

## A Study in Analysing the Major Factors Influencing in Raising Capital for Solar Photovoltaic Projects in Tamilnadu

Boniface P.<sup>1</sup>, Dr. TR. Kalai Lakshmi<sup>2</sup>

### Abstract

*Globally, environmental impact goals have been introduced, drawing attention to the need to transition to alternative energy sources that are capable of satisfying demand while simultaneously minimizing the amount of damage done to the environment. Solar energy is a significant renewable energy source that also provides an abundant supply of an environmentally friendly energy source. However, it is essential to analyze the factors that have an impact on the economic viability of the projects to provide assistance and inspiration to investors who are interested in installing solar energy systems to produce electricity. As a result, the purpose of this research is to investigate the primary factors that influence the procedure of acquiring financial support for solar photovoltaic projects. A comprehensive investigation will be carried out to achieve this objective, and primary data will be acquired via the use of questionnaires. The finance decisions that an organisation makes have a significant impact on the organization's capacity to continue its operations in the short and long term, including the returns that it provides to its owners and other relevant stakeholders. To maximise the well-being of its owners, often known as shareholders, the fundamental objectives of business organisations are to maximise their revenue and profits, reduce their expenses, and watch out for the interests of other essential stakeholders. The selection of the appropriate capital or finance structure is a significant financial decision that managers and directors who are entrusted with the achievement of an organization's objectives are required to make with great care to ensure that their goals are supported.*

**Keywords:** *Solar photovoltaic; economic viability; Macro economic factors, Government policies.*

### Introduction

Solar energy, geothermal energy, wind energy, biomass energy, marine energy, and various kinds of hydroelectric power are all examples of renewable energy sources. Renewable energy sources, often known as RES, are viable alternatives that can simultaneously satisfy the demand for energy, bring down the cost of energy, and reduce the negative impact on the environment. In contrast to the other sources, photovoltaic (PV) energy is the only one that can transform solar energy into electrical energy. Despite the fact that the sun is the major source of energy for the planet, only a tiny portion of it is now being used, and there is a significant amount of opportunity for potential expansion. There are a number of factors that might potentially have an impact on the economic feasibility of photovoltaic (PV) systems on a worldwide scale. The installation of

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<sup>1</sup> Research Scholar, School of Management Studies, Sathyabama Institute of Science and Technology, Chennai

<sup>2</sup> Research Supervisor, Associate Professor, School of Management Studies, Sathyabama Institute of Science and Technology, Chennai

photovoltaic (PV) systems on rooftops, for example, has been shown by researchers to be financially practical; nonetheless, it is possible that these systems do not provide major competitive benefits. For this reason, it is recommended that an incentive plan be put into place that would enable owners to make a profit from the sale of the electricity that is generated by their photovoltaic (PV) systems. In addition, it is said that the high initial prices of photovoltaic (PV) producing systems make it difficult to get access in the short term. As a consequence of this, more efficient rules are necessary in order to encourage the production of this energy. On the other hand, as was said before, the objective of photovoltaic (PV) systems is to reach grid parity, which is the condition in which the cost of power produced by PV is equivalent to the cost of energy gained from the grid (Babatunde, 2019).

The research topic, "A Study in Analyzing the Major Factors Influencing in Raising Capital for Solar Photovoltaic Projects in Tamil Nadu," addresses a critical aspect of sustainable energy development within the context of the Indian state of Tamil Nadu. As the world grapples with the challenges posed by climate change and seeks to transition towards cleaner and renewable energy sources, solar photovoltaic projects emerge as pivotal players in this transformative journey. The state of Tamil Nadu, situated in the southern part of India, has demonstrated a commendable commitment to embracing solar energy, evident in its substantial investments and policy initiatives to harness the potential of solar photovoltaic technology. However, the successful implementation of such projects relies heavily on securing adequate capital, making it imperative to conduct a comprehensive study to identify and understand the major factors influencing capital raising in this specific domain (Liu, 2019).

This research endeavour is driven by the need to bridge the existing knowledge gap regarding the intricacies of capital acquisition for solar photovoltaic projects in Tamil Nadu. By delving into the multifaceted aspects of this process, the study aims to provide valuable insights for policymakers, investors, and industry stakeholders (Goswami, 2019). Through an in-depth analysis, the research will explore the financial, regulatory, and socio-economic factors that play pivotal roles in influencing capital raising for solar projects. Additionally, the study will assess the impact of governmental policies, market dynamics, and environmental considerations on the capitalization of solar ventures in Tamil Nadu, contributing not only to the academic discourse but also offering practical recommendations for enhancing the financial viability and sustainability of solar photovoltaic initiatives in the region (Alhaj, 2019).

In essence, this research initiative seeks to contribute meaningfully to the discourse on renewable energy financing by unravelling the intricate web of factors that shape the capital-raising landscape for solar photovoltaic projects in Tamil Nadu. By shedding light on these key influencers, the study aspires to empower stakeholders with the knowledge necessary to foster a conducive environment for sustainable energy development in the region and, by extension, advance the global transition towards a more environmentally friendly and resilient energy paradigm (Kharseh, 2018)

## **Review of Literature**

### Earnings volatility

"Earnings volatility" can be defined as the inherent variability observed in an organization's financial gains, which subsequently influences the strategic choices of the company's capital structure. Saif-Alyousfi et al. (2020) propose an empirical measure for assessing profit volatility, which involves calculating the standard deviation of operational income divided by total assets. The utilisation of this particular metric is frequently observed within the financial industry. The existing body of literature suggests a significant correlation between capital structure, specifically leverage, and the volatility

of profits. This association has been identified by researchers who have thoroughly investigated the subject matter. Existing research has provided evidence suggesting a negative relationship between profit volatility and leverage. However, it is worth noting that certain authors, such as Jamali (2019), have put forth an alternative viewpoint, suggesting a positive association between these two variables..

#### Growth

The concept of convergence in business organisations refers to the capacity for future growth and the subsequent opportunities that may arise as a result. According to Ramanan's research in 2019, it was found that growth is commonly conceptualized as the discernible disparity in the overall value of assets possessed by commercial entities. The utilisation of this particular definition is commonly employed in experimental settings. In contrast, Milousi (2019) provided an additional pair of definitions about the concept of growth. One of the primary metrics to assess a company's financial health is the calculation of the ratio between its market capitalization plus long-term debt and its total assets. The second aspect under consideration pertains to the alteration observed in tangible assets over a given period, encompassing both the present and preceding periods. This alteration is then divided by the tangible assets recorded during that specific time frame. Numerous scholarly publications have elucidated the existence of a correlation between growth and capital structure, commonly referred to as leverage, as evidenced by the findings of academic researchers. According to Lourenco's (2018) research findings, a positive correlation has been established between leverage and growth. The presence of a negative association has been observed and documented by various authors in the field.

#### Macroeconomic conditions

The literature surrounding the macroeconomic factors influencing the raising of capital for solar photovoltaic projects in Tamil Nadu provides a nuanced understanding of the economic landscape within which these projects operate. One of the primary macroeconomic considerations in this context is the overall economic health and stability of the region. Research by economists such as Mankiw and Romer has consistently emphasized the pivotal role that macroeconomic stability plays in facilitating investment. A stable economy, characterized by low inflation rates, steady GDP growth, and a favourable investment climate, is conducive to attracting the necessary capital for large-scale projects like solar photovoltaic initiatives.

Moreover, the availability and cost of capital in the financial markets, another critical macroeconomic factor, significantly impact the viability of solar projects. Studies by Rajan and Zingales underscore the importance of a well-functioning financial system in ensuring efficient capital allocation. In the context of solar projects in Tamil Nadu, understanding how monetary policies, interest rates, and banking regulations affect the cost and accessibility of capital is essential. A comprehensive analysis of these macroeconomic elements can offer valuable insights into the challenges and opportunities associated with raising capital for solar ventures (Ellabban, 2019).

Additionally, the literature reveals that government policies and incentives play a central role in shaping the macroeconomic environment for renewable energy projects. Scholars like Gillingham and Newell emphasize the impact of policy frameworks on the deployment of clean energy technologies. In Tamil Nadu, the effectiveness of state-level policies, subsidies, and regulatory frameworks in promoting solar photovoltaic projects becomes crucial. A comprehensive review of existing literature would explore how macroeconomic policy measures influence investor confidence, market dynamics, and the overall attractiveness of solar investments in the region.

Furthermore, the global economic context and its impact on the renewable energy sector cannot be ignored. The works of Stern and Stiglitz stress the interconnectedness of economies in a globalized world. Fluctuations in international financial markets, trade

policies, and geopolitical considerations can all have far-reaching consequences on the raising of capital for solar projects in Tamil Nadu. Understanding the global economic trends and their implications for the local solar industry is paramount for stakeholders seeking to navigate the complexities of capital mobilization.

#### Government policies

The literature surrounding government policies as they pertain to the raising of capital for solar photovoltaic projects in Tamil Nadu is rich and multifaceted. Government policies play a pivotal role in shaping the regulatory and financial landscape for renewable energy initiatives, and understanding their impact is crucial for stakeholders involved in solar projects. Researchers such as Jacobsson Lauber and Sovacool have extensively explored the intricate relationship between policy frameworks and the deployment of renewable energy technologies, providing valuable insights into the dynamics at play (Gürtürk, 2019).

First and foremost, the literature emphasizes the significance of supportive policies in fostering an environment conducive to capital mobilization for solar projects. Government incentives, subsidies, and feed-in tariffs have been identified as powerful tools to attract investments in the renewable energy sector. Studies by Blyth and Ridley highlight how well-designed policy mechanisms can mitigate risks, enhance project bankability, and ultimately stimulate capital flow. In the context of Tamil Nadu, an exploration of the effectiveness of existing state-level policies and their alignment with national initiatives becomes imperative for understanding how governmental support influences the attractiveness of solar investments.

Moreover, scholars like Popp and Newell have underscored the critical role of policy stability and predictability. The literature suggests that frequent changes in regulatory frameworks and uncertainties in policy implementation can create a challenging environment for investors. Examining the historical evolution of solar policies in Tamil Nadu and their consistency over time is, therefore, a crucial aspect of the research. This analysis can shed light on how policy continuity influences investor confidence and, consequently, the ability to raise capital for solar photovoltaic projects.

The literature review also delves into the broader policy context, including environmental and energy policies. Works by Haas and Ornetzeder emphasize the interconnectedness of energy policies with environmental goals. In Tamil Nadu, understanding how state policies align with broader environmental objectives and global commitments is essential. This alignment can influence the perception of solar projects as not just economically viable but also environmentally sustainable, potentially attracting a broader range of investors and stakeholders.

Furthermore, the literature underscores the role of policy in addressing challenges unique to the solar sector. For instance, research by Sovacool and Drupady explores the impact of policies aimed at overcoming technical and grid integration challenges associated with solar projects. In Tamil Nadu, where grid integration and technical considerations are pertinent issues, analyzing how policies address these challenges can provide valuable insights into their effectiveness and impact on capital raising.

#### Objectives

- To understand the influence of macroeconomic conditions in raising capital for Solar Photovoltaic Projects in Tamil Nadu
- To analyse the impact of Earnings volatility of the project in raising capital for Solar Photovoltaic in Tamil Nadu
- To apprehend the role of government in providing support in raising capital for Solar Photovoltaic Projects in Tamil Nadu

- To understand the overall growth and profitability of Solar Photovoltaic Projects for raising capital in Tamil Nadu

#### Need and Scope

The imperative for conducting a study on the major factors influencing the raising of capital for solar photovoltaic projects in Tamil Nadu emanates from the critical intersection of renewable energy development and financial feasibility in the region. Understanding the key factors that drive the successful raising of capital for solar photovoltaic projects in Tamil Nadu is crucial for promoting sustainable energy growth and attracting potential investors. This study will provide valuable insights into the specific challenges and opportunities in the region, allowing policymakers and stakeholders to develop targeted strategies and policies to overcome barriers and encourage investment in solar photovoltaic projects (Kassem, 2018). By examining the financial viability of solar photovoltaic projects in Tamil Nadu, this study aims to identify the most effective methods for attracting investment and promoting sustainable energy growth. Additionally, it will analyze the potential barriers that hinder capital-raising efforts and propose strategies to overcome them (Kassem, 2018). The findings of this research will be instrumental in guiding decision-makers toward creating an enabling environment for solar photovoltaic projects and driving economic development in the region. Additionally, it will contribute to the broader knowledge base on renewable energy financing, aiding future research and informing decision-making processes in other regions facing similar circumstances. Furthermore, this research will examine the current policy landscape and regulatory frameworks surrounding renewable energy financing in the region. By identifying any gaps or inconsistencies, it will provide valuable insights for policymakers to develop more effective and supportive policies. Additionally, the study will assess the financial viability of solar photovoltaic projects by analysing their return on investment and potential revenue streams. This information will be crucial for attracting private investors and ensuring the long-term sustainability of renewable energy initiatives in the region. This study can provide valuable insights into the challenges faced by project developers and policymakers, helping them devise effective strategies to overcome barriers and accelerate the adoption of solar energy in the region (Lammoglia, 2019). As the global community intensifies its efforts to transition towards sustainable energy sources, solar photovoltaic projects have emerged as key contributors to this paradigm shift. However, the successful implementation of such initiatives is contingent upon securing substantial capital, making it imperative to unravel the intricacies of the capital-raising process. Tamil Nadu, known for its progressive stance on renewable energy, serves as an ideal case study for examining the contextual factors shaping the financial landscape of solar projects. The scope of this study extends beyond a mere financial analysis; it encompasses a holistic exploration of macroeconomic influences, government policies, and market dynamics. By comprehensively understanding these multifaceted aspects, the research aims not only to contribute valuable insights to the academic discourse but also to provide practical recommendations for stakeholders, policymakers, and investors, fostering a conducive environment for sustainable solar energy development in Tamil Nadu. The study's significance lies in its potential to inform strategic decision-making, thereby catalyzing the growth of the solar photovoltaic sector and advancing the broader goals of environmental sustainability and energy security in the region.

The study's significance lies in its potential to inform strategic decision-making, thereby catalysing the growth of the solar photovoltaic sector and advancing the broader goals of environmental sustainability and energy security in the region. Furthermore, the findings of this study can also serve as a valuable resource for policymakers and stakeholders in other regions who are interested in promoting sustainable solar energy development. By understanding the challenges and opportunities specific to Tamil Nadu, they can adapt and implement similar strategies to foster renewable energy growth in their own areas.

Ultimately, this research has the potential to contribute to a global shift towards clean and renewable sources of energy. By examining the major factors influencing the raising of capital for solar photovoltaic projects in Tamil Nadu, this research aims to provide valuable insights and practical recommendations for stakeholders, policymakers, and investors. With a focus on macroeconomic influences, government policies, and market dynamics, this study seeks to unravel the intricacies of the capital-raising process and foster a conducive environment for sustainable solar energy development in Tamil Nadu.

### Research gap

The existing body of literature on solar photovoltaic projects in Tamil Nadu exhibits a noticeable research gap that this study seeks to address. While there is a growing corpus of research focused on renewable energy financing and solar projects globally, there is a dearth of in-depth analyses specific to the Tamil Nadu context, which is characterized by its unique socio-economic, regulatory, and environmental dynamics. Many studies have explored the macroeconomic factors influencing renewable energy investments and the impact of government policies on such projects. However, there is a discernible lack of granular insights into how these factors specifically shape the capital-raising landscape for solar photovoltaic initiatives in Tamil Nadu. Moreover, previous research often provides a broad overview, neglecting the intricate interplay between various factors or failing to offer nuanced recommendations for stakeholders operating within the state. This study aims to bridge this research gap by undertaking a comprehensive examination that delves into the nuanced and context-specific aspects of capital mobilization for solar projects in Tamil Nadu. By doing so, it strives to contribute valuable knowledge that is not only academically rigorous but also practically relevant for those actively involved in fostering sustainable solar energy development in the region.

### Methodology

The present study aims to investigate the key factors influencing in raising capital for solar photovoltaic projects in Tamil Nadu. This research endeavour employs a comprehensive research methodology to explore the aforementioned factors in depth. The researchers employed a combination of primary and secondary sources of information in their study. To collect data pertaining to the Solar Photovoltaic Rooftop entrepreneurs in Chennai, Chengalpet, Tiruvallur and Kanchipuram Districts, a standardised questionnaire has been employed as the primary research instrument. The participants were chosen using a convenience sampling method. Furthermore, an extensive exploration of web databases, such as Google Scholar, Scopus, and EBSCO, was conducted by the researchers to identify any pertinent literature pertaining to the study.

The overall target population is around 600 Solar Photovoltaic Rooftop entrepreneurs. For this study, a sample size of 235 is taken. With the confidence level of 95%, margin of error of 5% and population proportion of 50% the sample size is computed as 235.

## Result

Sample size: **235**

This means 235 or more measurements/surveys are needed to have a confidence level of 95% that the real value is within  $\pm 5\%$  of the measured/surveyed value.

Confidence Level:?	95%	▼	
Margin of Error:?	5	%	
Population Proportion:?	50	%	Use 50% if not sure
Population Size:?	600		Leave blank if unlimited population size.
<b>Calculate</b>		▶	Clear

### Analysis

The present study aims to investigate the key factors influencing in raising capital for solar photovoltaic projects in Tamil Nadu. This research endeavour employs a comprehensive research methodology to explore the aforementioned factors in depth. The researchers employed a combination of primary and secondary sources of information in their study.

Age	Frequency	Percent
Below 30 Years	27	11.50
31 - 40 Years	27	11.50
41 - 50 Years	101	43.00
Above 50 Years	80	34.00
Gender	Frequency	Percent
Male	168	71.50
Female	67	28.50
Marital Status	Frequency	Percent
Single	83	35.30
Married	152	64.70
Education	Frequency	Percent
Under graduation	167	71.10
Postgraduation	68	28.90
Annual Turnover	Frequency	Percent
Less than 50 lakhs	20	8.50
50 lakhs -1 crore	94	40.00
1-2 crores	101	43.00
Above 2 crores	20	8.50
Experience	Frequency	Percent

Less than 2 years	9	3.80
2 - 5 years	140	59.60
5 - 10 years	68	28.90
10 -15 years	18	7.70
Total	235	100.00

From the above table, it is noted that, 11.50% were below 30 years, 11.50% were in the age group between 31 - 40 Years, 43% were in the age group between 40 – 50 years and the remaining 34% were above 50 Years. 71.50% were male and the remaining were female. 35.30% were single and remaining 64.70% were married, 71.10% have Completed Under graduation and the remaining 28.90% have completed post-graduation, 8.50% were having annual turnover below Rs.50 lakhs, 40.00% were having annual turnover of Rs 50 lakhs -1 crore, 43.00% were having annual turnover of Rs 1-2 crores and remaining 8.50% were having annual turnover of above 2 crores. 3.80% were having experience of Less than 2 years, 59.60% were having 2 - 5 years of experience, 28.90% having experience between 5 - 10 years and 7.70% were having experience between 10 - 15 years.

#### Correlation analysis

The statistical method known as correlation analysis is used to ascertain the nature and magnitude of a connection that exists between two variables. The purpose of this is to determine the degree to which fluctuations in one variable are linked with variations in another one. The kind of correlation measure that is used the most often is the Pearson correlation coefficient, sometimes known as "r," which ranges from -1 to 1. When two variables are positively correlated, it indicates that one variable tends to increase together with the other, and when they are negatively correlated, it indicates that one variable tends to decline along with the other. Both of these correlations are considered to be positive relations. links that are weak or non-existent are represented by correlations that are close to zero, while strong links are revealed by correlations that are close to one or one-half.

This analytical tool is valuable in various fields, including finance, economics, psychology, and medicine, as it helps researchers and analysts understand patterns and dependencies within data sets. However, it is crucial to note that correlation does not imply causation; just because two variables are correlated does not mean that one causes the other to change. It merely indicates an association, prompting the need for further investigation to establish causation or identify underlying factors. Additionally, outliers can significantly impact correlation results, necessitating careful consideration of the data distribution and potential confounding variables. Overall, correlation analysis provides a quantitative framework for assessing relationships between variables, aiding in data interpretation and decision-making processes.

Correlations	Macroeconomic Variables	Earnings Volatility	Government Support	Overall Growth
Macroeconomic Variables	1	.863**	.773**	.857**
Earnings Volatility	.863**	1	.806**	.842**
Government Support	.773**	.806**	1	.813**
Overall Growth	.857**	.842**	.813**	1



The correlation coefficient of 0.857 indicates an positive relationship between the variables "Macroeconomic variables" and "Overall growth" This value is nearly 1,. It suggests that there is a positive linear association between these two variables.

The obtained correlation coefficient of 0.842 suggests a significant positive association between the variables "Overall growth" and "Earnings volatility." The numerical value in question exhibits a remarkable proximity to the unit value of 1. The observed data suggests the presence of a positive linear relationship between the two variables.

The obtained correlation coefficient, specifically 0.813, suggests a positive association between the variables "Overall growth" and "Government support." The numerical value in question exhibits a remarkable proximity to the unitary value of 1. The observed data suggests a positive linear relationship between the two variables.

The present investigation focuses on the application of regression analysis as a statistical technique.

Regression analysis is a widely recognised and influential statistical technique employed to investigate the association between a dependent variable and one or more independent variables. The primary objective of this endeavour is to initially establish a functional representation of the connection, followed by utilising this model to make subsequent predictions. Linear regression is a widely utilised form of regression analysis that postulates a linear relationship between the variables under investigation. The dependent variable, denoted as Y, is the outcome of interest in the regression analysis. On the other hand, X<sub>1</sub>, X<sub>2</sub>, and so forth represent the independent variables, which are the factors that are hypothesised to have an impact on the dependent variable. The coefficient β<sub>0</sub> corresponds to the intercept term, which represents the value of the dependent variable when all independent variables are equal to zero. The coefficients β<sub>1</sub>, β<sub>2</sub>, and so on, indicate the slopes or the magnitude of the effect that each independent variable has on the dependent variable. Lastly, the error term ε represents the unexplained variation in the regression equation, accounting for factors not captured by the independent variables. The regression equation can be expressed as  $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \dots + \epsilon$ .

The coefficients of the regression equation provide valuable insights into the direction and intensity of the correlations. When considering the case of a positive coefficient, it can be inferred that there exists a positive correlation between the two variables under examination. This observation suggests that there is an expectation for the dependent variable to exhibit a corresponding increase in magnitude as the independent variable experiences growth. Conversely, the presence of a negative coefficient indicates a probable negative association between the variables under consideration. The coefficient of determination, commonly referred to as R<sup>2</sup>, is a statistical measure employed to ascertain the extent to which the independent variables account for the variability observed in the dependent variable.

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	223.073	4	55.768	2134.9	.000b
Residual	6.008	230	0.026		
Total	229.081	234			
Model	B	Std. Error	Beta	t	Sig.
(Constant)	-0.007	0.047		-0.147	0.88
Macroeconomic Variables	0.801	0.024	0.811	33.651	0.00
Earnings Volatility	0.062	0.022	0.069	2.842	0.01

Government Support	0.116	0.019	0.121	6.063	0.00
Overall Growth	0.019	0.022	0.02	0.846	0.40

From the above analysis it is noted that the F value is 2134.9 with p value of 0.00 hence it can be stated that there is a significant relationship among the variables. Furthermore, the regression equation can be framed as

$$Y (\text{Raising capital}) = -0.007 + 0.801 \times \text{Macroeconomic variables} + 0.062 \times \text{Earnings volatility} + 0.116 \times \text{Government support} + 0.019 \times \text{Overall growth}$$

Test of hypothesis

Null hypothesis: There is no significant difference between macro-economic conditions and raising capital for Solar Photovoltaic Projects in Tamil Nadu

Alternate hypothesis: There is a significant difference between macro-economic conditions and raising capital for Solar Photovoltaic Projects in Tamil Nadu

	Raising capital			
Macroeconomic Variables	Strongly Disagree	Disagree	Neutral	Agree
Disagree	18	0	0	0
Neutral	0	46	0	0
Agree	0	0	46	0
Strongly Agree	0	0	9	116
	18	46	55	116
Chi-Square Tests	Value	df	P value	
Pearson Chi-Square	652.394a	9	0.00	
Likelihood Ratio	501.382	9	0.00	

A chi-square test with a p-value of 0.00 demonstrates that the result is very significant from a statistical point of view. When it comes to statistical analysis, the p-value is a representation of the chance of obtaining the observed data or more severe outcomes when the null hypothesis is true. If there is no correlation or independence between the variables, a p-value that is less than 0.00 implies that there is an extremely low probability of obtaining the data that was seen, or even more extreme outcomes, if there is no connection between the variables. A p-value of 0.00 is often rounded up from a very small number, such as 0.0001, since this is the standard procedure. It constitutes highly convincing evidence that contradicts the null hypothesis at the same time. To put it another way, the probability that the event was just the result of random chance is very insignificant. The results indicate that the p value is 0.00, which indicates that the alternative hypothesis is accepted whereas the null hypothesis is rejected for the reasons stated in the findings. The conclusion that can be drawn from this is that there is a significant difference between macro-economic conditions and raising capital for Solar Photovoltaic Projects in Tamil Nadu.

Null hypothesis: There is no significant difference between Earnings Volatility and raising capital for Solar Photovoltaic Projects in Tamil Nadu

Alternate hypothesis: There is a significant difference between Earnings Volatility and raising capital for Solar Photovoltaic Projects in Tamil Nadu

	Raising capital			
Earnings Volatility	Strongly Disagree	Disagree	Neutral	Agree

Strongly Disagree	9	0	0	0
Disagree	9	0	0	0
Neutral	0	37	0	0
Agree	0	9	18	10
Strongly Agree	0	0	37	106
Total	18	46	55	116
Chi-Square Tests	Value	df	P value	
Pearson Chi-Square	443.180a	12	0.00	
Likelihood Ratio	325.008	12	0.00	

A chi-square test with a p-value of 0.00 demonstrates that the result is very significant from a statistical point of view. When it comes to statistical analysis, the p-value is a representation of the chance of obtaining the observed data or more severe outcomes when the null hypothesis is true. If there is no correlation or independence between the variables, a p-value that is less than 0.00 implies that there is an extremely low probability of obtaining the data that was seen, or even more extreme outcomes, if there is no connection between the variables. A p-value of 0.00 is often rounded up from a very small number, such as 0.0001, since this is the standard procedure. It constitutes highly convincing evidence that contradicts the null hypothesis at the same time. To put it another way, the probability that the event was just the result of random chance is very insignificant. The results indicate that the p value is 0.00, which indicates that the alternative hypothesis is accepted whereas the null hypothesis is rejected for the reasons stated in the findings. The conclusion that can be drawn from this is that there is a significant difference between Earnings Volatility and raising capital for Solar Photovoltaic Projects in Tamil Nadu.

Null hypothesis: There is no significant difference between Government Support and raising capital for Solar Photovoltaic Projects in Tamil Nadu

Alternate hypothesis: There is a significant difference between Government Support and raising capital for Solar Photovoltaic Projects in Tamil Nadu

	Raising capital			
Government Support	Strongly Disagree	Disagree	Neutral	Agree
Strongly Disagree	9	0	0	0
Disagree	9	0	0	0
Neutral	0	37	9	0
Agree	0	9	28	48
Strongly Agree	0	0	18	68
Total	18	46	55	116
Chi-Square Tests	Value	df	P value	
Pearson Chi-Square	383.776a	12	0.00	
Likelihood Ratio	274.897	12	0.00	

A chi-square test with a p-value of 0.00 demonstrates that the result is very significant from a statistical point of view. When it comes to statistical analysis, the p-value is a representation of the chance of obtaining the observed data or more severe outcomes

when the null hypothesis is true. If there is no correlation or independence between the variables, a p-value that is less than 0.00 implies that there is an extremely low probability of obtaining the data that was seen, or even more extreme outcomes, if there is no connection between the variables. A p-value of 0.00 is often rounded up from a very small number, such as 0.0001, since this is the standard procedure. It constitutes highly convincing evidence that contradicts the null hypothesis at the same time. To put it another way, the probability that the event was just the result of random chance is very insignificant. The results indicate that the p value is 0.00, which indicates that the alternative hypothesis is accepted whereas the null hypothesis is rejected for the reasons stated in the findings. The conclusion that can be drawn from this is that there is a significant difference between Government Support and raising capital for Solar Photovoltaic Projects in Tamil Nadu.

Null hypothesis: There is no significant difference between overall growth and raising capital for Solar Photovoltaic Projects in Tamil Nadu

Alternate hypothesis: There is a significant difference between overall growth and raising capital for Solar Photovoltaic Projects in Tamil Nadu

	Raising capital			
Overall growth	Strongly Disagree	Disagree	Neutral	Agree
Strongly Disagree	9	0	0	0
Disagree	9	0	0	0
Neutral	0	46	0	0
Agree	0	0	27	30
Strongly Agree	0	0	28	86
Total	18	46	55	116
Chi-Square Tests	Value	df	P value	
Pearson Chi-Square	482.450a	12	0.00	
Likelihood Ratio	360.114	12	0.00	

A chi-square test with a p-value of 0.00 indicates a highly significant result. In statistical analysis, the p-value represents the probability of obtaining the observed data or more extreme results when the null hypothesis is true. A p-value of 0.00 means that the probability of obtaining the observed data (or something even more extreme) under the assumption of no association or independence between the variables is virtually zero. A p-value of 0.00 is often rounded from a very small value, such as 0.0001. It signifies extremely strong evidence against the null hypothesis. In other words, the result is highly unlikely to occur by random chance alone. From the results it is noted that p value is 0.00, hence null hypothesis is rejected and alternate hypothesis is accepted, therefore it is concluded that there is a significant difference between overall growth and raising capital for Solar Photovoltaic Projects in Tamil Nadu.

## Discussion and conclusion

In conclusion, it is noted that there is a comprehensive analysis of critical factors affecting the capital-raising process for solar photovoltaic projects in the region. The study delves into macroeconomic variables, earnings volatility, government support, and overall growth, shedding light on their intricate relationships and impact on the financing landscape for solar ventures. Macroeconomic variables, such as inflation rates, interest rates, and GDP growth, play a pivotal role in influencing the capital-raising dynamics.

The research underscores the importance of a stable macroeconomic environment for attracting investments, as fluctuations in these variables can significantly affect investor confidence and the overall viability of solar projects. Earnings volatility is identified as a crucial factor, with the study emphasizing the need for financial stability and predictable earnings to instil confidence in potential investors (Saez, 2019).

Government support emerges as a key driver in facilitating capital infusion into solar photovoltaic projects. The analysis highlights the significance of supportive policies, incentives, and regulatory frameworks in encouraging private and public investments. The study underscores the need for a conducive environment created by governmental initiatives to propel the growth of the solar energy sector. Furthermore, the research emphasizes the interplay between these factors and their collective impact on the overall growth of solar projects in Tamil Nadu. The findings underscore the importance of a holistic approach, where macroeconomic stability, earnings predictability, and government support converge to create an environment conducive to capital raising. The study not only contributes valuable insights to the academic literature but also provides practical implications for policymakers, investors, and industry stakeholders involved in the solar photovoltaic sector in Tamil Nadu. Overall, the research underscores the multifaceted nature of factors influencing capital raising for solar projects and contributes meaningfully to the discourse on sustainable energy financing in the region.

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