

Data Collection

Data was collected using questionnaire, created using google sheets, data was collected from major metros, from people of different age groups, work experience & different income groups, the reason was to check what does these individuals feel about the impact of the questions asked in the questionnaire.

Especially in the areas of unpredictable crude oil prices.

The major reasons for targeting cities was as the questionnaire was online, it was easier to access the targeted audience, next was the use of electricity is more in cities within household, compared to rural India, cities also face the most impact of price hikes, where families live pay check to pay check. Next was the impact of any policy changes by the government is normally seen first in cities, it takes time to these policy changes to reach rural areas, so if there are any policy changes the audience from cities might have already experienced it and might have seen what impact it has had on their spendings & savings, for example most of the EV vehicles are sold in cities, because of the infrastructure it provides for the EV vehicles. Next was the diversity of usage of electricity & other forms of energy in cities are more, like vehicles, residential, commercials, malls, industries etc. Next was the awareness levels in cities are better compared to rural locations. Next was the reliability of the data provided by the audience is more precise. Next was the audience in cities are better educated in comparison to the rural audience. Next was the resources available in cities are better in comparison to the rural areas, looking at all the above points it was decided to get data from city audience for this research purpose.

The goal was to clearly find out whether the Null hypothesis or the alternative hypothesis would be more relevant to each individual & as a group when I collate the data how will the outcome look like.

Gender

Out of the total 384 participants there are 76% of male respondents and 24% female respondents in the survey.

Bar graph attached below.

Table 4.1 : Gender

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|--------------|------------|--------------|---------------|--------------------|
| Valid | Male | 292 | 76.0 | 76.0 | 76.0 |
| | Female | 92 | 24.0 | 24.0 | 100.0 |
| | Total | 384 | 100.0 | 100.0 | |

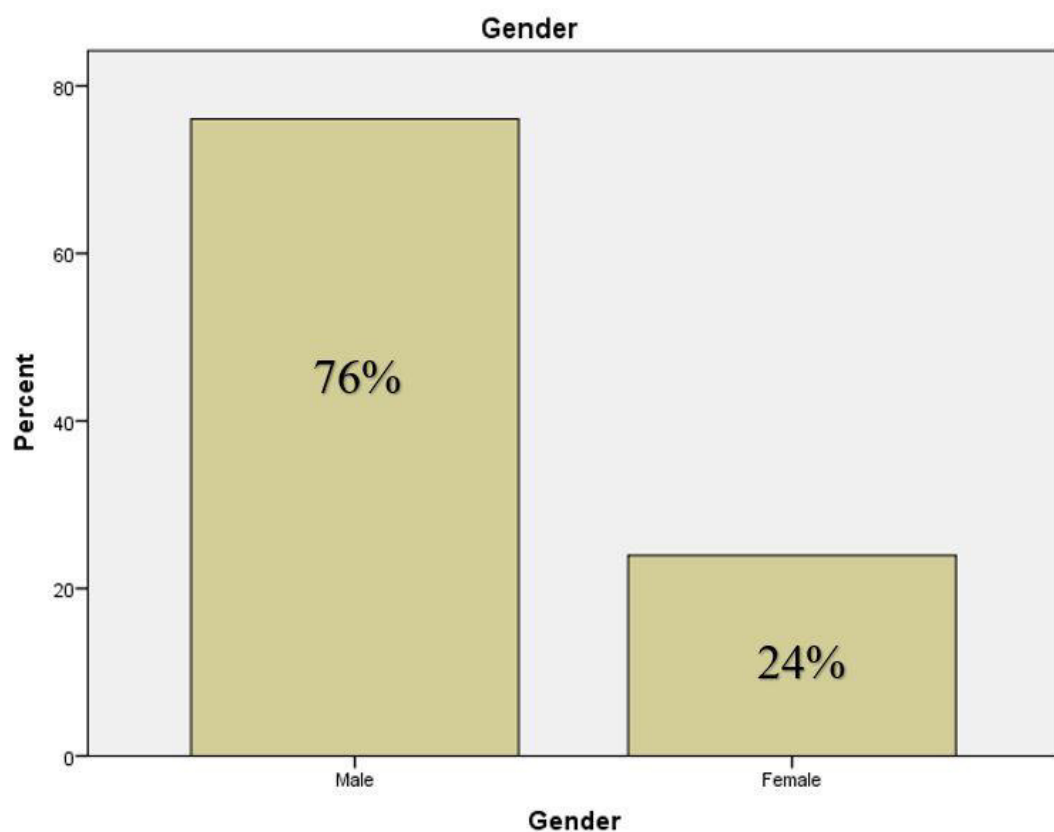


Fig. 4.1 : Gender shown percentage of Male & Female

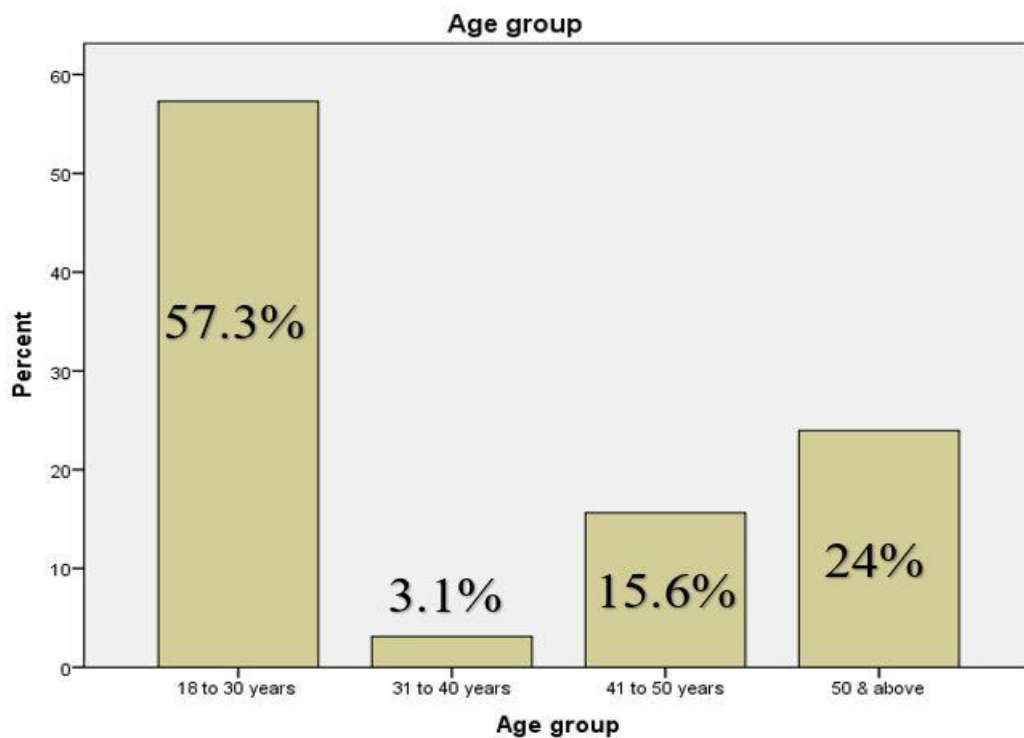
Age Group

There are 57.3% of respondents around 18- 30 years of age, 3.1% of respondents in the age group of 31- 40 years, 15.6% of respondents 41-50 years and 24% of respondents in the age group of 50 & above.

Bar graph attached below.

Table 4.2 : Age group

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------------|----------------|------------|--------------|---------------|--------------------|
| Valid | 18 to 30 years | 220 | 57.3 | 57.3 | 57.3 |
| | 31 to 40 years | 12 | 3.1 | 3.1 | 60.4 |
| | 41 to 50 years | 60 | 15.6 | 15.6 | 76.0 |
| | 50 & above | 92 | 24.0 | 24.0 | 100.0 |
| | Total | 384 | 100.0 | 100.0 | |

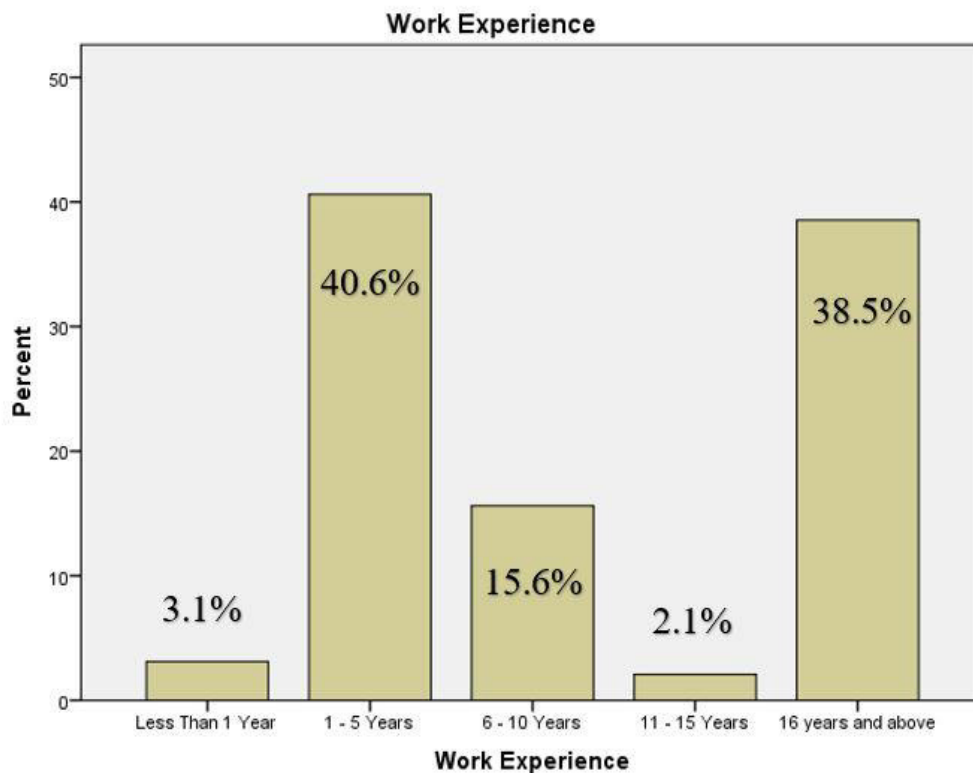
**Fig. 4.2 : Age group**

Work Experience

There are 3.1% of respondents around Less Than 1 Year of experience, 40.6% of respondents have 1 - 5 Years of experience, 15.6% of respondents 6-10 years of experience, 2.1% of respondents has 11- 15 years of experience and 38.5% of respondents have 16 years and above experience. Bar graph attached below.

Table 4.3 : Work Experience

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------------|--------------------|------------|--------------|---------------|--------------------|
| Valid | Less Than 1 Year | 12 | 3.1 | 3.1 | 3.1 |
| | 1 - 5 Years | 156 | 40.6 | 40.6 | 43.8 |
| | 6 - 10 Years | 60 | 15.6 | 15.6 | 59.4 |
| | 11 - 15 Years | 8 | 2.1 | 2.1 | 61.5 |
| | 16 years and above | 148 | 38.5 | 38.5 | 100.0 |
| | Total | 384 | 100.0 | 100.0 | |

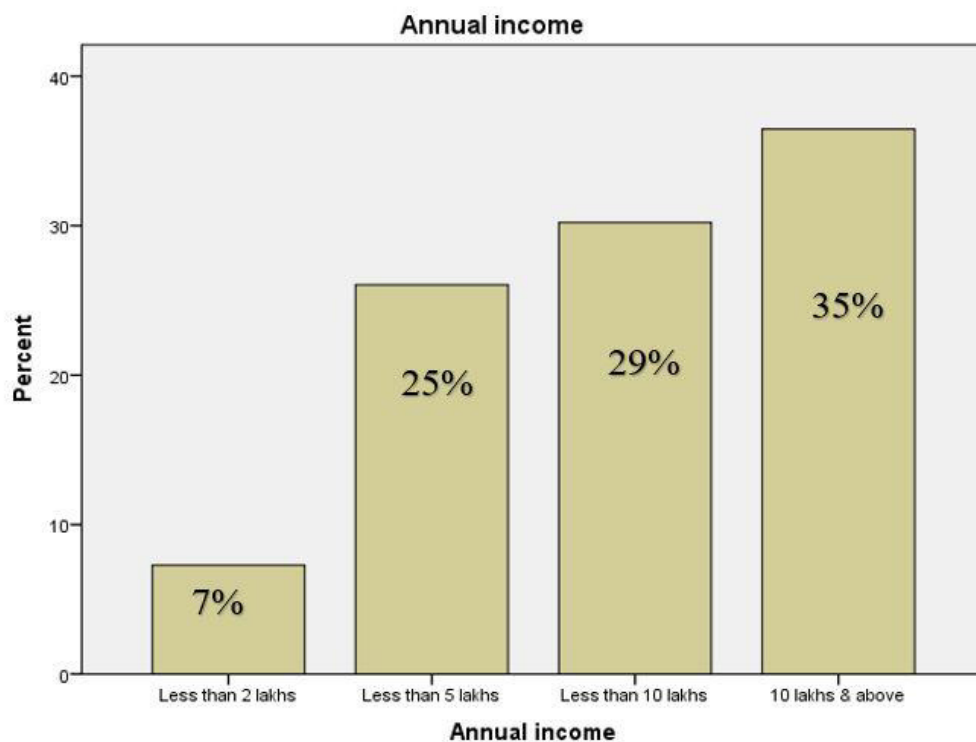
**Fig. 4.3 : Work experience****Annual Income**

There are 7.3% of respondents earning less than 2 lakhs, 26.0% of respondents earning Less than 5 lakhs, 30.2% of respondents earning Less than 10 lakhs, and 36.5% of respondents earning 10 lakhs & above.

Bar graph attached below.

Table 4.4 : Annual income

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------------|--------------------|------------|--------------|---------------|--------------------|
| Valid | Less than 2 lakhs | 28 | 7.3 | 7.3 | 7.3 |
| | Less than 5 lakhs | 100 | 26.0 | 26.0 | 33.3 |
| | Less than 10 lakhs | 116 | 30.2 | 30.2 | 63.5 |
| | 10 lakhs & above | 140 | 36.5 | 36.5 | 100.0 |
| | Total | 384 | 100.0 | 100.0 | |

**Fig. 4.4 : Annual income**

Reliability Statistics

Cronbach's Alpha is a reliability test performed in SPSS to assess the internal consistency, or reliability, of a measuring instrument. It is particularly useful when a questionnaire is created with multiple Likert scale items, helping to determine the scale's reliability. The table below presents the reliability statistics for a sample of 384 respondents. With Cronbach's alpha of 0.910, our scale demonstrates good internal consistency for this specific sample.

4.5 : Reliability Statistics

| Cronbach's Alpha | N of Items |
|-------------------------|-------------------|
| .910 | 35 |

Part B: Crude Oil Price

We can see that majority of 42.7% respondents have strongly agreed on the statement “I am concerned about the unpredictability of crude oil prices affecting my financial stability due to variations in total expenditure”.

Bar graph attached below:

Table 4.6 : Survey on crude oil prices

| | Strongly Disagree | Disagree | Neither Agree nor Disagree | Agree | Strongly Agree |
|---|------------------------------|--------------------|---|--------------------|---------------------------|
| | Row N % | Row N % | Row N % | Row N % | Row N % |
| I think that the government of India has a crucial role in managing and stabilizing crude oil prices which will benefit me. | 12.5% | 6.2% | 21.9% | 33.3% | 26.0% |
| I think individuals should actively seek alternative energy sources due to the growing volatility and uncertainty in crude oil prices | 8.3% | 14.6% | 24.0% | 24.0% | 29.2% |
| I believe fluctuations in crude oil prices significantly impact the Indian economy and my financial position as well. | 20.8% | 8.3% | 26.0% | 17.7% | 27.1% |

| | Strongly Disagree | Disagree | Neither Agree nor Disagree | Agree | Strongly Agree |
|---|-------------------|----------|----------------------------|---------|----------------|
| | Row N % | Row N % | Row N % | Row N % | Row N % |
| I believe crude oil price changes directly affect my daily expenses and I find it hard to manage monthly expenditures. | 22.9% | 16.7% | 24.0% | 21.9% | 14.6% |
| I am concerned about the unpredictability of crude oil prices affecting my financial stability due to variations in total expenditure | 12.5% | 9.4% | 18.8% | 16.7% | 42.7% |

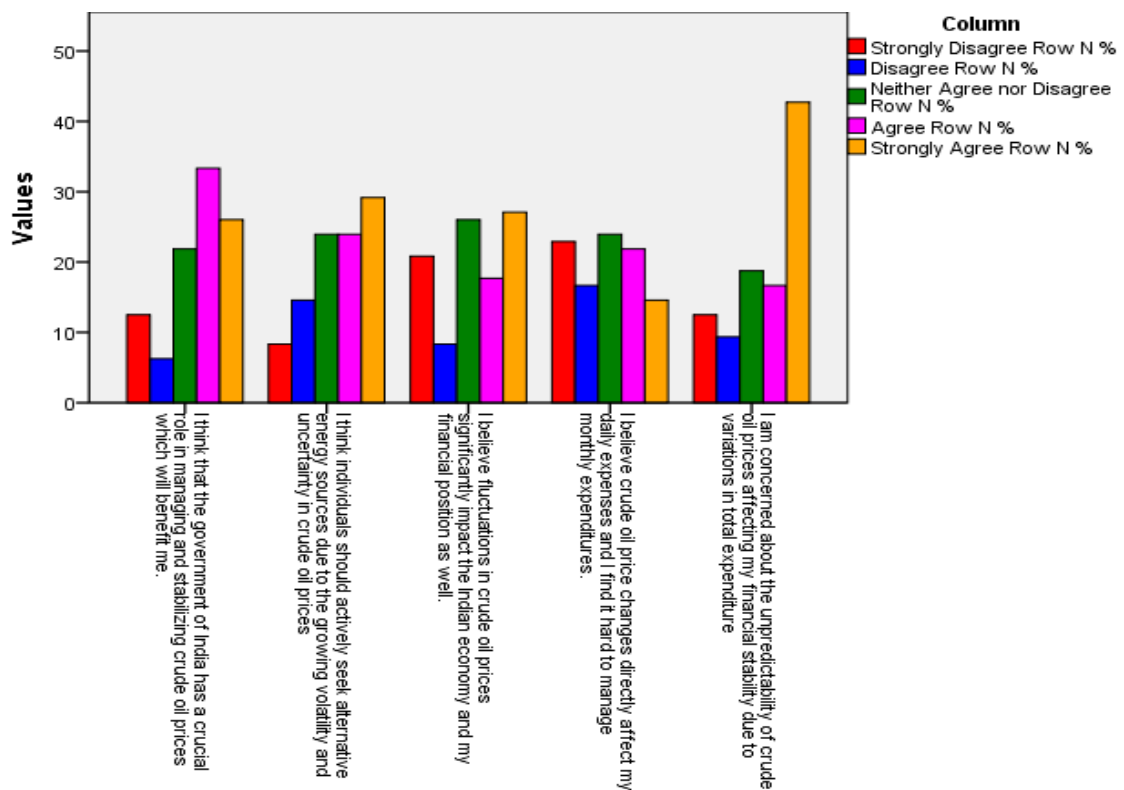


Fig. 4.5 : Crude oil prices

Part C: Energy Import Dependence

We can see that majority of 56.2% respondents have strongly agreed on the statement “I believe reducing energy import dependence is essential for price stability and reducing inflation in the economy.”.

Bar graph attached below.

Table 4.7 : Energy import dependence

| | Strongly Disagree | Disagree | Neither Agree nor Disagree | Agree | Strongly Agree |
|---|--------------------------|-----------------|-----------------------------------|----------------|-----------------------|
| | Row N % | Row N % | Row N % | Row N % | Row N % |
| Energy import dependence affects my confidence in the country's energy security and makes me concerned about the unexpected rise in crude prices. | 9.4% | 9.4% | 25.0% | 26.0% | 30.2% |
| Energy import dependence, according to me, poses a threat to national security and stability in global markets. | 14.6% | 11.5% | 22.9% | 32.3% | 18.8% |
| I think diversification of energy sources is crucial to mitigating the risks associated with crude oil price rise due to import dependence | 5.2% | 14.6% | 26.0% | 28.1% | 26.0% |
| I believe reducing energy import dependence is essential for price stability and reducing inflation in the economy. | 4.2% | 6.2% | 13.5% | 19.8% | 56.2% |
| I am concerned about our | 30.2% | 22.9% | 19.8% | 13.5% | 13.5% |

| | Strongly Disagree | Disagree | Neither Agree nor Disagree | Agree | Strongly Agree |
|---|-------------------|----------|----------------------------|---------|----------------|
| | Row N % | Row N % | Row N % | Row N % | Row N % |
| country's reliance on imported energy resources and how it affects daily product prices | | | | | |

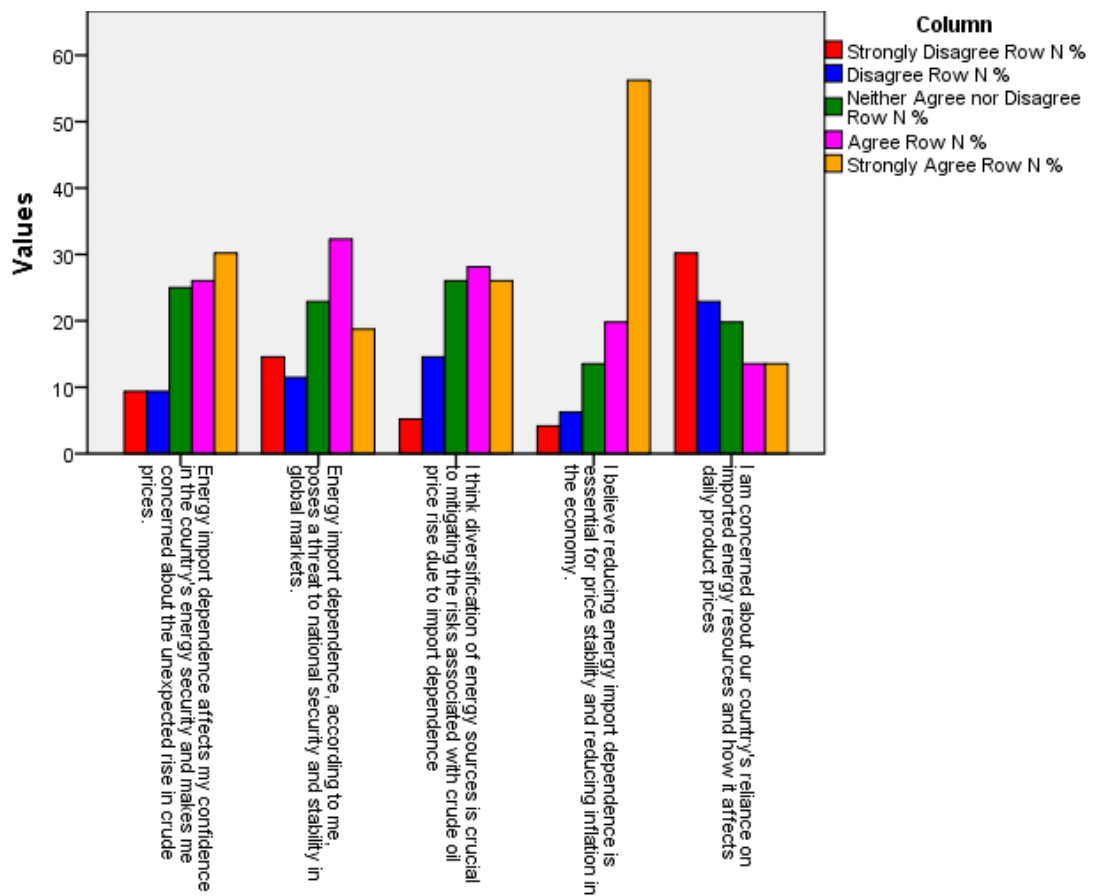


Fig. 4.6 : Energy import dependence

Part D: Economic Growth

We can see that majority of 63.5% respondents have strongly agreed on the statement “According to me, different governmental and environmental policies should be adopted to mitigate the adverse effects of fluctuating crude oil prices.”.

Bar graph attached below.

Table 4.8 : Economic growth

| | Strongly Disagree | Disagree | Neither Agree nor Disagree | Agree | Strongly Agree |
|---|------------------------------|--------------------|---|--------------------|---------------------------|
| | Row N % | Row N % | Row N % | Row N % | Row N % |
| According to me, different governmental and environmental policies should be adopted to mitigate the adverse effects of fluctuating crude oil prices. | 7.3% | 3.1% | 8.3% | 17.7% | 63.5% |
| According to me, crude oil price volatility hinders long-term economic planning in the country affecting the general population. | 7.3% | 2.1% | 6.2% | 28.1% | 56.2% |
| According to me, high crude oil prices negatively impact economic development and my career in the foreseeable future as well. | 6.2% | 8.3% | 9.4% | 28.1% | 47.9% |
| I believe stable crude oil prices are necessary for sustained economic growth of India in the foreseeable future. | 5.2% | 2.1% | 12.5% | 25.0% | 55.2% |

| | Strongly Disagree | Disagree | Neither Agree nor Disagree | Agree | Strongly Agree |
|--|-------------------|----------|----------------------------|---------|----------------|
| | Row N % | Row N % | Row N % | Row N % | Row N % |
| I believe there is a direct correlation between crude oil prices and India's economic growth | 4.2% | 6.2% | 9.4% | 26.0% | 54.2% |

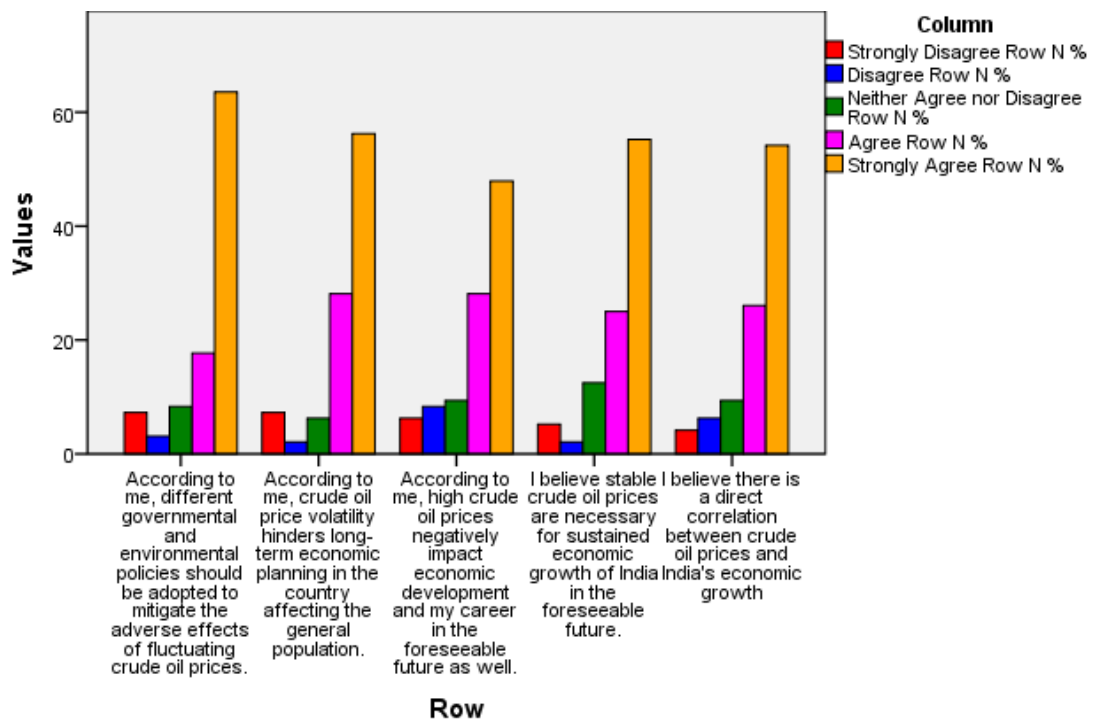


Fig. 4.7 : Economic growth

Part E: Alternative Energy Adoption

We can see that majority of 60.4% respondents have strongly agreed on the statement “I think different government incentives can encourage individuals to adopt alternative energy solutions”.

Bar graph attached below:

Table 4.9 : Alternative energy adoption

| | Strongly Disagree | Disagree | Neither Agree nor Disagree | Agree | Strongly Agree |
|---|--------------------------|-----------------|-----------------------------------|----------------|-----------------------|
| | Row N % | Row N % | Row N % | Row N % | Row N % |
| I think different government incentives can encourage individuals to adopt alternative energy solutions. | 2.1% | 4.2% | 12.5% | 20.8% | 60.4% |
| I support that transitioning to alternative energy sources is an effective way to reduce environmental impact | 4.2% | 3.1% | 10.4% | 22.9% | 59.4% |
| I think education and awareness campaigns are necessary to promote the benefits of alternative energy adoption among the masses in India. | 5.2% | 3.1% | 10.4% | 21.9% | 59.4% |
| I believe alternative energy technologies are becoming more affordable and accessible for me to use in my daily lives. | 5.2% | 2.1% | 11.5% | 26.0% | 55.2% |

| | Strongly Disagree | Disagree | Neither Agree nor Disagree | Agree | Strongly Agree |
|--|-------------------|----------|----------------------------|---------|----------------|
| | Row N % | Row N % | Row N % | Row N % | Row N % |
| I am optimistic about the potential of alternative energy to replace traditional sources like crude oil in my daily usage pattern. | 4.2% | 5.2% | 8.3% | 29.2% | 53.1% |

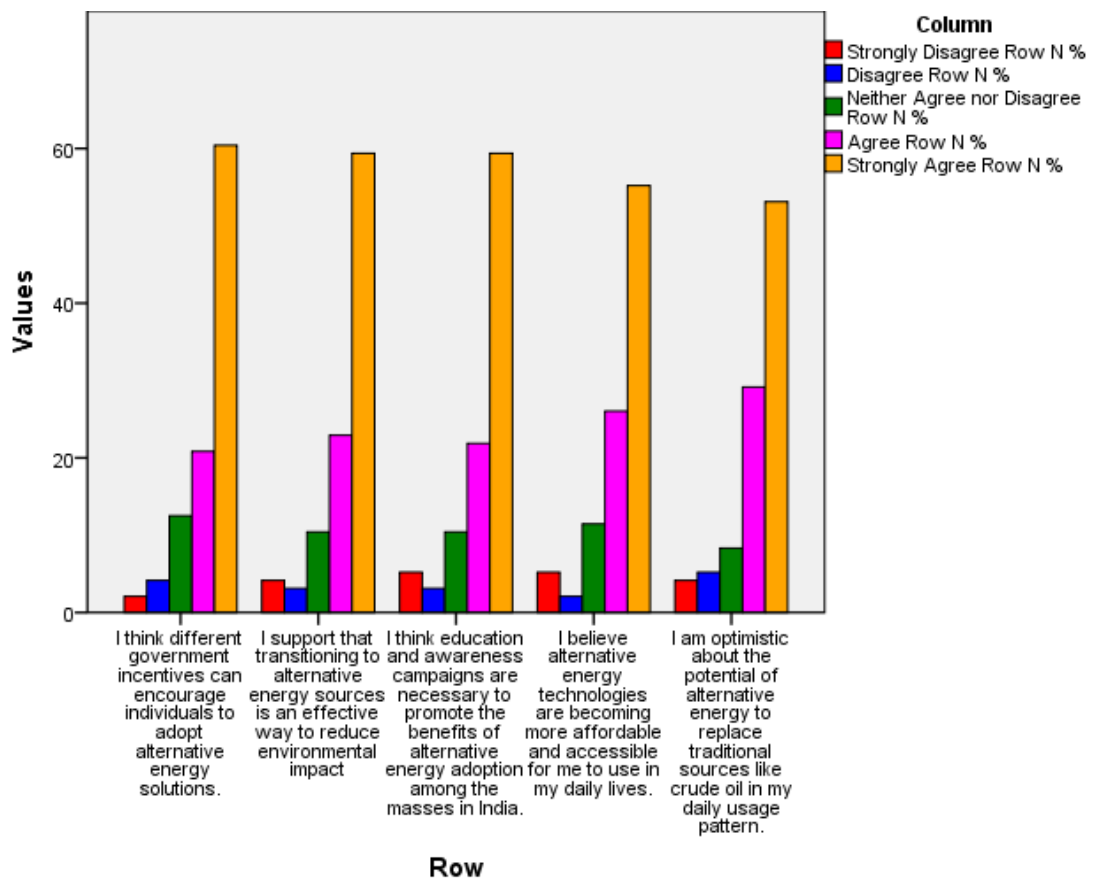


Fig. 4.8 : Alternative energy adoption

Part F: Environmental Impact

We can see that majority of 64.6% respondents have strongly agreed on the statement “I firmly believe that crude oil consumption contributes significantly to environmental pollution”.

Bar graph attached below.

Table 4.10 : Environmental impact

| | Strongly Disagree | Disagree | Neither Agree nor Disagree | Agree | Strongly Agree |
|--|--------------------------|-----------------|-----------------------------------|----------------|-----------------------|
| | Row N % | Row N % | Row N % | Row N % | Row N % |
| I believe that the utilization of alternative energy sources is essential to mitigate climate change caused by traditional energy use (crude oil usage). | 2.1% | 13.5% | 19.8% | 24.0% | 40.6% |
| I believe mitigation of the environmental impact of crude oil extraction and utilization should be a top priority for the Indian government. | 5.2% | 4.2% | 8.3% | 24.0% | 58.3% |
| I feel a personal responsibility to choose energy sources with minimal environmental impact to safeguard nature in India. | 4.2% | 4.2% | 5.2% | 30.2% | 56.2% |
| I am concerned about the long-term ecological consequences which can affect the Indian ecosystem due to reliance on crude oil | 2.1% | 5.2% | 11.5% | 24.0% | 57.3% |

| | Strongly Disagree | Disagree | Neither Agree nor Disagree | Agree | Strongly Agree |
|---|-------------------|----------|----------------------------|---------|----------------|
| | Row N % | Row N % | Row N % | Row N % | Row N % |
| I firmly believe that crude oil consumption contributes significantly to environmental pollution. | 3.1% | 8.3% | 9.4% | 14.6% | 64.6% |

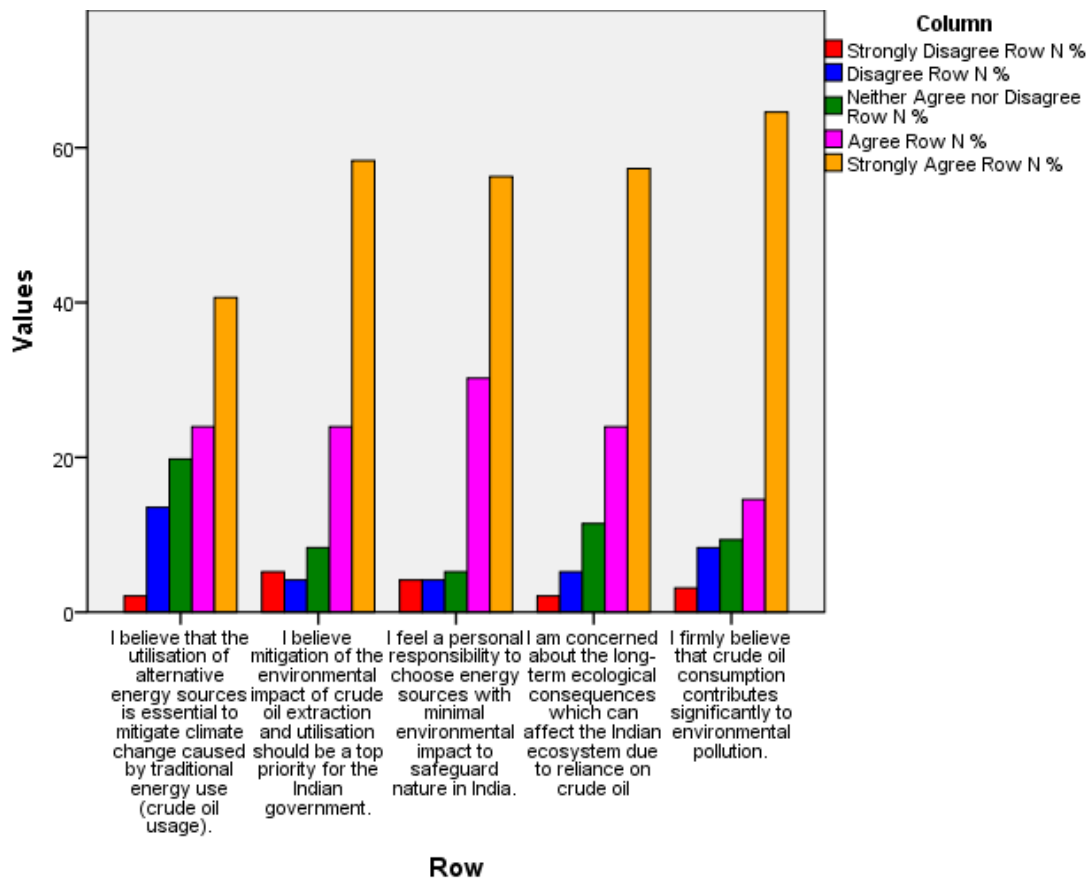


Fig. 4.9 : Environmental impact

Part H: Regional and Sectoral Variation

We can see that majority of 58.3% respondents have agreed on the statement “According to me, understanding regional and sectoral variations is essential for effective energy planning and policymaking to reduce crude oil consumption”.

Bar graph attached below.

Table 4.11 : Regional and sectoral variation

| | Strongly Disagree | Disagree | Neither Agree nor Disagree | Agree | Strongly Agree |
|--|-------------------|----------|----------------------------|---------|----------------|
| | Row N % | Row N % | Row N % | Row N % | Row N % |
| According to me, understanding regional and sectoral variations is essential for effective energy planning and policymaking to reduce crude oil consumption. | 6.2% | 13.5% | 4.2% | 58.3% | 17.7% |
| I believe the government should implement policies to address disparities in energy prices among different regions | 16.7% | 20.8% | 8.3% | 45.8% | 8.3% |
| I think region and sector-specific incentives can play a role in promoting renewable energy adoption in India | 13.5% | 14.6% | 6.2% | 53.1% | 12.5% |
| I believe there is a significant impact of regional and geographical price differences on the accessibility of both crude oil and renewable energy | 17.7% | 21.9% | 13.5% | 41.7% | 5.2% |

| | Strongly Disagree | Disagree | Neither Agree nor Disagree | Agree | Strongly Agree |
|---|-------------------|----------|----------------------------|---------|----------------|
| | Row N % | Row N % | Row N % | Row N % | Row N % |
| I believe there are significant regional variations in crude oil prices across different states in India which impacts individual customers throughout the country. | 8.3% | 24.0% | 13.5% | 43.8% | 10.4% |

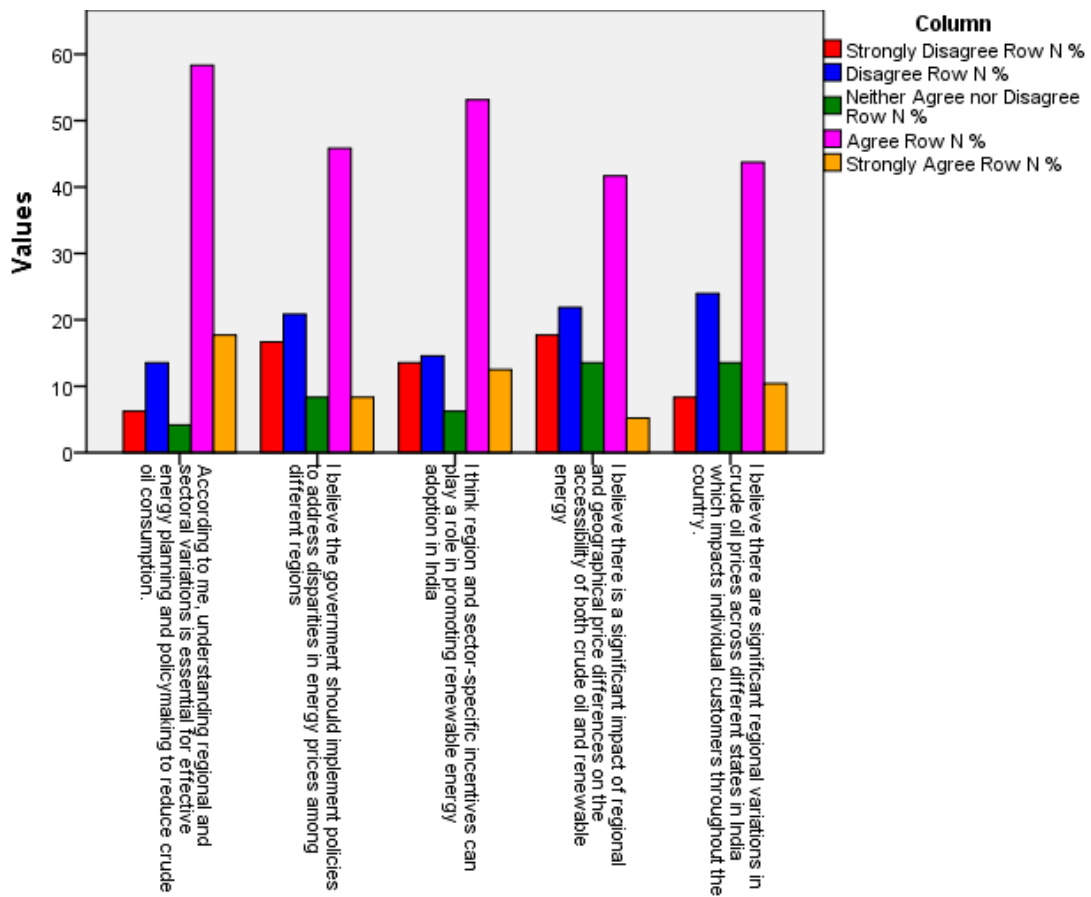


Fig. 4.10 : Regional and sectoral variation

Part I: Policy Framework

We can see that majority of 59.4% respondents have agreed on the statement “I believe the current policy framework of the Indian government should prioritize investments in renewable energy infrastructure”.

Bar graph attached below.

Table 4.12 : Policy framework

| | Strongly Disagree | Disagree | Neither Agree nor Disagree | Agree | Strongly Agree |
|---|--------------------------|-----------------|-----------------------------------|----------------|-----------------------|
| | Row N % | Row N % | Row N % | Row N % | Row N % |
| Evaluating and revising policies regularly is essential to ensure their continued effectiveness in reducing crude oil consumption and improving renewable energy usage. | 7.3% | 28.1% | 15.6% | 41.7% | 7.3% |
| I believe the current policy framework of the Indian government should prioritize investments in renewable energy infrastructure | 8.3% | 5.2% | 5.2% | 59.4% | 21.9% |
| According to me, there is a need for more stringent regulations to limit the use of crude oil and promote green alternatives. | 17.7% | 13.5% | 12.5% | 46.9% | 9.4% |
| I am optimistic about the potential impact of existing policies in reducing the | 15.6% | 20.8% | 18.8% | 33.3% | 11.5% |

| | Strongly Disagree | Disagree | Neither Agree nor Disagree | Agree | Strongly Agree |
|---|-------------------|----------|----------------------------|---------|----------------|
| | Row N % | Row N % | Row N % | Row N % | Row N % |
| country's reliance on crude oil in the foreseeable future. | | | | | |
| I think the current policy framework effectively encourages the use of renewable energy in India. | 6.2% | 11.5% | 5.2% | 54.2% | 22.9% |

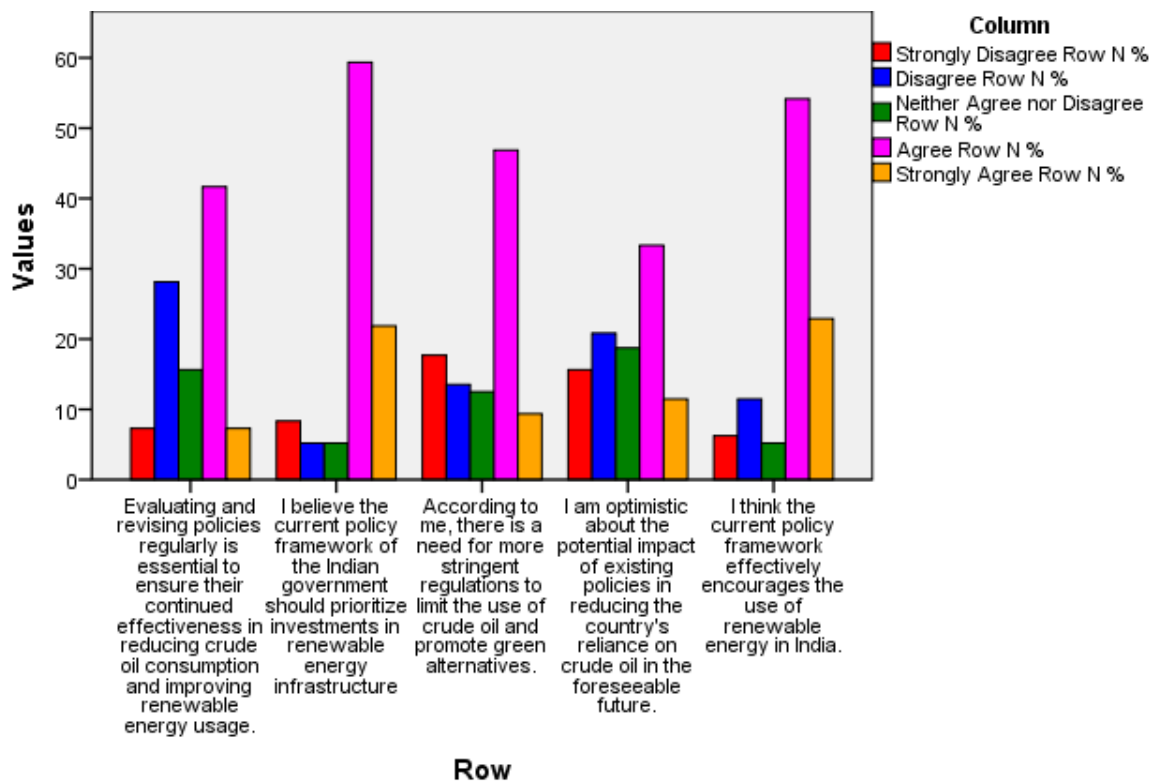


Fig. 4.11 : Policy framework

Hypothesis Testing

H0: There is no substantial association between Crude Oil Prices and Energy Import Dependence.

H1: Crude Oil Prices and Energy Import Dependency have a substantial link.

We have applied correlation analysis to prove the above hypothesis.

From the below results we can see that there is positive (.556), significant ($p\text{-value} = 0.000 < 0.050$) association between the variables.

Therefore, we can accept the alternative hypothesis that *Crude Oil Prices and Energy Import Dependency have a substantial link.*

Table 4.13 : Correlations

| | | Crude oil prices | Energy import dependency |
|--|---------------------|------------------|--------------------------|
| Crude oil prices | Pearson Correlation | 1 | .556** |
| | Sig. (2-tailed) | | .000 |
| | N | 96 | 96 |
| Energy import dependency | Pearson Correlation | .556** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 96 | 96 |
| **. Correlation is significant at the 0.01 level (2-tailed). | | | |

H0: Energy Import Dependence has no meaningful impact on Economic Growth.

H1: Energy Import Dependence has a major impact on Economic Growth.

We have applied regression analysis to prove the above hypothesis.

From the model summary table, the column “R” represents degree of association between the variables. Here there is 52.2% degree of effect on economic growth through energy import dependency.

Table 4.14 : Model summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1 | .522 ^a | .273 | .265 | .88660 |

a. Predictors: (Constant), Energy import dependency

The “ANOVA” table shows the level of significance, here the p-value is .000 < 0.050 level of significance.

Table 4.15 : ANOVA table

| | Model | Sum of Squares | df | Mean Square | F | Sig. |
|----|------------|----------------|----|-------------|--------|-------------------|
| 1. | Regression | 27.747 | 1 | 27.747 | 35.299 | .000 ^b |
| | Residual | 73.889 | 94 | .786 | | |
| | Total | 101.636 | 95 | | | |

a. Dependent Variable: Economic growth

b. Predictors: (Constant), Energy import dependency

Therefore, based on the above test results we can accept the alternative hypothesis that **Energy Import Dependence has a major impact on Economic Growth.**

H0: There is no substantial association between Crude Oil Prices and Environmental Impact.

H1: Crude Oil Prices and Environmental Impact have a substantial relationship.

We have applied correlation analysis to prove the above hypothesis.

From the below results we can see that there is positive (.508), significant (p-value= 0.000 < 0.050) association between the variables.

Therefore, we can accept the alternative hypothesis that **Crude Oil Prices and Environmental Impact have a substantial relationship**

Table 4.16 : Correlations

| | | Crude oil prices | Environmental impact |
|---|---------------------|------------------|----------------------|
| Crude oil prices | Pearson Correlation | 1 | .508** |
| | Sig. (2-tailed) | | .000 |
| | N | 96 | 96 |
| Environmental impact | Pearson Correlation | .508** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 96 | 96 |
| **. Correlation is significant at the 0.01 level (2-tailed). | | | |

H0: There is no substantial association between Alternative Energy Adoption and Economic Growth.

H1: Alternative Energy Adoption and Economic Growth have a substantial link.

We have applied correlation analysis to prove the above hypothesis.

From the below results we can see that there is positive (.856), significant (p-value= 0.000 < 0.050) association between the variables.

Therefore, we can accept the alternative hypothesis that **Alternative Energy Adoption and Economic Growth have a substantial link.**

Table 4.17 : Correlations

| | | Alternative energy adoption | Economic growth |
|---|---------------------|-----------------------------|-----------------|
| Alternative energy adoption | Pearson Correlation | 1 | .856** |
| | Sig. (2-tailed) | | .000 |
| | N | 96 | 96 |
| Economic growth | Pearson Correlation | .856** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 96 | 96 |
| **. Correlation is significant at the 0.01 level (2-tailed). | | | |

H0: Policy Framework has no substantial impact on Alternative Energy Adoption.

H1: Policy Framework has a substantial impact on Alternative Energy Adoption.

We have conducted regression analysis to prove the above hypothesis.

From the model summary table, in the “R” column, we can see that there is around 87.7% degree of correlation between the variables. There is 87.7% impact on alternative energy adoption through policy framework.

Model Summary

Table 4.18 : Model summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1 | .877 ^a | .769 | .766 | .472 |

a. Predictors: (Constant), Policy framework

The “ANOVA” table, gives the significant output of the regression run.

As the p-value is .000 < 0.05 level of significance, we can accept the alternative hypothesis that **Policy Framework has a substantial impact on Alternative Energy Adoption.**

Table 4.19 : ANOVA^a

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|-------|------------|----------------|----|-------------|---------|-------------------|
| 1 | Regression | 69.573 | 1 | 69.573 | 312.657 | .000 ^b |
| | Residual | 20.917 | 94 | .223 | | |
| | Total | 90.490 | 95 | | | |

a. Dependent Variable: Alternative energy adoption

b. Predictors: (Constant), Policy framework