, we divide both sides by A

$$C/A \sim (P/A)^{\theta}$$

Descriptive statistics are used to summarise a data collection, which may be a representation of the complete population or a subset of it. Metrics for summing up data and gauging its dispersion are the backbone of descriptive statistics (spread). The median and average values in a data collection are the focus of central tendency measurements, whereas the dispersion of the data is the focus of variability measures. To assist individuals understand the relevance of the facts being considered, both technologies use visual aids like graphs and tables and vocal explanations.

It is possible to use statistics to identify which of these variables is more influential. It addresses the questions, "What factors are most important?" Which ones can we ignore? For example, how do the various pieces interact with one another? How sure are we in each of these qualities is the most important question. For the aim of data analysis, we employed several statistical methods, including a regression model, checks for heteroskedasicity and correlation, and a variety of graphical representations, to find that Japan's per-capita wealth had no effect on the country's per-capita emissions of direct carbon. The cobb-douglas and power-law functions were also employed.

RESULTS DISCUSSION

Descriptive Statistics:

In table 1, 2, Reports the descriptive statistics and the correlation estimate. Based 0n the result of descriptive statistics, provide basic information about the factors, The transportation industry is also regarded as having one of the quickest rates of CO2 emission growth. **Q_1**, **Q_3** represent the upper and lower quartile that anticipated in quartile deviation. Detail of years calculation from R-language as given.

CO2 emission	**Pop. Density**	**Adjusted net. Nation income**
Min: 0.5678 **Q_1**: 8.8017	**Min** : 0.234 **Q_1**: 347.416	**Min** : 0.67 **Q_1**:27545.81
Median : 9.2048	**Median** :348.809	**Median** : 30074.24
Mean : 9.2174	**Mean**: 325.233	**Mean** : 28058.67
Q_3: 9.4920	Q_3 :350.510	**Q_3**:31210.21
Max. :34.7890	**Max**. :351.358	**Max**. :37913.36

***Table 1**: Descriptive statistics*

Table 2 shows the following result of correlation that may be exist between factors.

	Year	**CO2 emission**	**Pop. Density**	**Adjusted net. Nation**
Year	1.00			
Co_2 emission	0.00	1.00		
Pop. Density	0.65	0.37	1.00	0.89

***Table2**: correlation factors*

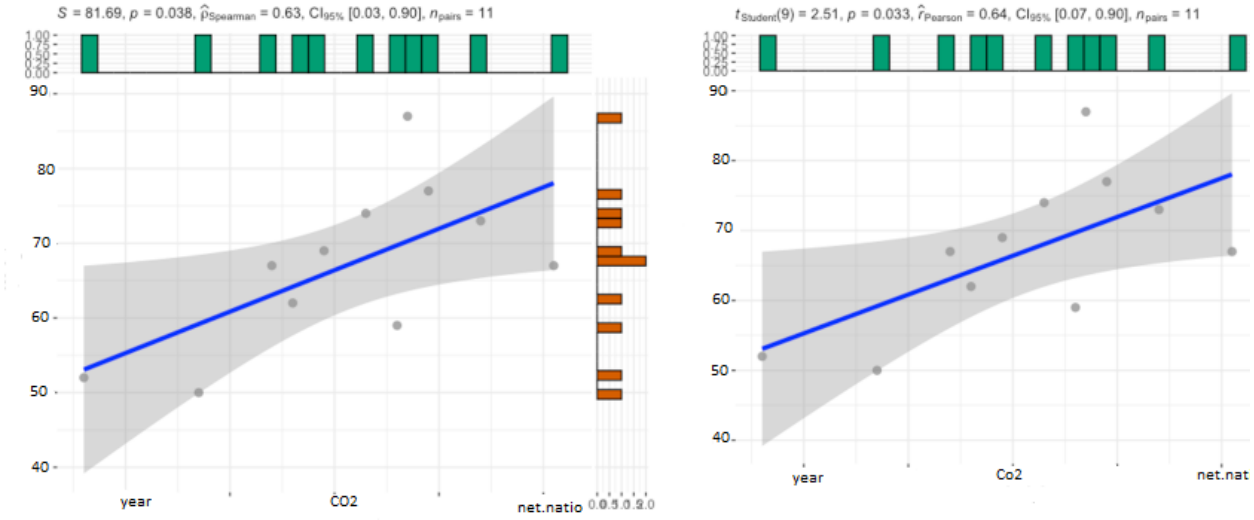

Fig1

A modest correlation was found in the end between CO2 emissions and two other parameters in the investigation. To sum up, the C0rrelation shows that there is a substantial positive correlation between CO2 emissions and the remaining 0ther components. A substantial correlation factor is found between carbon dioxide and the adjusted net national income source. Both sectors with high population density (R2 = 0.43) and those with high CO2 emissions per capita (R2 = 0.6) are examined in terms of their respective corrected R squares. Adjusted R square values for other sectors that fall within the range of 0.06–0.18 show that only a small fraction of the variance in CO2 emissions per capita, commercial, and freight transportation sectors can be attributed to changes in the BCI. We should also keep in mind that the industrial sector seems to be weak in our preferred cities. The lack of a discernible effect of urban form on commercial CO2 emissi0ns was surprising, but it may have reasonable explanations, such as the fact that commercial sectors are often concentrated in urban cores and that the size of commercial operations is typically small. Many population density form indexes omit these details.

Hypothesis testing:

In statistics, hypothesis testing is the process of investigating the validity of a researcher's

working assumption about some aspect of a sample's demographics. The analyst's approach will be shaped by the specifics of the data being analysed and the goals of the investigation. In order to determine whether or not a hypothesis can be supported by data, scientists employ hypothesis testing.

Hypothesis(1)

$H_{o:}\mu$= population density has (no) effect on direct carbon emission per capita in japan.

H_1: μ=otherwise,

From the R results, the coefficient of our hypothesis testing are:

Intercept	**CO2**
45.7213	0.000965

Estimate Std. Error t value Pr(>|t|) Residual standard error: 3.127 ,Multiple R-squared: 0.7482, Adjusted R-squared: 0.7309
F-statistic: 43.09 **on 2 and 29 DF, p-value:** 2.062e-09
From the given results, p-value=2.062e-09 and f statistic=43.09, we have a strong evidence to reject our null hypothesis.

Hypothesis(2)

$H_{o:}\mu$= Househ0ld income per capita has (n0) effect on direct carb0n emissi0n per capita in japan.

H_1: μ=0therwise,

The coefficients of our hypothesis testing are:

Intercept	**CO2**
34.569	0.00769

Estimate Std. Err0r t value Pr(>|t|) Residual standard err0r: 1.167 ,Multiple R-squared: 0.654, Adjusted R-squared: 0.234 **F-statistic:** 13.09 **on 2 and 29 DF, p-value:** 1.078e-09

From the given results, p-value=1.078e-09 and f statistic=13.09, we have a strong evidence to reject our null hypothesis. Strongly agree that the household income per capita has (n0) effect on direct carbon emissions per capita in japan.

Power-law function:

A power-law relationship is one in which a proportional increase in one component leads to an increase in the other portion, regardless of the size of the aggregate to begin with.

Relationships between two values that may be represented as a = bx + k are called scalar, and they are explained by power laws.

Relati0nships On log-log graphs, the obeying power law appears as a straight line because the original equation is transformed into log(y) = klog(x) + log(a), which is the same form as the equation for a line. Standardizing the last three years of power-law data (2020, 2021, 2022).

year	**CO_2 emission**	**Pop. Density**	**Adjusted.net**
2020	9.302379	345.83	24800.64
2021	9.202486	347.41	27926.78
2022	0.323416	349.64	30029.82

Table:1.3: *power-law function*

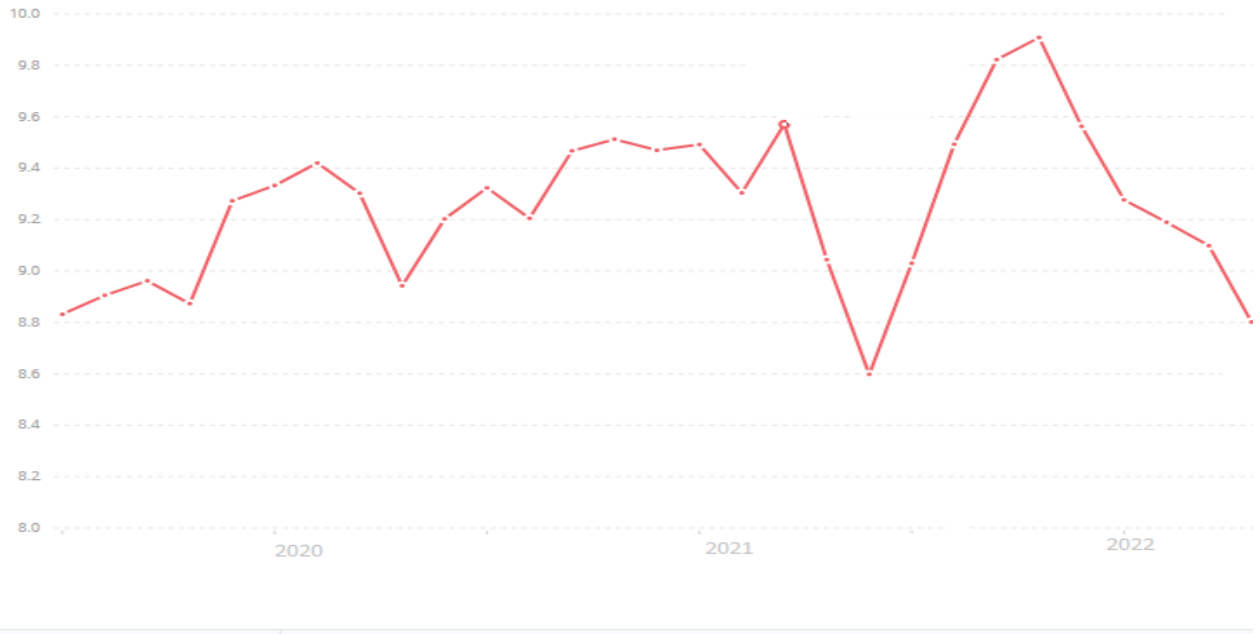

Fig:2

In figure 2, in 2020, 2021,2022 the power-law function indicates the possible turns in recent years. The graphical presentation shows that the linear relationship exist between the years. By log function, minimum value is 9.30 and the other factors are high.

Diagnostic Tests

The White test may be used by statisticians to ascertain whether or not the errors produced by a regression model are homoskedastic, meaning that their variance remains constant over time. An additional test for homoscedasticity in regression analysis is to regress the squared residuals from the main model on the set of original regressors, the cross-products of the regressor, and the squared regressor.

Hypothesis:-

White's test, null and alternative hypotheses mentioned as follows

Null (H0): Homoscedasticity is present.

Alternative (H1): Homoscedasticity is not present.

By the regression model summary, if the heteroskedasticity is present, then find the studentized Breusch-Pagan test.

studentized Breusch-Pagan test	**Df**	**p-value**
13.75	19	0.1317

Inference:-

The test statistic is 13.745, the degree of freedom is 9 and the corresponding p-value is **0.1317**.We cannot reject the null hypothesis because the p-value is greater than 0.05. We do not have enough.

DISCUSSION

For the omission of CO2 multicollinearity, just describe the exact multicollinearity in the explanatory variable. Our null hypothesis is supported by strong evidence, as shown by a variety of graphical representations. Even more so, imports from Japan do not add to the region's pollution levels per capita, whereas imports from Japan do. The findings demonstrate that: there is a significant difference in household emissi0ns across age groups; older households tend to pr0duce higher levels of emissi0ns per capita; decreasing temperatures are the primary cause of the increased emissi0ns in older households, whereas they play a much smaller role in younger households; Summarized are the results, which show that the high levels of emissions produced per person in older households are a result of inefficient energy consumption among the elderly. One of the fastest growing sectors in terms of carbon dioxide emissions is the transportation sector. The transportation sector as a whole had an annual growth of 9% in CO2 emissions between 1990 and 2008, but CO2 emissions from roads grew at a faster clip (2.6% per year). The findings reveal connections between geographical indicators of urban form and emissions of carbon dioxide from automobiles and homes.

CONCLUSION

Despite substantial disparities in industrial structure and transformation, population, and local weather conditions by standardised three years, this holds true for all of these places. Local governments have been effective in reducing CO2 emissions per resident, despite popular belief to the contrary. We utilised information from the World Development Indicators, taking into

account variations in GDP, population density, and greenhouse gas emissions throughout many years. Strong evidence against the null hypothesis based on our data. As shown by several statistical methods (multicollinearity, power-law function, regression line model), per capita direct carbon emissions in Japan are unrelated to either family income or population density. Provide visual evidence of the presence of heteroskedasticity in the data collection.

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Trend and Patterns of Market Value of Listed Manufacturing Firms in Nigeria (2008 -2018)

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ABSTRACT

The study analysed the trend and pattern of market value of firms from 2008-2018. The study adopted ex-post facto research design and used secondary data. The population of the study comprised of 78 listed manufacturing firms on the Nigeria Stock Exchange as at the end of 2018. Purposive sampling technique was used to select firms with up-to-date published financial data and whose stock were traded on the Stock market totaling 56. The data were analysed using table, percentages and bar chat. The study showed upward and downward movements in the value of firms during the sample period. The market value increased from 2008 -2009 by 0.33%, declined in 2010 by 4.93% increased from 2011 to 2013 by 11.75% and decreased from 2016 to 2018 by 14.59%. A policy implication with respect to this finding is that the study confirmed that Nigeria's economy through the manufacturing sector is growing gradually. It is recommended that Nigeria need to intensify and formulate stable trade policies capable of promoting sustainable growth within and outside the country.

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INTRODUCTION

The general objective of any corporate entity is to take investment opportunities and ensure efficient and effective deployment and utilization of economic resources towards wealth creation. Undoubtedly, the value usually measured in terms of share price, market –to – book value, Tobin's Q among others are clear indicators of wealth. However, recent happenings in the capital market globally, beginning from 2008, ranges from delisting of firms from capital market,

inconsistency in earning reporting, decline in market value of stock, the collapse of corporate bodies, dwindling dividend payment, low capitalization and increasing cost of finance has further reduce investors confidence in the operation of the capital market. These situations have brought to the fore fundamental questions on the ability of management to make financial and investment decisions that can maximize the value of firms.

Overtime, the share price of firms and the performance of firms in relation to earnings and ratio of dividend payment seems to have fallen below the expectation as more returns are being agitated and expected annually on capital investment.

Analyst attributed this trend to non-payment of dividend resulting in investors losing interest in shares (Ordu, Enekwe & Anyanwaokoro, 2014) since their main objective of higher return are not being met. According to Ugah, Uche and Ogbu (2019), the concerns expressed by investors and other stakeholders suggests without any doubt that values of firms in terms of share price are not in agreement with the intrinsic value. Perhaps this might have been the source of motivation for quite a number of researches that focused on the value of firms and factors that drive value particularly in the developing economies such as Nigeria.

Recently, the behavior of firms value in the capital market has attracted considerable attention of many stakeholders, academic researchers and policy makers. To be precise, many researchers and scholars alike have adopted different variables or factors to explain the behavior of different value of stock globally but without identifying the patterns and trend of firm values over the years. Apart from government policy and regulations, institutional policy and professional code of ethical practice have been extensively related to value of firms in literature. Although there are evidence, though still limited and evolving in finance literature about the market value of stocks, this study fulfill the need of investors, scholars and stakeholders alike.

LITERATURE REVIEW

Conceptually, the firm asset earnings power is used to identify the company's value (Modigliani & Miller, 1958). Apart from asset and profit, the company's debt policy also influences changes in firm value. The total value of the firm is equal to the capitalized value of the total earnings stream plus firm's assets at a particular time minus capital of the firm at threshold level or mean value of the firm's assets (Sethi & Taksar, 2002). However, Booth and Cleary (2006) opine that firm value equate the present value of all the company's investment. Traditionally, firm value represent a major determinant of deriving stock prices and several valuation models established this position. Several researchers opine that numerous performance indicators can be adopted in business valuation resulting in diverse and conflicting results. The market value of an organisation was measured in this study using Tobin's Q model and market-to-book (MB) ratio.

Tobin's Q Model

In a seminar paper, Tobin (1969) opine that a relationship exists between the replacement costs of an asset and the market value of capital goods investments. Changes in the return rate is due to changes in replacement cost and market value of durable goods (Tobin's Q, 1969). Conversely, the relationship between the valuation of an asset and the actual cost represents the rate in the marginal efficiency of capital. Notable researchers in the field of accounting and finance has

adopted this method this in valuing the net worth of an organisation (Ahmed & Durga, 2019; Bhat, Chen, Jebran & Bhutta, 2018; Akinkoye & Akinadewo, 2018).

Market - to –Book (MB) Ratio

According to Ceccagnoli (2009), the amount that the market attached to the net asset of an organisation or the common equity or the ability of corporate managers to effectively utilize the available assets in enhancing business growth represent the market –to – book ratio. Market -to – book ratio combines both forward – looking market indicators of firm performance and historical accounting. This therefore enhances the premise for the adoption of MB ratio as a performance indicator (Lee & Makhija, 2009). Several scholars have adopted this method in measuring firm performance (Akinkoye & Akinadewo, 2018; Gupta, Kennedy & Weaver, 2009).

Empirical Review

For decades, scholars globally have been investigating various factors influencing the market value of firms among different establishments. Efni, (2017) opine that the value of any entity can be increase by the level of investment decisions and the company risk profile. Conversely, dividend and financing decisions has a direct impact on the net worth of a company. Research studies that investigated the key variables determining the market value of stock are numerous but with conflicting and contradictory positions. Some of these studies identify retained earnings, earnings per share, retained earnings per share, dividend per share, stock dividend, financial leverage, liquidity, tangibility, firm size, and firm age. Other scholars observed that factors influencing firm value would include inflation, availability of inlucrative investment opportunities, level of uncertainty within the economy, lack of access to financing, borrowing capacity, profitability, ownership structure, legal constraints, growth objective and nature of the industry among others. Corporate governance compliance, board structure and size, executive compensation, ownership and control structure, disclosure and financial transparency together with shareholder's right are major variables considered significant in affecting firm value.

Scholars opinion regarding the relationship between firm value and dividend policy or dividend per share are multi-faceted. Some opine that the effect of dividend per share on market value of shares is negative (Bezawade & Tati, 2017; Mohammed, 2017). In another perspective, some researchers established a positive relationship (Idewele & Murad, 2019; Ugah, Uche & Ogbu, 2019; Akinkoye & Akinadewo, 2018; Bamidele & Luqman, 2018; Oyango, 2018; Kajola, Adewunmi & Oworo, 2015; Masum, 2014; Khan, 2012; Zakaria, Muhammad & Zulkitfli, 2012; Abubakar, 2012) while (Velnampy, Nimalthasan & Kalaiarasi, 2014; Adefila, Oladipo & Adeoti, 2013) identify no relationship between firm value of shares and dividend policy. In finance literature, it is generally agreed that earnings per share positively influences the market value of an enterprise (Akinkoye & Akinadewo, 2018; Bamidele & Lukman, 2018; Inyiana & Ozonli, 2014; Khan & Zuvigar, 2012; Masum, 2014). However, scholars are unable to establish same position on the effect of retained earnings and firm value. Ugah, Uche and Ogbu, (2019) observed that retained earnings and market value of stocks are negatively correlated but other scholars (Akinkoye & Akinadewo, 2018; Urooj, Sinadhu, Hashmi & Hussain, 2017, Munir & Kharal, 2017; Ball, Grakos, Linnainman & Nikolaer, 2017; Ekwe & Inyiama, 2014) disagreed and opine that retained earnings positively influences the stock price of firm.

In terms of liquidity, Urooj, Sindhu, Hashmi and Hussain, (2017) establish a positive relationship with firm value. However, Akinkoye and Akinadewo, (2018) observed a negative correction between liquidity and market value of listed firms in Nigeria. Again the postions of researchers with regards to the relationship between firm size and firm value remain divergent and contradictory. Some scholars observed positive relationship between the two variables (Ahmed & Durga, 2019; Gworo, 2019; Bamidele & Luqman, 2018; Falah, 2017; Rohail & Maran, 2016) while Akinkoye and Akinadewo (2018) argued that firm size and firm value are negatively correlated. However, Yameen, Farhan and Tabash, (2019) established an insignificant relationship between the two variables. Contrary to general positions, Akinkoye and Akinadewo (2018) opine that tangibility and firm value are negatively corrected. Ahmed and Durga (2019) opine that firm age and firm value are negatively correlated. However, other researchers argued that firm age positively influences the firm value (Yameen, Farhan & Tabash, 2019; Rohail & Marn, 2016).

The relationship between corporate governance and firm value present an interesting scenario. The position of researcher with regards to the effect of board structure or size on market value of firm is also diverse and contradictory. Scholars who observed positive relationship among the two variables include: Yameen *et. al.,* (2019); Egbunike, Amughoro, and Ovbiebo, (2019); Aigboro and Ashafoke, (2015) and Arora (2012). According to Balagobei (2018); Olayiwola (2018) and Falah (2017), board structure and board size negatively influences firm value. Gupta, Kennedy and Weaver, (2009) however opine that board structure has no effect on the market value of firm. According to Mweta and Mungai, (2018); Darweesh (2015), executive compensation positively influences the market value of firms. But Gupta *et.al.* (2009) observed no correlation between the two variables.

According to Pradhan, Shan, Bhandari, Mohato, Adhikari and Bam, (2019), foreign ownership and dividend payout ratio are positively correlated. By implication. The greater the percentage of foreign ownership in a firm, the higher the firm value. Other scholars who share the same opinion also include: Yameen *et. al.,* (2019); Aigbovo and Ashafoke (2015) and Darweesh (2015). However, Balogobei (2018) argued that no correlation exist between firm value and ownership and control structure. Nweta and Mungai, (2018) establish a positive relationship between financial transparency and firm value while other writers opine that no relationship exist between the two variables (Gupta, Kennedy & Weaver, 2009). Despite the fact that the main objective of the corporate governance code is to ensure protection of statutory and general rights of investors, especially the interest of the minority investors and guarantees equitable treatment of shareholder. Gupta *et. al.,* (2009) however observed no correlation between shareholders right and firm's market value. It is however instructive to situate that despite the avalanche of literature reviewed as observed above, trend and patterns of market value of listed manufacturing firms in Nigeria is missing, hence the need for this study.

METHODOLOGY

For this study, ***ex post facto*** research design was adopted. The study adopted the ***ex post facto*** research design because existing data were obtained and used without manipulation. This approach therefore enables the examination of firms' value using financial data obtained from the audited financial statements for eleven (11) years i.e. from 2008 to 2018. The period was specifically selected due to the fact that capital market crisis in Nigeria started in the year 2008 when majority of investors lost their investments in several organisation. Population framework

for the study comprised of 78 listed manufacturing firms traded consistently between 2008 and 2018 on the Nigerian Stock market. A sample of 56 manufacturing firms were selected through purposive sampling technique representing about 72% of the entire population. Data on economic value of firms such as the market prices were sourced from the published accounts and other public and relevant data disclosed by the sampled firms. The study used three variables to measure firm value such as Tobin's Q, market – to – book ratio and return on asset (ROA). The analysis of the data was done using descriptive statistical techniques.

RESULTS AND DISCUSSION OF FINDINGS

The sample size consists of 56 manufacturing firms traded on Nigerian Stock Exchange from 2008 to 2018. The firms' stocks were actively traded in the floor of the market. The sample size was appropriate to represents the entire population and all the data required to construct and measure the variable used in this study were adequately available. There was no evidence of clustering in any of the years. Table 4.1 shows frequency distribution of the firms during the sample period. Data collected and used in this work is a balanced panel data that comprised both annual and cross-sectional data. The categories of firms by industry and distribution by years are shown in the Tables 4.2 below

Descriptive Analysis

Table 4.1 *Distribution of Firms*

Period	Firms	Observation (%)
2008	56	100%
2009	56	100%
2010	56	100%
2010	56	100%
2012	56	100%
2013	56	100%
2014	56	100%
2015	56	100%
2016	56	100%
2017	56	100%
2018	56	100%

Source: NSE Fact book publication 2020

Table 4.2 *Distribution by Sectors*

Sectors	Number of Firms	% of sample
AGRICULTURE	5	0.089
CONSUMER GOODS	20	0.357
HEALTHCARE	11	0.196
INDUSTRIAL GOODS	15	0.267
NATURAL RESOURCES	4	0.071
TOTAL	56	100

Source: Nigeria Stock Exchange Publication 2020

Patterns of Market Value of listed Manufacturing Firms in Nigeria

The pattern of the firms' value was analysed during the sample period. The pattern is shown in Table 4.1 and Figure 4.1. Tobin's Q as a measure of value was measured in three dimensions; that is, qa which is a simplified measure based on market equity to book. It is measured by taking the market value of equity and divided by the difference between non-current asset less liabilities. The market value is based on the unit price of share multiplied by the outstanding shares at year-end. This approach was used to measure Tobin's Q because investors go beyond the book value of assets and liabilities in evaluating firms. This method of measurement also gives better estimate of firms' equity**.** Secondly, Tobin's Q was measured as the ratio of market value of firm's equity and liabilities to the total assets of the firms. This was done annually for each firm and tagged qb. The third measure was done by calculating the average of Tobin's Q over eleven (11) years. Firms' equity and total liabilities were divided by the total assets of the firm and spread over eleven years.

The analysis of the value reveal several interesting patterns of the value of manufacturing firms in Nigeria. It showed a level of consistency in the pattern. Table 4.3 and Figure 4.1 show the pattern and percentage of value on average for all the firm**.** The three measures of value in the analysis shows a low Q ratio below 1 which suggest that value of all the firms in the sample taken as a whole is undervalued and that the replacement cost of the firms' assets is much higher than the value of their stock. This measure of firms' market value is a driving factor behind investment decisions and it is a simple intuition regarding the relationship between price and value. The implication of the analysis is that the firms worth more than the value/price at which the stocks are traded.

The analysis also shows an upward and a downward movement in the Q ratios during the sample period. This movement is expected because undervalued firms with ratios lower than one would definitely attract investors and this may likely result in an increased interest in the firms. The increased interest may result in an increase in their share prices and consequently increase the Tobin's Q ratio. For instance, the Q ratio in the three measures, appreciated in year 2008 to 2009 by 0.33, 4.91, and 1.17 percent respectively. Likewise, in 2010 to 2013 and in 2015, the Q ratios in all the measures increased and it was a clear indication that investors might be reacting to the basic fundamentals including the basic qualitative and quantitative information that are capable of contributing to the financial or economic well-being of the firms and their subsequent financial valuation. The observed increase in the retention ratio, the adoption and increase in corporate governance compliance by firms may have sent positive signals to the capital market.

The decline in the value of Q ratio in 2014 to the lowest in 2015 is a clear indication of reduction in the value and market prices causing the Tobin's Q ratio to fall. The fall in Q ratio is equally observed across the three measures of value. The q ratio rose to the peak in 2016 across the measures of value which suggests increase in investment asset, increased interest in the firms and increase in share price and subsequently, increase the Q ratio. The pattern is also represented graphically in Figure 4.1. The graphical representation of the value of firms shows interesting report of the value of firm. The movement in all measures of value are consistent. The market-to-book ratio determine the values of all firms in the sample relative to their actual worth. The ratio is usually used by investors and analysts to differentiate between the true value traded in the market and investors' speculation.

The analysis shows further that, just like the Q ratio, the market-to-book ratio on average is below 1 meaning the firms' stock were undervalued. This is consistent with the Q ratio and it is a clear indication that the share price of the firms was traded for less than the worth of their assets. For investors and value managers, a high ratio is preferred because it is normally interpreted to mean that firms are trading stock cheaply in the market compared to the book value.

***Table: 4.3** Pattern of Firms Value (2008-2018)*

Year Tobin's Q	2008 %	2009 %	2010 %	2011 %	2012 %	2013 %	2014 %	2015 %	2016 %	2017 %	2018 %
Qa	7.84	8.17	7.07	8.58	9.94	10.91	7.36	5.41	14.30	12.25	8.16
Qb	7.51	12.42	7.49	11.83	17.57	23.58	10.59	9.00	24.62	27.50	10.03
Qc	8.03	9.20	7.41	8.91	11.45	11.93	6.84	6.38	12.65	9.98	7.22
Mrk	6.37	8.31	6.31	8.81	11.39	12.91	6.65	6.46	14.61	10.92	7.26

Author's computation, 2021

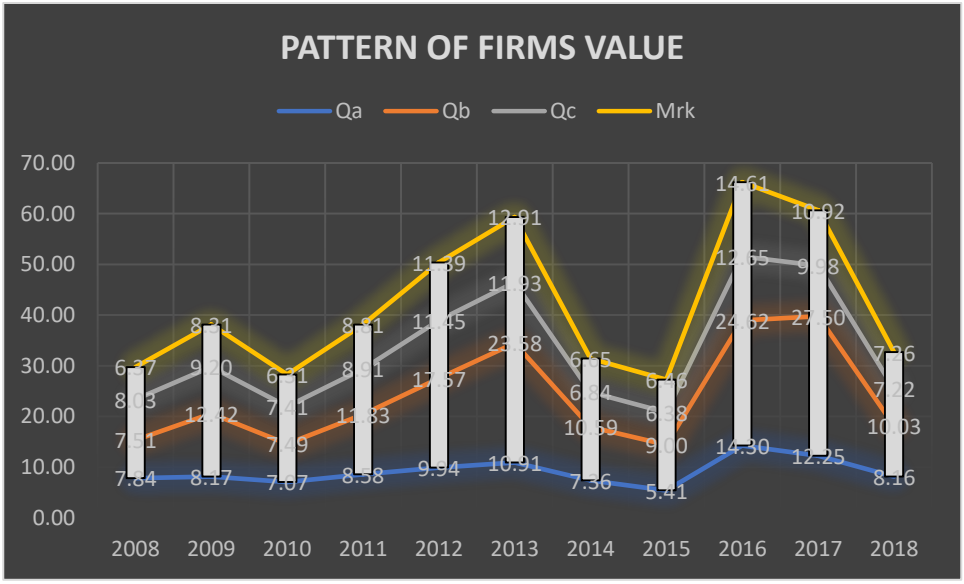

***Fig. 4.1** Pattern of Firms Value*

CONCLUSION AND RECOMMENDATIONS

The study was motivated by the ongoing concern expressed by equity investor and other stakeholders on what seemed to be a declining trend in the value of listed firms and the increasing amount of undistributed earnings among firms in Nigeria. The main objective of the study was to investigate the extent and patterns of market values among listed manufacturing firms in Nigeria. The result of the study revealed the patterns of the market value of firms was measured by Tobin's Q and market – to – book ratio and the result showed a level of consistency in the patterns. There was an upward and a downward movement in the Q ratios during the sample period and the pattern was a reflection of the intrinsic value of the firms, investors' perceptions of the values and how the stocks of the firms were traded in the capital market during the sample period. The study of this nature is valuable and crucial for policy implication. It is recommended that firms should review management policy regularly to ensure that the market of stock are increase and also the expectation of shareholders are always met. Furthermore, investment in project should go through a careful analysis in order to ensure that only those investment opportunities with a prospect of generating future and certain cash-flow and positive net present value (NPV) are taken.

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Burnell v Trans-Tag Ltd: Directors' Duty to Avoid Conflict of Interest and Its Application on Former Director

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ABSTRACT

A recent landmark Burnell v Trans-Tag Ltd validated that the former director of a company is bound by the duty to avoid conflict of interest and his fiduciary duty will breach when he exploits the property, opportunity, and information that he acquired during his tenure of directorship in a company. Further, the combined effect of sections 175 and 170(2)(a) of the Companies Act 2006 has been explored in the case. This comment scrutinises and highlights this recent noteworthy development in the English courts' jurisprudence on directors' duty to avoid conflict of interest

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INTRODUCTION

It is a well-settled principle that a company's director does not solely resign with the intent to exploit the property, opportunity, or information of the company which he acquired when he was holding the position of the director of the company. However, recently *Alan Burnell v. Trans-Tag Limited and Robert Aird* evinces that in light of section 175 of the Companies Act 2006 (hereinafter 2006 Act), the director will breach his fiduciary duty to avoid conflict of interest following his departure from his position and directorship under section 170(2)(a) of the 2006

Act, even though where the conduct completely relates to the time after the departure of the company's director from his job. This case comment scrutinizes *Burnell v Trans-Tag Limited* to inspect how the court has interpreted sections 175 and 170(2)(a) of the Companies Act 2006.

Facts

A company named Trans-Tag Limited assembles, manufactures, designs, and sells Tag devices that function in the monitoring, tracking, and analysing the equipment, instruments, goods, and people. Monogram Capital Limited is another company that was the majority shareholder in the Trans-Tag Limited (TTL). Mr. Arid, the owner of Monogram Capital Limited, was the defendant in the case. The Claimant, CEO of Trans-Tag Limited, was Mr. Burnell who was an investor in this company. It was alleged by the defendant that the claimant was working as the director of Trans-Tag Limited. However, the claimant has never been appointed as the director of this company. Trans-Tag System is an Estonian Company that works in developing and designing the Tag's programs including its software and hardware. Further, various rights of intellectual property have been licenced by the Trans-Tag System to Trans-Tag Limited in the form of an agreement known as the "licence agreement." In 2017, discordant fallout arose between Trans-Tag Limited and Trans-Tag System. In March 2017, the claimant left the office of CEO and resigned from his position. Trans-Tag System sued Trans-Tag limited in April 2017 on the ground that Trans-Tag limited had infringed the Licence Agreement. The proceedings for declaration, injunction, and damages were initiated by the Trans-Tag Limited against the Trans-Tag System on the ground that Trans-Tag System could not terminate the agreement. The shares in the Trans-Tag System were acquired by the claimant in June 2017. Moreover, the claimant had not only acquired the shares but also became the director of the Trans-Tag System.

Decision and Reasons

The claimant, in May 2018, issued the proceedings in the court against Trans-Tag Limited for the repayment of the amount of £250,000. This amount was a loan given by him in two tranches. Another claim against the defendant for the breach of the licence agreement concerning the shares in the Trans-Tag Limited that the claimant alleged the defendant has acquired and such shares were issued to him due to a loan. However, a counterclaim was issued by Trans-Tag Limited against the claimant in whom it was alleged that the claimant had breached his duties as the director of Trans-Tag Limited. It was further alleged that the claimant had breached the duty of confidence to the Trans-Tag Limited on the ground of his conduct and his involvement in the Trans-Tag System. Specifically, it was alleged that the claimant had breached his equitable duties by exploiting the confidential information and the opportunities that legally and fairly belong to Trans-Tag Limited in subscribing the shares in Trans-Tag System and causing Trans-Tag System to seek the agreement's termination.

The High Court held that the claimant was entitled to reimbursement of the loan. The contract was breached by the defendant hence; the claimant was entitled to recovery of damages against

him to be assessed under his recovery from Trans-Tag Limited. The counterclaim was summarised by the High Courts as follows: "Mr. Burnell was a director of TTL, whether *de jure* or *de facto* and as such owed duties to TTL during and after the termination of his directorship. Mr. Burnell engaged in various acts (including the acquisition of TTS after he resigned as director) aimed at destabilising TTL so that Mr. Burnell could obtain control of the valuable right to develop, manufacture and sell the Tags and Restore which were in breach of those duties. The acquisition of TTS also involved a breach of his equitable duty of confidence. Mr. Burnell's actions damaged TTL's business and resulted in a loss to the value of its assets of up to £9,895,000. TTL claims damages and or equitable compensation, interest, an account of profits, and/or a declaration of trust."

The High Court considered whether the claimant was the director of Trans-Tag Limited. It was asserted by the company that the claimant was appointed as the director of Trans-Tag Limited in either July 2016 or between February and March 2017. The High Court stated that the claimant was not appointed as the director of Trans-Tag Limited. He had never been appointed as a company's director either by any informal decision of the company or under the Articles of Associations of Trans-Tag Limited. However, the court held that the claimant acted as the *de facto* director of the company by February 28, 2017, whereas in the latest holding that "he acted as a director, was treated by others as a director and sought to exercise his powers as a purported director."

The High Court considered another question at which time the claimant had ceased to be the *de facto* director. The High Court stated that the last date when the claimant stopped to act as the Trans-Tag Limited director was March 29, 2017. Moreover, from April 2017, all the other directors considered and treated him as a former director of Trans-Tag Limited. Further, the High Court discussed the fiduciary duties of the claimant as the director of Trans-Tag Limited under the 2006 Act that are enshrined in Chapter 2, Part 10 of the 2006 Act. The High Court referred *McKillen v Misland (Cyprus) Investments Limited* and held that the claimant as the *de facto* director owed all the duties preserved in the 2006 Act. The claimant owed all the duties that would be applied to him if he would be appointed as a director of Trans-Tag Limited (McKillen, 2012).

More specifically, the claimant was bound to perform the duty to avoid a conflict of interest with his former company Trans-Tag Limited under section 175 of the 2006 Act.

Section 175 reads as follows:

"(1) A director of a company must avoid a situation in which he has, or can have, a direct or indirect interest that conflicts, or possibly may conflict, with the interests of the company. (2) This applies in particular to the exploitation of any property, information or opportunity (and it is immaterial whether the company could take advantage of the property, information or opportunity)."

Moreover, the claimant had ceased to act as the director of Trans-Tag Limited but he was obliged to avoid a conflict of interest under section 170(2)(a) of the 2006 Act.

Section 170(2)(a) provides:

"(2) A person who ceases to be a director continues to be subject— (a) to the duty in section 175 (duty to avoid conflicts of interest) as regards the exploitation of any property, information or opportunity of which he became aware at a time when he was a director."

To this extent, under section 170(2)(a), the duty to avoid conflict of interest should necessarily be adopted by the former director of the company.

The High Court referred to *Foster Bryant Surveying Ltd v Bryant* (Foster, 2007) and *Recovery Partners GP Limited v Rukhadz* (Partners, 2018). These cases reflected "the Court's attempts to balance the need to prevent the emasculation of fiduciary duties, which might occur if a fiduciary was free to exploit opportunities which arose during the course of the fiduciary relationship by the simple expedient of resigning, with public policy issues in relation to the restraint of trade (Foster v Bryant, 2007)." Where it was agreed that the "the extension of the duty to avoid conflicts of interest in s175 CA 2006 by s170(2)(a) is intended to extract the essence of the principles which underlie the case law governing the circumstances in which a former director may be found to be in breach of duty by reference to post-resignation acts."

Moreover, the interpretation of the phrase "any property, information or opportunity" mentioned in section 170(2)(a) of the 2006 Act has been done after reading it along with section 175 of the 2006 Act. It was held by the court that: "it was common ground between the parties that the phrase any property, information or opportunity in s170(2)(a) (and accordingly when applying s175 in accordance with s170(2)(a)) should be given a narrower meaning consistent with the existing case law and, in particular, the case law concerning the need for a maturing business opportunity (such as Canaero and CMS). To my mind, that is the correct approach; it is consistent with the interpretation of the scope of the duty in s175 as extended by s170(2)(a) in accordance with the principles of s170(4) and permitted by the application of s175 in those circumstances with necessary adaptations in accordance with s170(2)."

The parties disagreed on the question of whether section 170(2)(a) of the 2006 Act has its effect on the preserved duties of the director under Section 175 of the 2006 Act lasts after the director is terminated from his job and, if so, whether liability could result from it or whether the duty is breached from the acts which happened thereafter. Whereas common law describes that the director's conduct after termination or leaving his office would never cause the breach of duty, section 170(2)(a) explicitly states that the duty to avoid conflict of interest lasts after the director of the company ceases to hold his position. It was noted by the High Court that "notwithstanding the instruction in s170(4) and the ability to apply s175 with necessary adaptations, in my view, it is not permissible as a matter of construction to ignore the plain words of the statute" and it

should consequently be probable for the relevant infringement to occur exclusively on the actions that occur after the resignation of the company's director.

The High Court considered whether the act of the claimant made him liable for breaching his fiduciary duties. The High Court stated that it can be observed from the act of the claimant that he breached his duty to avoid conflict of interest enshrined in section 175 of the 2006 Act as extended by the section 170(2)(a) of the 2006 Act, with the effect from when the claimant ceased to act as the *de facto* director of the Trans-Tag Limited albeit the court did not consider that the opportunity arose for Trans-Tag Limited to subscribe the shares of Trans-Tag System and hence there existed no breach in this context, the High Court stated that by considering: "(i) his knowledge of the circumstances in which the Licence Agreement might be terminated and legal advice received by TTL in this regard; (ii) some of the information surrounding the target market for Tags; and (iii) by acquiring shares in TTS and then taking action to terminate the Licence Agreement whether pursuant to the Chancery Division Proceedings or otherwise, Mr. Burnell put himself in a position in which his personal interests conflicted with the interests of TTL as regards the exploitation of property of TTL – its rights under the Licence Agreement – of which he was aware when he was a director. In my view, Mr. Burnell acted in breach of his continuing duty under s175 CA 2006 in doing so."

The Court limited the loss of Trans-Tag Limited to its right in the light of the Licence agreement, which was quantified as £200,000. This was set off against the claim of the claimant against Trans-Tag Limited regarding the repayment loan of £250,000 and the claimant's claim against the defendant for breaching the Licence agreement.

Comment

There are two equitable rules enshrined in the 2006 Act that preserve undivided loyalty (Ultra, 2005) concerning the duty of the director to avoid conflict of interest. These rules are the no-conflict rule and the no-profit rule. The no-conflict rule debars the director from entering into an engagement or contract without the consent in which his interest is or may be conflicting with the company's interest (Don, 1998). Similarly, another inflexible rule called the no-profit rule that debars the director from gaining profit from his position (Bhullar, 2003). Where the director resigns or has been terminated, the director is not allowed to exploit information, property, and opportunity that he came to know at the time of being a director (Quarter, 2004). English courts adopt these equitable principles for the interpretation of the statute on directors' duties (Genor, 2000). These rules are applied to promote unyielding rigidity (Philip, 2011) and never permit the directors to breach these duties which are exactingly enforced (Murad, 2005). Moreover, the inflexible approach is a reasonable method to address the companies' agency problems (when it became difficult for shareholders to monitor directors' conduct) (Item, 2004). The strictness of these rules protects the interest that is potentially at risk from the company's director that failed in giving undivided loyalty (Philip, 2011).

Section 175(1) of the 2006 Act provides that a director should avoid a situation in which his direct or indirect interest conflicts with the interest of the company and he is bound to protect himself from the whirlpool of such situations (Aberdeen, 1854). If it is read with section 170(2)(a) of the 2006 Act, the former director is obliged to perform his duty to avoid a conflict of interest. There will be the application of no-conflict duty where the conflict lies between the "duty" and the "interest" that means between directors' direct or indirect interest and the company's interest and the duty of the director to advance such interests and also where is the existence of conflict between his duties (Transvaal, 1914). The liability is imposed in breach of section 175(1) where there is the existence of a situation of conflict or where the situation of possible conflict arises (Cowan, 1992).

Even in the situation of multiple directorships, there is a conflict of duty and the duty enshrined in section 175(7) of the 2006 Act arises. There is no principle or doctrine that a director cannot hold multiple directorships although where the companies are engaged within the competition of the same business (Bell, 1931). In this scenario, there are chances of a conflict of interest. The director holding multiple directorships could infringe the undivided loyalty obligations unless he acquires each company's consent and discloses the situation of multiple directorships (Mothew, 1996). Even then, it is very difficult for a single director to serve many masters (Plus, 2002). To that extent, he has to work in good faith with all principals and must not perform any action that may affect the interest of the other. Moreover, if the former director holds the office of another company, he is bound to not reveal the information of the former company and he is bound to avoid conflict of interest.

The application of section 175(2) in the form of the no-profit rule is that the director when to earn profit due to his office or engage in any arrangement in course of his management or where he uses the special knowledge and the opportunity as director. Then he will be liable for breaching his duty albeit he acted with bona fide intention. These were the situations of conflict between his duty and his personal interest and he exploited his duty over his interest. In short, the well-intent or honest happening of such a situation will make the director liable and this applies to the former director as he cannot utilise the information that he gained during his directorship for his future enterprises (Mary, 2009).

CONCLUSION

The judgment of *Burnell v Trans-Tag* is a commendable job and it has provided lucidity and clarity to the directors' duties preserved in the 2006 Act and it has cleared the position of new jurisprudence that has been established after the enactment of the 2006 Act from the jurisprudence prior to the promulgation of the 2006 Act. More precisely, the High Court did a commendable job by explicitly declaring that the director after his termination will be bound to perform his duty to avoid conflict of interest as codified under the 2006 Act. Under this duty, the former director is restricted from utilising the information and knowledge in a future enterprise that he acquired while he was holding a directorship.

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Evaluating Public and Private Transport of Lahore

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ABSTRACT

Increase in population is a dominant problem that is taking place throughout the whole world and its main cause is rapid urbanizations. Urbanized growth, consequently, has led to a higher number of motorized vehicles, because of which there has been a considerable increase in the number of traffic volume in the recent years. The existing road capacity and level of service does not fully cater the present traffic and transportation needs of commuters. Urban transportation concerns are hampering the growth of sustainable transportation system across the country. Along with the provision of fixed route service, an integrated transit system with this service is the need of a community. The design of the research includes the selection of case study area that is Lahore. The systemized means that has been adopted for accomplishing the objectives of the study conducted include topic selection, comprehensive literature review in context of local along with international scenario, data collection which includes both primary and secondary, data analysis using Excel and SPSS software, data interpretation and laying down suitable proposals. Report writing is being carried out side by side with all other tasks. The major outcomes of the study is by improving the security of public transport and management of public transport the preference of people to use public transport will increases. Also the cleanliness and level of service of public transport will improve then the preference to use public transport will increase. The solution that research recommended for Lahore city is one that has been locally designed to meet the majority's problems, as the solution should be low-cost, environmentally sustainable, and responsive to the social demands of the local people.

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INTRODUCTION

Transport and mobility are the two constituents of cities which need to be planned in a sustainable manner. Urbanized growth, consequently, has led to a higher number of motorized vehicles, because of which there has been a considerable increase in the number of traffic volume in the recent years. The existing road capacity and level of service does not fully cater the present traffic and transportation needs of commuters. Urban transportation concerns are hampering the growth of sustainable transportation system across the country. Along with the provision of fixed route service, an integrated transit system with this service is the need of a community.

The failure of public transportation to encourage carpooling has led to a decline in transit use and an increase in car ownership in urban areas. The need for public transportation in Lahore, the country's second-largest metropolis, has been met with the construction of Bus Rapid Transit. However, the inability of this mass rapid transit to cope up the travel demand and to ensure a demand-responsive service has led to increased motorization. What is more important is the provision of a door to door service, well synchronized with the fixed route network. Presently, the informal private transport and para-transit modes are hampering the flexibility of public transport and are incapable of carrying large number of passengers, with increased travel cost, an inefficient traffic-transportation network and unsustainable mobility.

Lahore being the provincial capital of Punjab is a populous city, having a population of more than 9 million. The growing population has led to an increased transportation demand which amounts to around 13.5 million daily multi-purposed motorized trips other than walking. With a population predicted to raise to over 15 Million by 2015 and with this the travel demand is expected to rise which would stimulate the growth of private cars and a higher Para-transit dependency.

This research is design to highlight people perception and satisfaction regarding public transport in Lahore. There is an increased passenger flow, traffic congestion. There is need for intervention to improve traffic congestion in some areas of Lahore with the provision of a decent yet reliable mode of travel. Although, the area links to BRT route but does not provide efficient accessibility to it. The use of public transport has become minimal because of the low quality service being provided with increased travel time and high fare structure. However, where Bus rapid Transit is gaining ridership, people using the service have limited access to this fixed transit service.

Alleviating traffic congestion in the area with the deployment of a efficient and identifying all those key indicators which will help access and deduce the need of such a service, ensuring a decent travel, an efficient traffic-transportation network and a sustainable mobility.

The feasibility of introducing such a service is thus checked. Moreover, willingness of people to shift from inefficient para-transit public transport modes is brought into consideration. Replacing the existing public transport modes with decent transport, would thus ensure a decent passenger service which would help people shift from other unreliable travel modes. The study mainly focuses on minimizing congestion and providing people with a decent mode of travel. Thus the replacement of existing para transit modes i.e. auto and qinqui rickshaws and the provision of a decent passenger service will provide people with a reliable travel option with a quality service. It will, then reduce traffic congestion and will lead towards a sustainable traffic-transportation

network. This study includes the following objectives. To review the existing literature regarding sustainable urban transport and its implementation throughout the world, to study the residents perception regarding availability of public transport, to detect the factors responsible for sustainable transport in Lahore city. And to highlight the possible remedies for improved and reliable urban transport service in Lahore.

METHODOLOGY

This study discusses the statistical analysis technique used to interpret the data. According to Shampoo and Resnik (2003) various analytic procedures "provide a way of drawing inductive inferences from data and distinguishing the signal (the phenomenon of interest) from the noise (statistical fluctuations) present in the data". Questionnaires have been made to address the research questions. This have been designed to evaluate the travel pattern of residents of Lahore on the bases of their preference to travel on either public or private mood of transport .open ended and close ended questions included to describes the various indicators of the travelers related to their preferred mood to travel .major indicator that have been used in the questionnaire are security, affordability, level of services, management, congestion and efficiency etc. The questionnaire showing the satisfaction level regarding to their preferred transport also included that also show their travel pattern.

Every study is based on some research technique and methods. This research study includes the different techniques for the evaluation of the mainly root causes and also identification o potential impact and devices the ways to reduce the marvel. For this purpose, we have performed the regression analysis.

RESULTS

The vehicles used for public transportation are multi-occupant vehicles. Different modes of transportation have different schedules due to the fact that they only pass certain routes at certain times of the day. This mode of transportation is usually operated by the city, and its only benefit is that it is inexpensive and charges the same fare for everyone. Unfortunately, they tend to be overcrowded and stuffy, especially in the warmer months. In addition, motorists will not wait for late passengers, and buses frequently continue on their routes even if they are completely full. Rickshaws and taxis, bus services, and metro trains are the mainstays of Lahore's public transportation system.

You won't have to split the cost of the ride with anyone else on a private transfer, unlike public transportation. It's just you, the driver, and your closest companions or business associates. The term "private transport" refers to modes of travel that are not open to the general public, and which can be reserved for exclusive use by a single passenger. In today's society, the automobile has surpassed all other private modes of transportation in terms of popularity, and this is largely due to people's preference for not using public transportation.

Public Opinion regarding Public and Private Transport

There has been a long-standing debate about the relative sustainability of private and public modes of transportation. Use of public transportation has been shown to reduce emissions of atmospheric pollutants from the transportation sector, and many studies have found that reliance on private automobiles is the primary cause of these emissions. However, population density is

crucial to the financial viability of public transportation. In terms of population and urbanisation, Pakistan leads South Asia.

Urban land use and the transportation system, for example, have been revitalised by Pakistan's rapid urbanisation and automobile use, despite being socially, economically, and environmentally unsustainable. Lahore, with its 11.13 million residents, is Pakistan's second-largest metropolis (2017). There is an annual growth rate of 3.5%, according to census data. A well-coordinated system of public transportation is required to navigate this massive population.

Many people believe they lack access to public transportation because of this. The stations for the metro bus and the orange line are too far from their homes, and thus they refuse to use them. Women have voiced their displeasure with a policy implemented by the government that gives men preferential treatment when it comes to reserving seats. It could be a contributing factor to the relatively low number of women in the field.

The cost savings from taking the bus or train instead of driving your own car to work can be as much as four times higher. Parking fees, emission tickets, and speeding fines are just some of the hidden costs that come with driving your own car on a regular basis. If you take public transportation, you won't have to worry about paying for parking, gas, insurance, maintenance, or anything else associated with driving. Regular bus riders are more likely to have favourable views of the service and to perceive fewer obstacles to riding the bus than non-riders. Users who rely on the bus on a regular basis are more likely to have a positive outlook on the industry as a whole. Buses have a very negative reputation among those who either never use them or last rode one quite some time ago. This may have occurred because of a lack of factual knowledge or information about the accessibility of bus routes. Thus, it appears necessary to alter unfavourable perceptions of the bus while also requiring bus companies to implement solutions to remove obstacles to ridership.

When getting around the city was a hassle before the Metro Bus Service, many residents opted for motorbikes. They avoided regular buses due to the inconvenient and unreliable service they provided. Furthermore, they can't afford the expensive Daewoo, the Lahore area's preferred mode of public transportation. A bus trip allows for social interaction, while the confines of a car make it difficult to talk to strangers. Travelers in cars may experience anxiety if they view driving as a stressful occupation. However, there are motorists who form strong emotional attachments to their vehicles. Certain motorists have an extreme bias against using public transportation and demonstrate an almost pathological need for their personal vehicle.

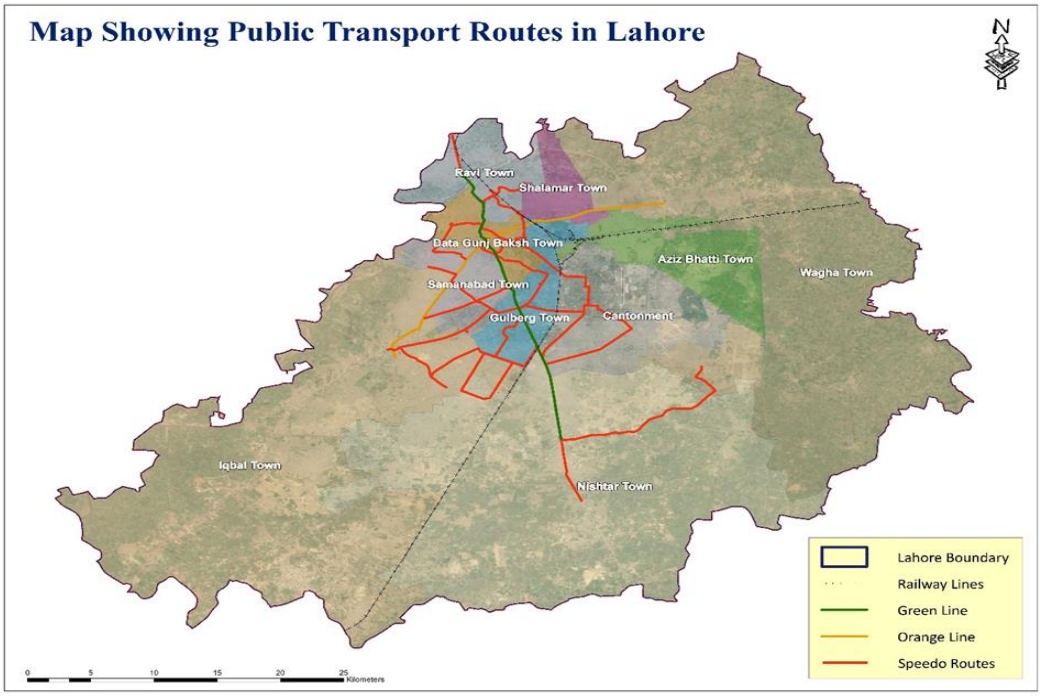

FIG 1: *Existing Map Showing Public Transport Route in Lahore*

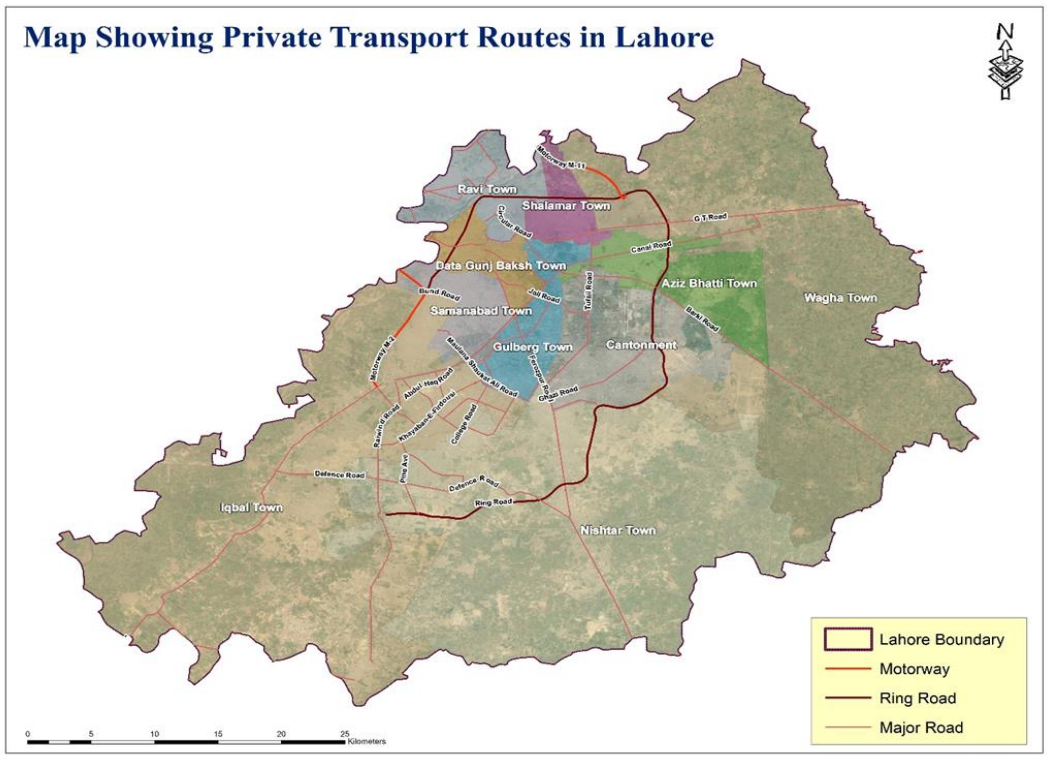

FIG 2: *Existing Map Showing private Transport Route in Lahore*

ANALYSIS OF RESPONDENTS VIEWS IN CONCERNED CASE STUDY AREA:

The data was collected from the residents and officials of the concerned Case Study Area and the data without Analysis is of no Use and Cannot make sense if not presented Visually because the visual representation develop clear understanding about the situation. The responses recorded from the Respondents are following.

Public transportation and respondents view at concerned case study area.

Preference of Public Transport over Private Transport

This response helps to indicate the preference of people in regard to choose public transport in their respective case study areas. It represents that about 118.25% respondents wants public transport as the consider private transport is considerably expensive one.

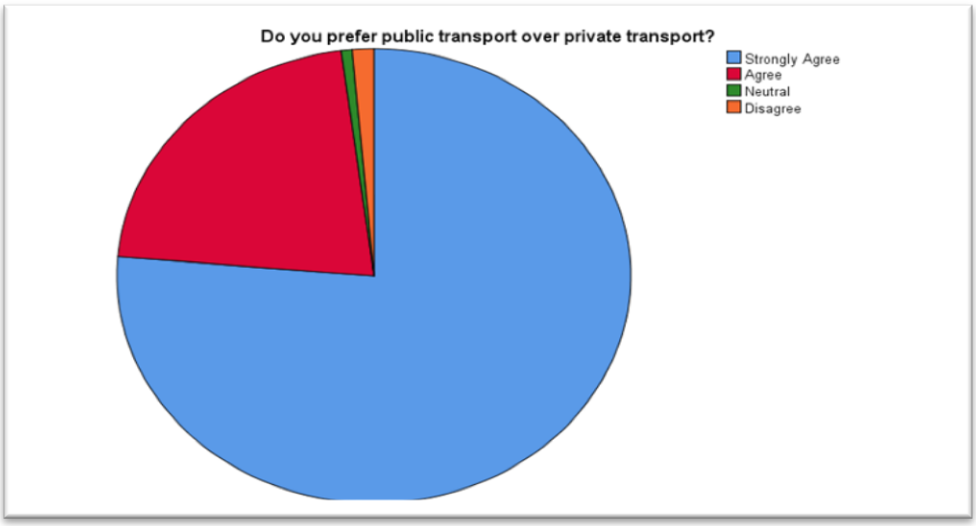

Figure 3

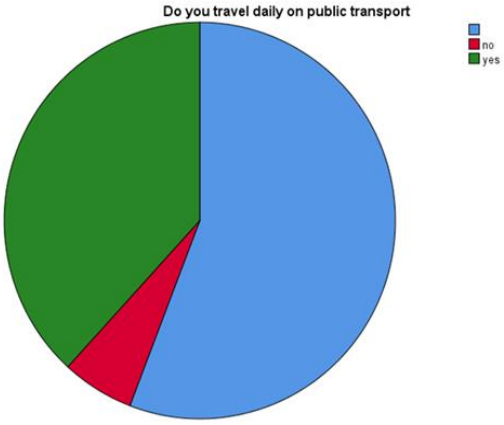

Figure 4

The above response shows that most of the people travel on public transport that 115.28% respondent travel on public transport while 30% respondent said that they don't travel on public transport.

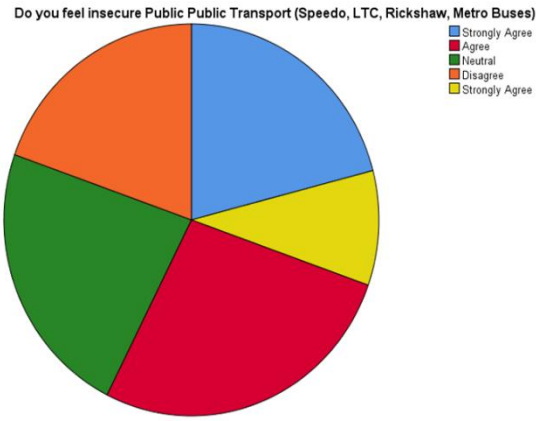

FIG 5: *Is public transport safe/Insecure*

The above responses show that maximum 43% people considered that the public transport terminals are unsafe and they feel insecure at there. about minimum 11.2% people feel that public transport terminals are insecure.

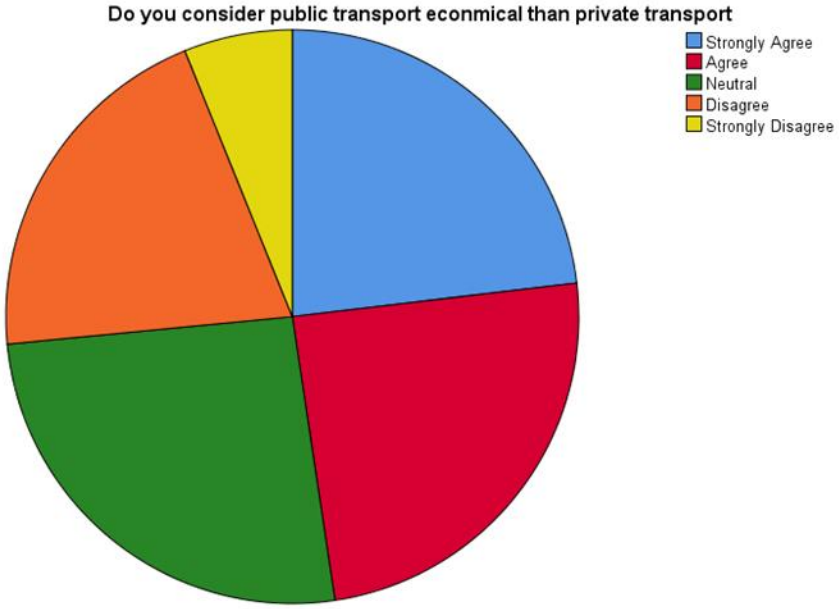

FIG 6: *Is public Transport Economical /Not Economical*

The graph indicates that 40% of people contemplate that public transport is affordable as it is economical as compared to private transport .as the cost to travel on private transport is greater than public transport

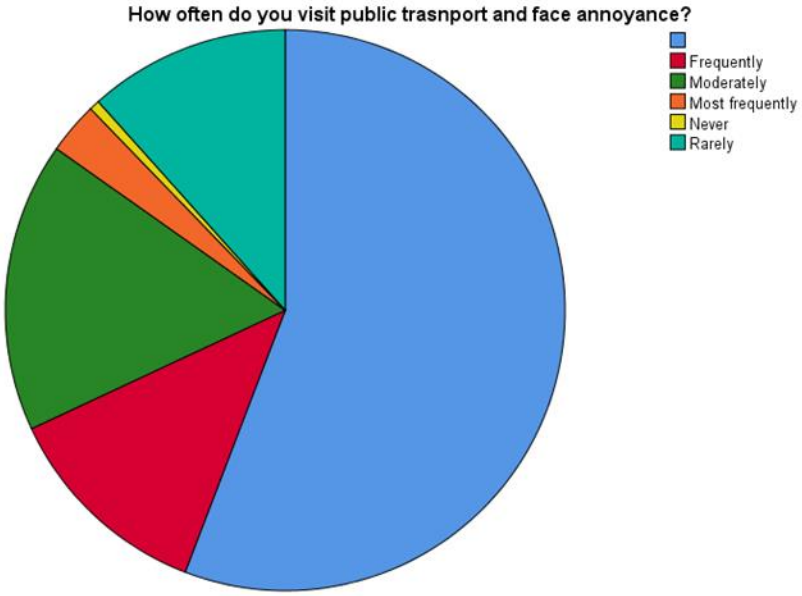

FIG 7: *How often do you visit public transport and face annoyance*

The above simple bar count shows the response of people about the annoyance they face while visiting public transport. about maximum57.25% people and minimum 3% people considered that they face annoyance when visit public transport.

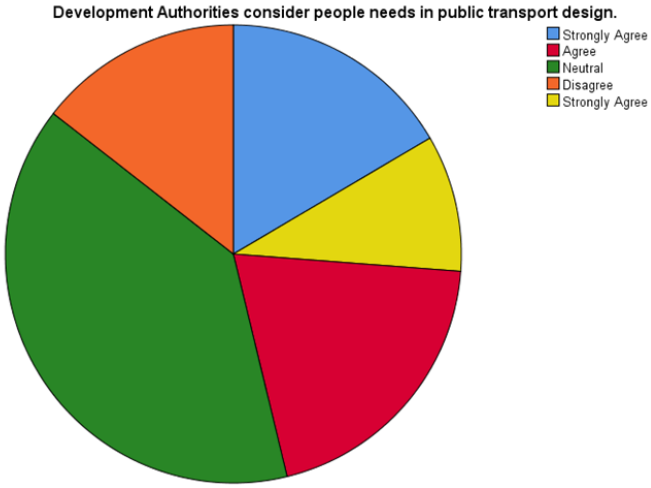

FIG 8: *Do development authorities consider people needs in public transport design*

The responses show that 58% people think that the development authorities should consider people needs while designing public transport as it become user friendly. And minimum 13% people consider that authorities incorporate pubic needs in designing of public transport.

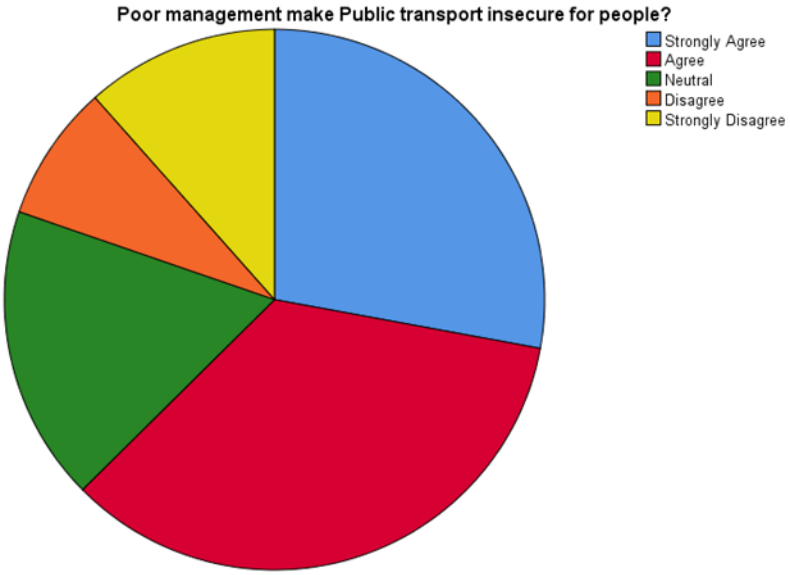

FIG 9: *Poor Management Cause Public Transport Insecure for people*

The figure shows that 52% respondent considered that public transport is insecure due to poor management of the staff and managing authority. This question helps to indicate the reason of insecurity of public transport.

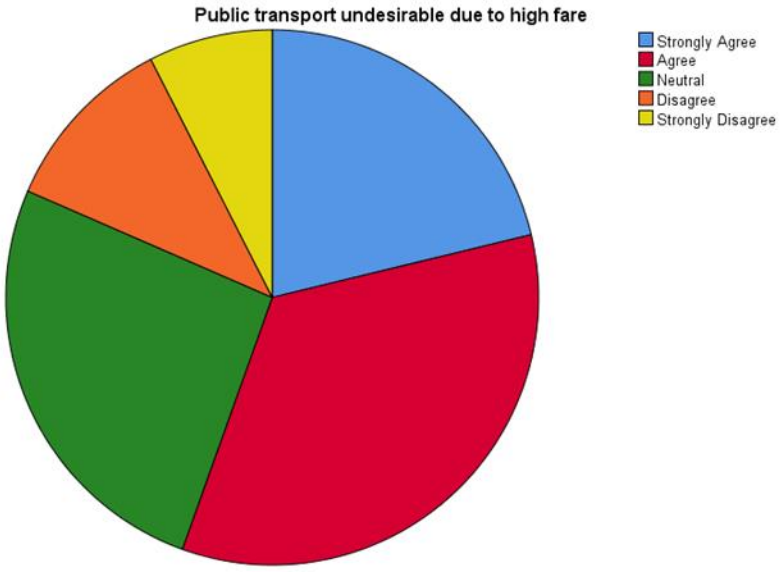

FIG 10: *Rent of Public Transportation*

The responses show that high fare is the reason of the people that they are not using public transport. maximum 50% people and minimum 11.09% people considered that they fare of public transport is high therefore it is undesirable for them

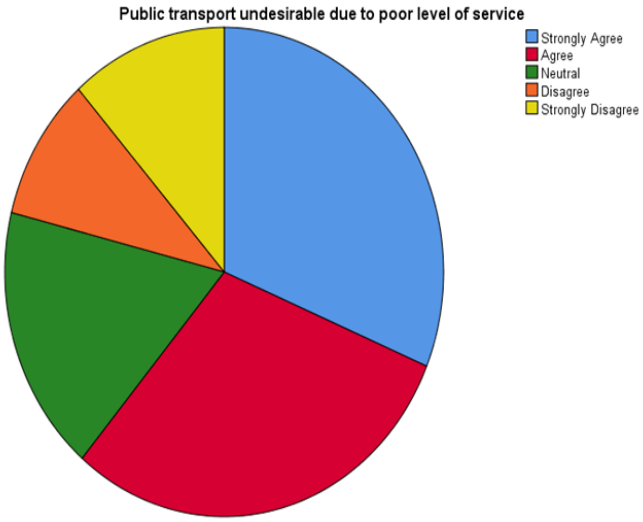

FIG 11: *Checking Undesirability of Public Transportation*

The graph shows the unitability of people in the context of level of service of public transport. About maximum 48% and minimum 12% people not considered that the dislike the public transport due to poor level of service.

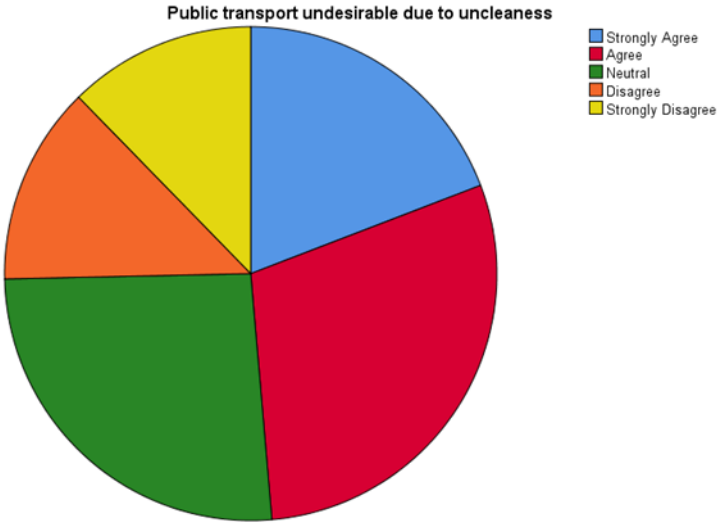

FIG 12: *Checking Undesirability of Public Transportation due to uncleanliness*

The bar count shows that 43 % of people feels that public transport is undesirable due to dirty environment in it as it is not clean as the private transport.

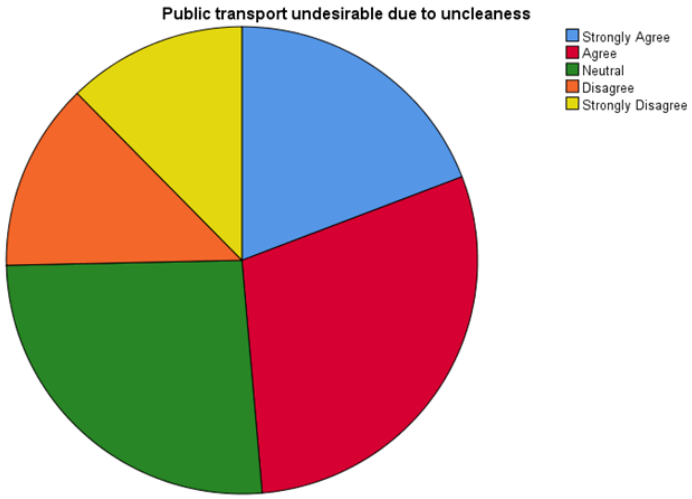

FIG 13: *Checking Undesirability of Public Transportation due to Inefficiency*

The responses showed that maximum 54% and minimum 11% people considered that public transport is undesirable due to inefficiency. Lack of innovation and facilities make the public transport inefficient as compared to private transport.

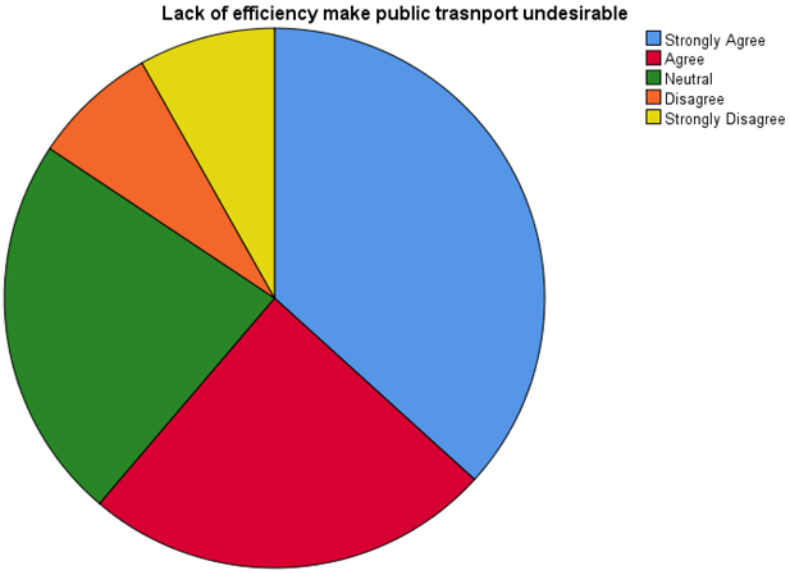

FIG 14: Role of congestion in undesirability of Public Transportation

The question indicates the reason of undesirability of people that they don't like public transport. maximum 48% and minimum 12% respondent considered that congesting is the reason behind that they unlike public transport.

ANALYSIS

To assess the value of dependent variables based on the values of independent variables (Multiple linear Regressions)

Research Question: why people prefer private transport over public transport?

Outcome variable=Dependent variable

Predictor variables=Independent variables

Hypothesis Testing:

The table below shows that the value of p is less than 0.05 so the analysis is significant, furthermore it indicates that regression analysis is possible for critical evaluation of dependant variable (preference of private transport over public transport) and its relationship with independent variables (Poor time management make public transport undesirable, People feel unsafe in public transport, Do you consider public transport economical than private transport, Development Authorities consider people needs in public transport design., Do you feel insecure Public Transport (Speedo, LTC, Rickshaw, Metro Buses), Public transport undesirable due to uncleanliness, Public transport undesirable due to high fare, Congestion make public transport undesirable, Public transport undesirable due to poor level of service, Lack of efficiency make public transport undesirable, Poor management make Public transport insecure for people?).

Table 1: Anova Analysis

Anova

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	46.327	7	6.618	78.530	.000[b]
	Residual	11.714	139	.084		
	Total	58.041	146			

a. Dependent Variable: Do you prefer public transport over private transport?

b. Predictors: (Constant), Public transport undesirable due to uncleanness, Congestion make public transport undesirable, do you consider public transport economical than private transport, public transport in Lahore is safe, public transport undesirable due to poor level of service, Poor management make public transport insecure for people? Lack of efficiency make public transport undesirable

Analysis is significant since the p value is less than 0.05

1.1.1. EXCLAIMATION

ANOVA Purpose

If ANOVA is significant then you can go to the other boxes otherwise your regression analysis is not significant.

Model Summary

Table 4.2: Model summary for regression analysis

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.893[a]	.798	.788	.290

a. Predictors: (Constant), Public transport undesirable due to uncleanness, Congestion make public transport undesirable, do you consider public transport economical than private transport, public transport in Lahore is safe, public transport undesirable due to poor level of service, Poor management make public transport insecure for people? Lack of efficiency make public transport undesirable

R Square: 79.8% of the variance is accounted for preference of private transport over public transport

Coefficient box

Table 3: Coefficient box

Correlations							
		Do you prefer public transport over private transport?	Public transport in Lahore is safe	Do you consider public transport economical than private transport	Poor management make public transport insecure for people?	Public transport undesirable due to poor level of service	Congestion makes public transport undesirable
Pearson Correlation	Do you prefer public transport over private transport?	1.000	.812	.776	.792	.773	.686
	Public transport in Lahore is safe	.812	1.000	.860	.911	.916	.725
	Do you consider public transport economical	.776	.860	1.000	.937	.891	.726

	than private transport						
	Poor management make public transport insecure for people?	.792	.911	.937	1.000	.930	.717
	Public transport undesirable due to poor level of service	.773	.916	.891	.930	1.000	.764
	Congestion makes public transport undesirable	.686	.725	.726	.717	.764	1.000
	Lack of efficiency make public transport undesirable	.741	.947	.908	.946	.967	.746
	Public transport undesirable due to uncleanness	.719	.916	.889	.930	.934	.739

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.332	.100		3.330	.001	.135	.529
	Public transport in Lahore is safe	.965	.113	1.044	8.536	.000	.741	1.188
	Do you consider public transport economical than private transport	.351	.114	.351	3.073	.003	.125	.577

	Poor management make public transport insecure for people?	.435	.142	.464	3.062	.003	.154	.716
	Public transport undesirable due to poor level of service	.669	.156	.684	4.291	.000	.361	.977
	Congestion makes public transport undesirable	.197	.069	.173	2.852	.005	.061	.334
	Lack of efficiency make public transport undesirable	-1.370	.206	-1.409	-6.645	.000	-1.777	-.962
	Public transport undesirable due to uncleanness	-.404	.130	-.409	-3.108	.002	-.661	-.147

REGRESSION EQUATION

$Y = 0.332 + 0.965X1 + 0.351X2 + 0.435X3 + 0.669X4 + 0.197X5$

REGRESSION RESULTS

1. The dependent variable that preference to choose public transport is most effect by the independent variable security and level of services as their significant values are least that is 0.000.
2. The second most effected independent variable is cleanliness which have significant value is 0.002.
3. The third most effected independent variable are management and cost which have significant values are 0.003.
4. The fourth effected independent variable is congestion which have significant values is 0.005.

CONCLUSIONS

1. Although many cities, including Lahore, have adopted transportation policies influenced by the United States model of promoting private vehicles or the European and Japanese model of high-tech rail-based urban transportation, neither of these models is particularly well suited for city because in both cases, society and the environment bear the costs of individual mobility, and both the benefits and the costs are shared by society and the environment.
2. Since a result, the only solution acceptable for Lahore city is one that has been locally designed to meet the majority's problems, as the solution should be low-cost, environmentally sustainable, and responsive to the social demands of the local people.

3. However, locally designed development programs, particularly in urban transportation, raise questions about local institutions' institutional and human resource capacity.
4. In the case of Lahore, international agencies' technical and financial assistance has failed to focus on building the capacity of existing institutions, which could then design local solutions on their own. As a result of this discussion, a more in-depth examination of the role of institutional relationships and capacities in transportation planning among different levels of government, as well as their relationships with global agencies, is needed to explain urban transportation decision-making in Pakistan.
5. However, there has been no consideration given to 60 percent of the trips are made by pedestrians and other non-motorized modes of transportation. Although urban rail projects are being considered for various cities in Pakistan like Karachi, Islamabad etc., this is first effort in Lahore to solve urban transport problems through rail based technology.
6. However, there are some areas in Lahore where the city is fast expanding. It's unlikely that putting LRT in one corridor will alleviate traffic concerns while also improving environmental sustainability.
7. As a result, institutions in Lahore must design transportation policies that take into account particular demands and goals, as well as the city skills and resources. To achieve low-cost, safe, and resilient policy outcomes, financial restrictions must be overcome (Imran, 2003).
8. According to the Lahore Urban Development and Traffic Study (1981) conducted with World Bank/IDA assistance, the Lahore District had only 39,205 licensed and "on road" automobiles in 1974. With an annual growth rate of 6.31 percent, this number increased to 74,742 in 1979 and 652,082 in 1996. Motorcycles (53 percent), Motor Cars (29 percent), Trucks (1 percent), Delivery Vans (5 percent), Tractors (3 percent), Buses (3 percent), Taxis (2 percent), Rickshaw (3 percent), and others made up the percentage of total registered vehicles in Lahore in 1996. (1 percent) (NESPAK, 1997).

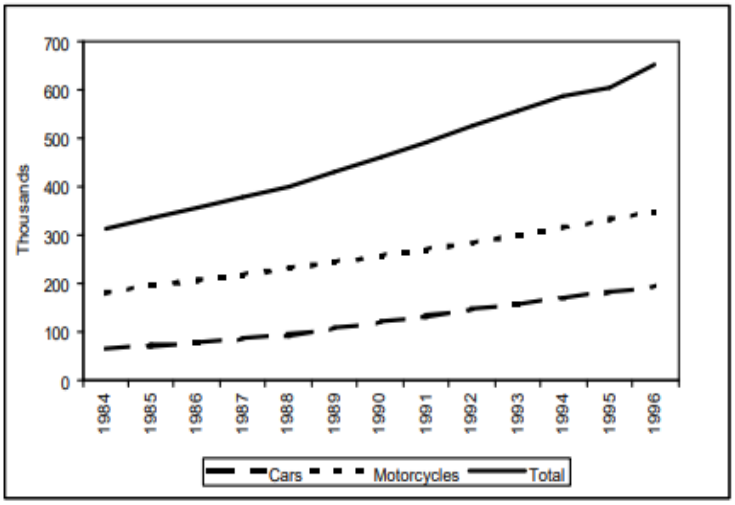

Figure 27: *Growth of Registered Vehicles in Lahore District (1984-1996)*

Source:(Nespak,1997)

The introduction of the Lahore Transport System (LTS) in 1997 marked a considerable improvement in the bus system. CNG (Compressed Natural Gas) and air-conditioned franchised

buses operated by multinational and national businesses have been launched as part of this program. However, this program has not been successful in garnering investment in the urban transportation sector from international agencies, which are more interested in investing in Lahore's Light Rail Project and Ring Road. Furthermore, the Lahore transportation systems, particularly public transportation, have completely overlooked the needs of women, the poor, and the elderly in urban transportation (Low, 2003).

RECOMMENDATION

1. By going through the in-depth study of the literature it has been found that the international countries like California, Singapore, Hong Kong and Delhi make the initiatives that make their transport sustainable .So it is recommended that to introduce smart shuttle/bus in Lahore to provide access to people on fixed route transit. It is the alternative method to personal vehicle or bus transit for short-haul feeders. The concept of shuttle bus service to ensure a sustainable public transportation system. The concept of shuttle bus service to ensure a sustainable public transportation system. Also recommended that to promote the use of environmental friendly fuel to reduce the vehicular emissions that create the pollution in Lahoere .The introduction of intelligent signals can effectively reduce the travel time by which the delays can be overcome.
2. To make the public transport sustainable and user friendly the security, travel time, cleanliness and the level of services should be effectively and efficiently manage so that the preference to use public transport can increase.
3. As the sustainability in the transport sector can be achieve by economic viability, environmental protection and social equity so measures such as making the fare at suitable rate that all needed passenger can afford to travel, use of less carbon combustion fuel should be use and the gender equality should be focused priority basis so that not only men but also the women can feel safe and comfortable to travel on the mood of transport.
4. The only option to efficiently meet transportation demand in large metropolitan areas like Lahore is to equip the city with a high-quality public transportation infrastructure that must be developed in tandem with urban expansion. Urban rail (RMTS) and Bus Rapid Transit (BRT) will make up the main network (BRT).it should be affordable ,operate fairly and efficiently and support a competitive economy as well as regional development .also operate on the techniques that reduces the emission rate and minimize the adverse effects on use of land and generation of noise.
5. Secondary and feeder services will be provided by buses of various sizes and types. Mass transit networks serve as the backbone of urban transportation infrastructure and are integrated with urban land use and development, according to the experiences of successful cities. In Lahore, the bus, including wagons, is and will continue to be the most essential method of public transportation.
6. The gap between the available road and the demand for travel has been revealed by the travel demand study. The supply and demand. The conclusion is clear: with a population growth rate of more than 2% and a GRDP growth rate of roughly 6%, the current network will be unable to meet future road traffic demand. The basic strategy for road network expansion is to increase road capacity to fill up the gaps.
7. Infrastructure is costly, and it must be managed and operated properly. As a result, traffic management is critical not only for traffic efficiency but also for safety, comfort, and the

urban environment. The current deterioration of the situation, particularly in terms of traffic safety, is intolerable.

8. Because the number of cars on the road is likely to rise sharply in the future, regulating the demand for private transportation will become a greater challenge.
9. The traffic conditions in Lahore's core district is the most important problem in the research area. The majority of intercity and intracity traffic congregates there Using radial arterial roadways is a good idea. Inadequate road infrastructure and haphazard traffic management Infrastructure exacerbates the problem. Defects in traffic management must be urgently addressed.

Developed and developing countries are prioritizing the development of pedestrian and cycling facilities in their designs, with the goal of eventually replacing their current reliance on automobiles. Pedestrian and cycling facilities are built into the modern urban fabric as a necessary component. There is currently no pedestrian policy or strategy in place in Lahore to help the city transition to a more sustainable transportation system. It's crucial to remember that while many people prefer to walk rather than drive as their single or major form of transportation, many others do not have that option. This includes children under the age of 16, as well as a large number of older and physically challenged individuals. This segment of the population should not be denied access to safe and reasonable walking possibilities. People should be able to walk securely in a culture that values choice and freedom, whether for joy and pleasure, errands, travelling to work or school, shopping, or other purposes. For the situation to significantly improve, pedestrian safety and mobility must be elevated to a high priority. Engineers, planners, and other state

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