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Assessing the Valuation of Electric Vehicle Stocks: An In-Depth Analysis of Investor Sentiment, Financial Metrics, and Growth Potential

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Abstract: ***The electric vehicle (EV) industry has witnessed substantial growth and investor interest in recent years. However, concerns have arisen regarding the overvaluation of EV stocks, driven by investor hype and speculation. This study investigates the current valuation of EV stocks and assesses whether they are justified by underlying fundamentals. By integrating primary data from investor surveys and secondary data from financial reports, this paper aims to offer a comprehensive analysis of market dynamics, investor sentiment, and implications for future growth in the EV sector.***
Keywords: Electric Vehicle Stocks, Market Trends, Investor Behavior.

I. INTRODUCTION

The transition to electric vehicles (EVs) has catalyzed significant changes within the global automotive industry. The convergence of technological advancements, environmental awareness, and government regulations has propelled EVs into the mainstream. Despite this positive momentum, concerns regarding the overvaluation of EV stocks have emerged, fueled by speculative investor behavior and market hype. This study seeks to evaluate the current valuations of EV stocks and assess the extent to which they are supported by the companies' financial fundamentals and growth potential.

II. OBJECTIVES

This research aims to achieve the following objectives:

1) Identify the primary factors driving investor interest in EV stocks.
2) Compare the valuations of EV stocks against their peers using critical financial metrics, including price-to-earnings (PE) ratio, price-to-book (PB) ratio, and EV/EBIT ratio.
3) Analyze investor sentiment regarding their investment horizon and portfolio allocation to EV stocks.

III. METHODOLOGY

This research employs a mixed-methods approach, combining quantitative and qualitative analyses:

A. Quantitative Analysis

Financial metrics for selected EV companies were analyzed, including PE ratio, PB ratio, and EV/EBIT ratio. These metrics provide insights into the relative valuation of EV stocks compared to their industry peers.

B. Primary Data

Data was collected through a survey conducted among 85 respondents residing in and around Calicut and Malappuram districts in Kerala. The respondents included a diverse group of investors who have invested in EV stocks or have shown interest in the sector. The survey aimed to gather insights on investor sentiment, investment horizons, portfolio allocations, and expectations for future growth in the EV market.

C. Survey Instrument

The survey comprised a structured questionnaire Key areas covered included:

- Investment horizon (short-term, medium-term, long-term)
- Key factors influencing stock selection

- Perceptions of current EV stock valuations (overvalued, fair, undervalued)
- Future growth potential of the EV industry

IV. LITERATURE REVIEW

The electric vehicle (EV) market has been the focus of extensive research, with numerous studies analyzing factors influencing stock performance. The key themes emerging from the literature include valuation concerns, financial ratio applications, investor behavior, market growth potential, and the role of technological innovation. These aspects provide a comprehensive understanding of the forces shaping the EV stock landscape.

A. EV Stock Valuation and Overvaluation

The valuation of EV stocks has been a major topic of discussion among researchers, with many noting that these stocks often trade at significantly higher price-to-earnings (PE) and price-to-book (PB) ratios compared to traditional automotive companies. Lee and Ryu (2021) argue that speculative behavior and increased market optimism regarding future growth prospects contribute to inflated valuations, commonly referred to as the "green premium." This phenomenon is largely driven by investors' belief that EV firms will dominate the automotive sector in the coming decades, despite their current profitability being lower than legacy automakers.

Shenet al. (2020) further support this viewpoint, highlighting that the EV industry attracts significant investment due to its long-term potential, even when short-term earnings remain weak. The anticipation of regulatory support, technological advancements, and shifting consumer preferences toward sustainability all contribute to these elevated valuations. However, concerns remain about whether the high valuations are sustainable in the face of evolving market conditions and increasing competition from traditional automakers entering the EV space.

B. Role of Financial Ratios in EV Stock Analysis

Financial ratios play a crucial role in evaluating stock value, yet their application to EV stocks presents unique challenges. Traditional valuation metrics such as PE, PB, and EV/EBIT often appear unusually high for EV stocks. Smith and Miller (2022) observed that these elevated ratios reflect high investor expectations rather than current financial performance. The discrepancy between conventional valuation metrics and EV stock pricing raises concerns about the applicability of traditional methods for assessing EV companies.

Johnson (2019) suggests that growth-based ratios such as the Price-to-Earnings-to-Growth (PEG) ratio may provide a more accurate picture of EV stock valuation. Given that EV firms are in a rapid expansion phase, their valuation should consider future earnings growth rather than relying solely on present earnings. The need for alternative valuation approaches is further reinforced by industry volatility, where rapid technological advancements and evolving government policies significantly impact stock prices.

C. Investor Behavior and Speculative Investment

Investor behavior is a key determinant of EV stock valuations. Studies have found that EV stock investors tend to be younger and more inclined to invest heavily in high-growth sectors. Li and Sun (2020) discovered that approximately half of EV stock investors seek short-term gains, reflecting a speculative approach to investing. This finding aligns with our primary data, which reveals that 44% of respondents invest for less than one year, indicating a preference for quick returns rather than long-term wealth accumulation.

D. Growth Potential in Emerging Markets

The expansion of the EV market in emerging economies has been a focal point of recent studies. Governments in these regions have been actively promoting EV adoption through policy incentives, subsidies, and infrastructure investments. Gupta et al. (2021) report substantial EV adoption in Asia, where government initiatives and rising environmental awareness are key drivers of growth. However, despite these positive trends, challenges such as inadequate charging infrastructure and high initial vehicle costs continue to hinder widespread adoption.

Kim and Choi (2022) emphasize that affordability remains a critical barrier to EV adoption in emerging markets. While government incentives help reduce costs, many consumers still find EVs expensive compared to traditional internal combustion engine vehicles. Our primary data supports these findings, with 44% of respondents recognizing significant growth potential in emerging markets, yet 18% highlighting affordability and infrastructure limitations as major obstacles.

E. Primary Data Collection

To capture real-world insights, primary data was collected via a structured survey distributed among stock market investors and traders in Malappuram and Calicut districts. This regionally focused sample ensures relevance to the specific investment community within these areas, providing local perspectives on the EV sector's valuation and growth. A total of 85 respondents participated in the survey, all of whom are active in stock market investments or trading, ensuring familiarity with financial metrics and industry dynamics. Questions explored investment horizons, portfolio allocation to EV stocks, perceived growth potential, and specific financial considerations such as Price-to-Earnings (PE) ratio, Price-to-Book (PB) ratio, and investor optimism. The survey's insights aid in understanding investor sentiment, motivations, and concerns, particularly in relation to EV stocks' speculative aspects and perceived overvaluation.

F. Secondary Data Collection

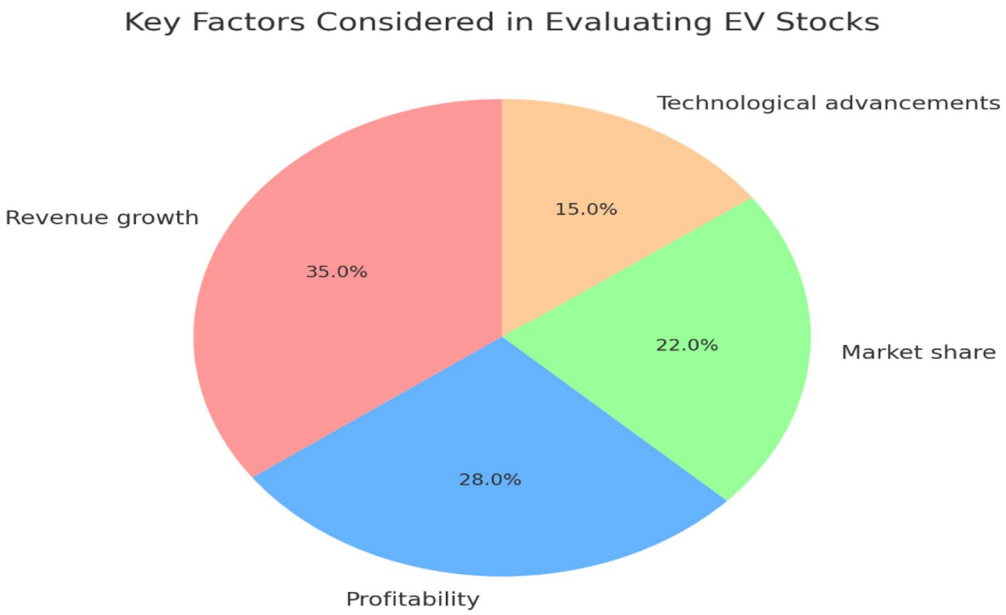
Secondary data was sourced from financial reports, market analysis, and stock performance metrics for key EV companies. This data was instrumental in calculating financial ratios, Free Cash Flow (FCF), and intrinsic values for a selection of prominent EV firms. PE, PB, and EV/EBIT ratios were derived to measure the valuation and performance of the EV sector in comparison to traditional automotive and technology stocks, allowing for a well-rounded financial analysis of overvaluation concerns and growth expectations. Specific companies examined include Olectra Greentech Ltd, Sona BLW Precision Forgings Ltd, Wardwizard Innovations & Mobility Ltd, Servotech Power Systems Ltd, and Amara Raja Energy & Mobility Ltd.

G. Data Analysis Techniques

For quantitative analysis, we calculated intrinsic values, PE, PB, EV/EBIT ratios, and FCF for each selected EV Company. These metrics provided a financial foundation to determine overvaluation and growth justification. Additionally, key insights from primary data were analyzed in relation to secondary data findings to assess if investor expectations of rapid growth align with actual financial performance.

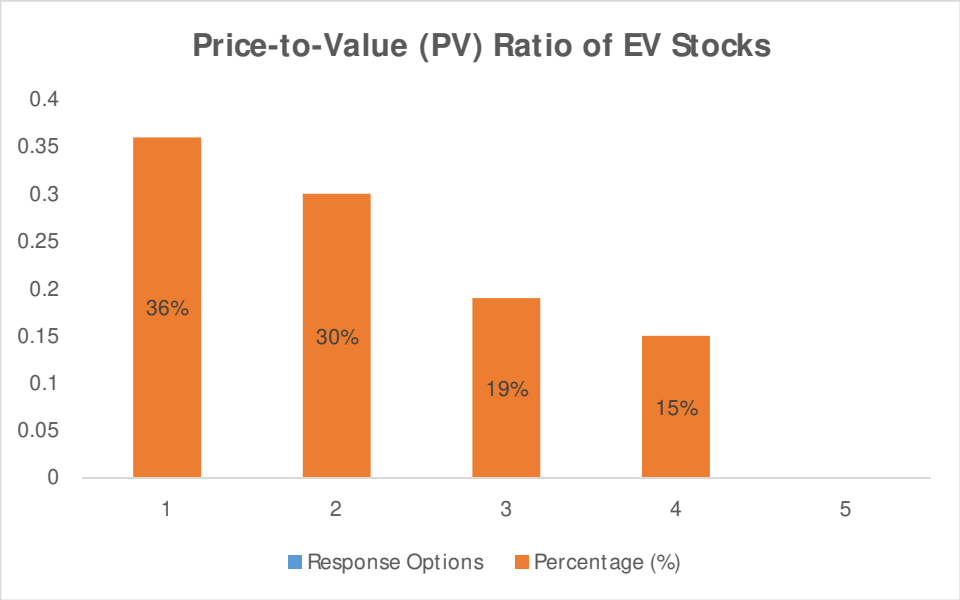
V. PRIMARY DATA ANALYSIS

1) Chart 1- Important factor to evaluate EV stock



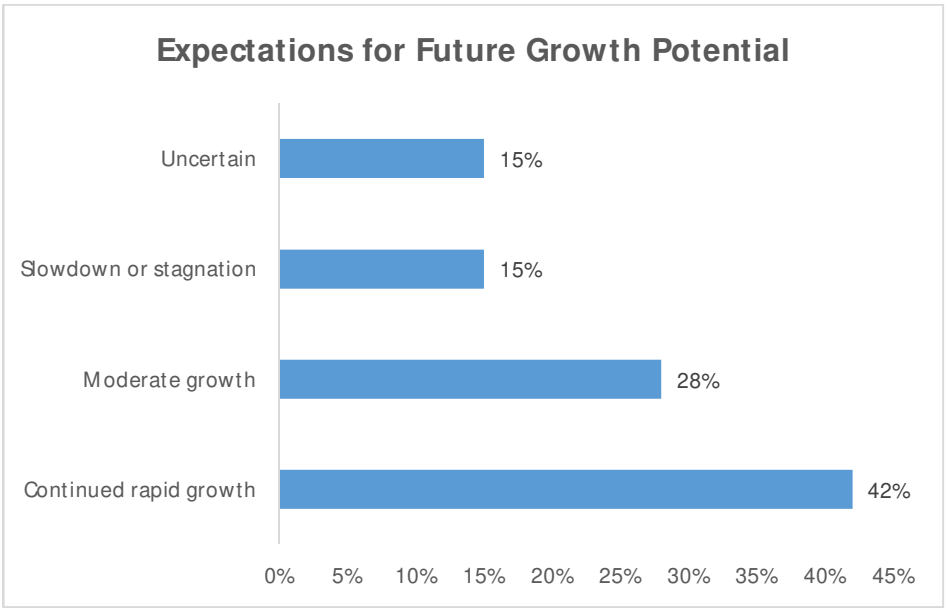
The chart shows that investors prioritize revenue growth (35%) and profitability (28%) as the key factors when evaluating EV stocks. Market share (22%) also holds significant importance, while technological advancements (15%) are considered less crucial

2) *Chart 2- Regarding Valuation of stock*



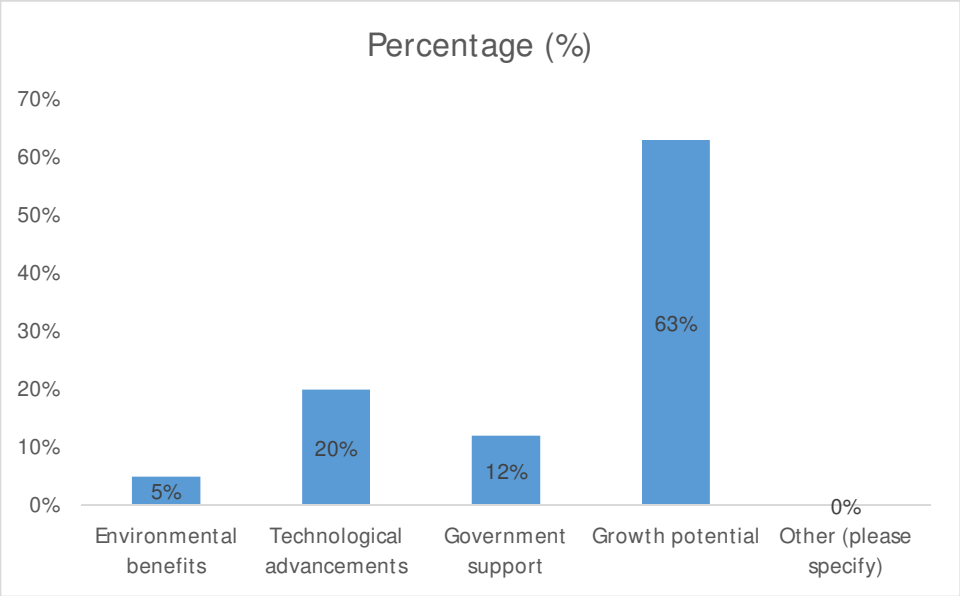
The chart indicates that 36% of investors believe EV stocks are significantly overvalued, reflecting concerns about high valuations. 30% see them as fairly valued, suggesting some believe prices align with fundamentals. 19% of respondents feel EV stocks are undervalued, indicating optimism

3) *Chart 3- Regarding Expectations for Future Growth Potential of the EV Industry*



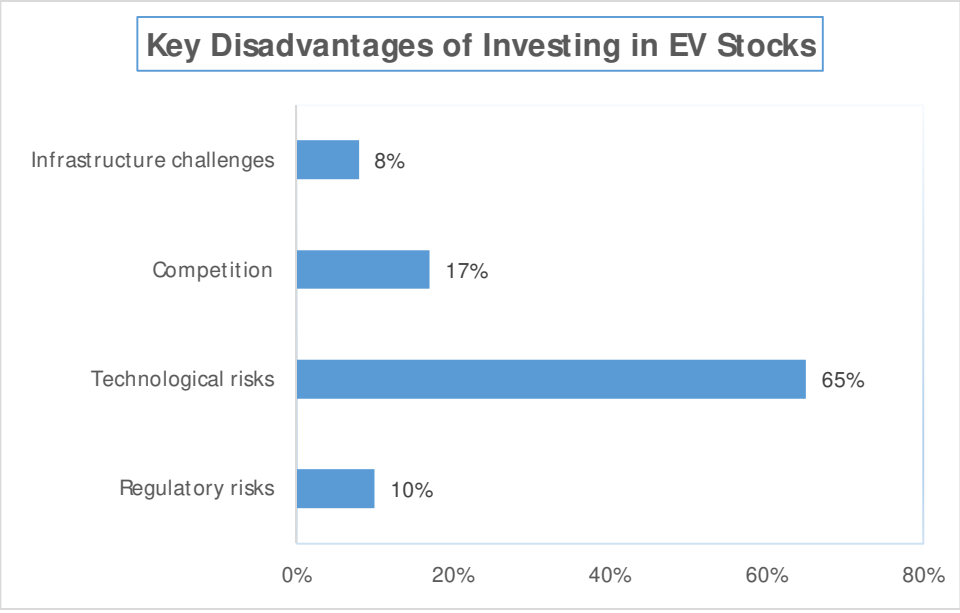
The survey data reveals that most investors (42%) have optimistic expectations for the future of the electric vehicle (EV) industry, anticipating continued rapid growth. A significant portion (28%) expects moderate growth, indicating some cautious optimism. However, 15% foresee a slowdown or stagnation in the industry, suggesting concerns about potential challenges

4) Chart 4- Regarding Key Advantages of Investing in EV Stocks



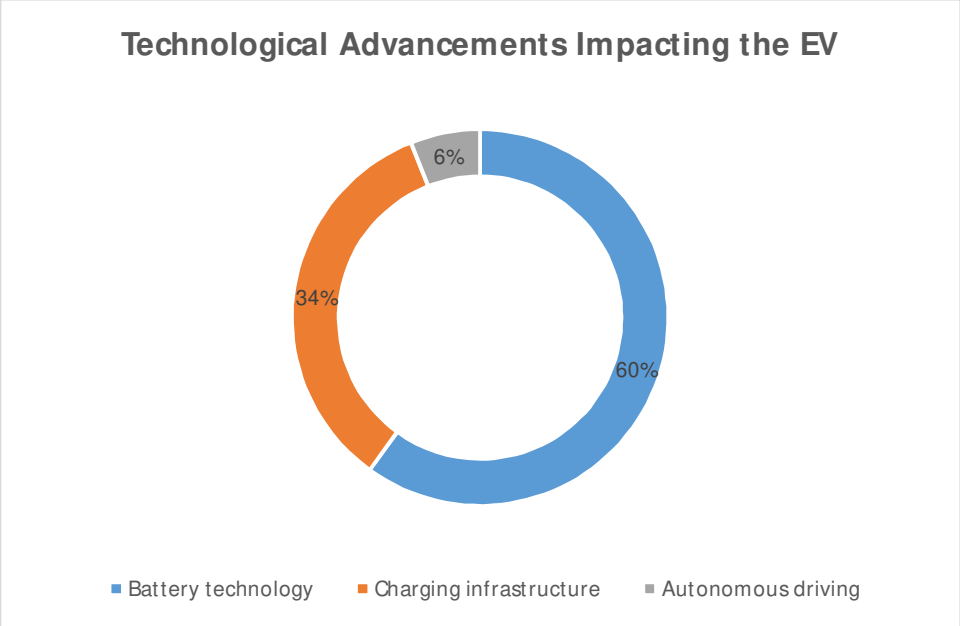
The survey results indicate that investors view growth potential as the most significant advantage of investing in the EV industry, with 63% of respondents highlighting it. Technological advancements also play an important role, with 20% recognizing their importance.

5) Chart 5- Regarding Main Disadvantages of Investing in EV Stocks



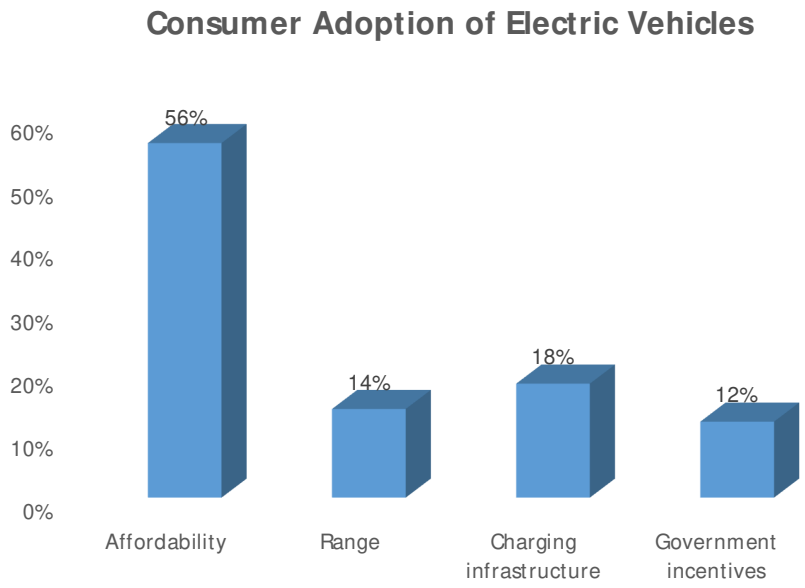
The study shows that technological risks are the biggest concern for investors in the EV industry, with 65% of respondents identifying them as a key disadvantage. Competition is also a concern for 17% of investors, indicating some apprehension about market dynamics

6) *Chart 6- Regarding Technological Advancements Impacting the EV Industry*



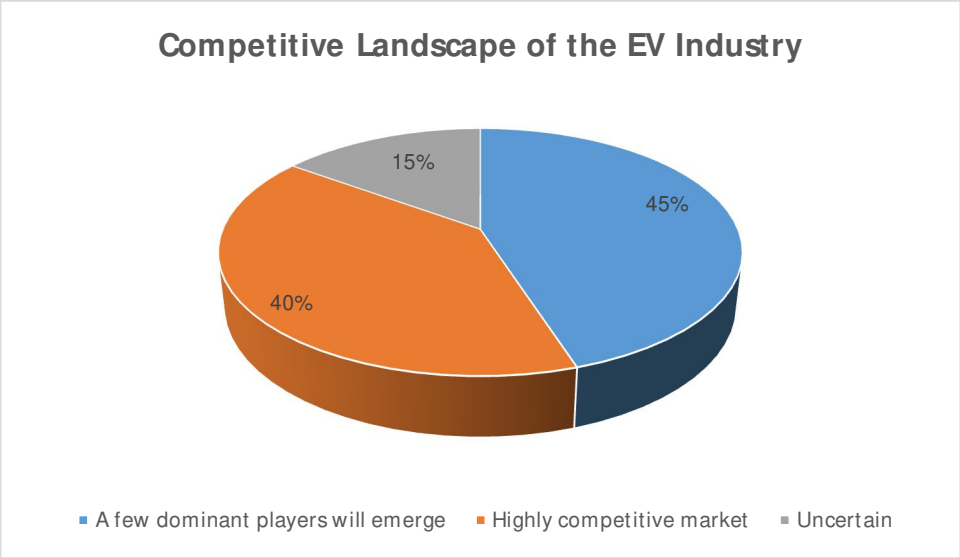
The survey results show that battery technology is seen as the most significant technological advancement impacting the EV industry, with 60% of respondents emphasizing its importance. Charging infrastructure follows closely with 34%, reflecting the crucial role it plays in supporting EV adoption.

7) *Chart 7- Regarding Factors Driving Consumer Adoption of Electric Vehicles*



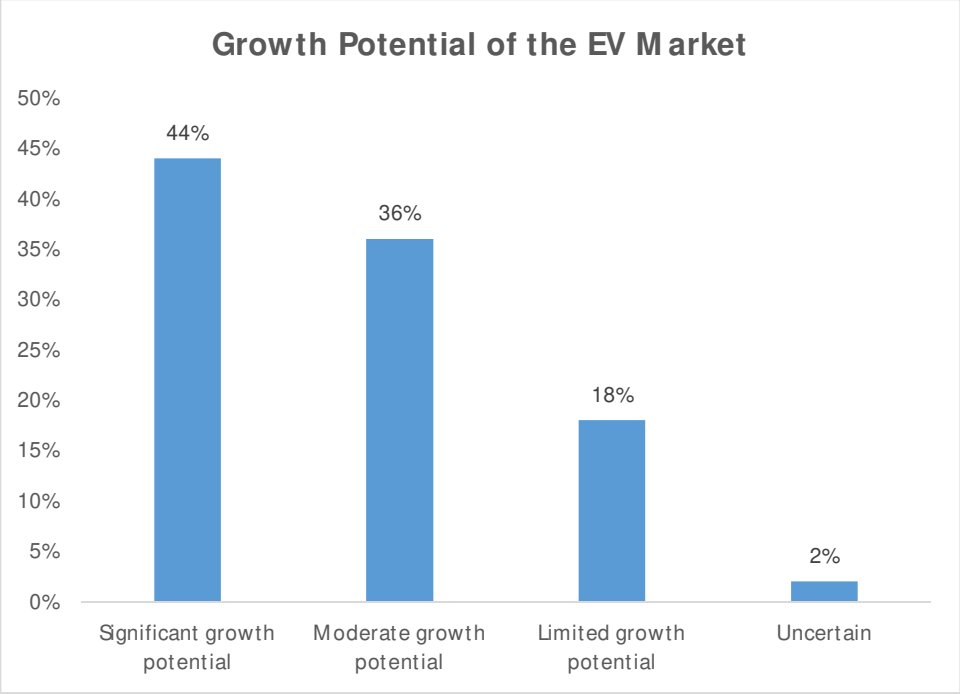
The survey results indicate that affordability is the most important factor driving consumer adoption of electric vehicles, with 56% of respondents citing it as a key consideration**.** Charging infrastructure also plays a significant role, with 18% recognizing it as a driver for adoption.

8) Chart 8- Regarding Assessment of the Competitive Landscape of the EV Industry



In assessing the competitive landscape of the EV industry, the majority of respondents showed confidence that a few dominant players would emerge, with 45% supporting this view. Another 40% of respondents believed the EV market would remain highly competitive, suggesting a balanced outlook between the potential for market leaders and sustained competition.

9) Chart 9- Regarding Growth Potential of the EV Market in Emerging Economies



A substantial 44% of respondents believe that emerging economies present significant growth potential for the EV market, driven by factors such as expanding infrastructure, supportive government policies, and increasing environmental awareness. Another 36% expect moderate growth, reflecting a cautiously optimistic outlook

VI. SECONDARY DATA ANALYSIS AND FINANCIAL METRICS

Table-1 showing – PE and PB Ratios

Company	PE Ratio	PB Ratio
Olectra Greentech Ltd	55.4	15.4
Sona BLW Precision Forgings Ltd	35.6	8.2
Wardwizard Innovations	22.7	12.4
Servotech Power Systems Ltd	46.2	46.2
Amara Raja Energy & Mobility	3.75	3.75

The analysis reveals that companies like Olectra Greentech and Servotech Power Systems have high PE ratios (55.4 and 46.2, respectively), suggesting investor optimism or speculative overvaluation. Amara Raja's lower PE ratio (3.75) indicates a more conservative valuation.

Table-2 showing EV/EBIT Ratio and Intrinsic Value

Company	EV/EBIT Ratio	Intrinsic Value	Market Price
Olectra Greentech Ltd	90.4	828.17	1720
Sona BLW Precision Forgings Ltd	56.5	343.77	633.55
Wardwizard Innovations	46.2	23.95	43.85
Servotech Power Systems Ltd	213	31.22	177
Amara Raja Energy & Mobility	19.8	1213	1331

High EV/EBIT ratios for companies like Servotech (213) and Olectra Greentech (90.4) may indicate speculative valuation trends. Disparities between intrinsic values and market prices, such as for Olectra, suggest potential overvaluation.

Table-3 showing Free Cash Flow (FCF) Analysis

Company	Cash from Operations	Fixed Assets Purchased	FCF
Olectra Greentech Ltd	143	-79	64
Sona BLW Precision Forgings Ltd	693	-320	373
Wardwizard Innovations	-63	-7.55	-70.55
Servotech Power Systems Ltd	-1	-24.94	-25.94
Amara Raja Energy & Mobility	1314	-442	872

Companies with positive FCF, like Amara Raja (872), demonstrate financial stability, while those with negative FCF, like Wardwizard (-70.55), highlight potential cash constraints.

VII. FINDINGS

Key findings indicate a mix of speculative overvaluation and varying financial health across EV companies. High PE and PB ratios highlight optimism but also speculative risks. Intrinsic value disparities and negative FCF among some companies suggest caution. High growth expectations drive valuation premiums, yet some EV companies struggle to align valuations with revenue and cash flow performance.

1) High PE Ratios: EV stocks show elevated Price-to-Earnings (PE) ratios, with some stocks like Sona BLW Precision Forgings Ltd reaching a PE ratio of 56.5, compared to an industry average of around 15-20. This high PE indicates that market valuations for EV companies often reflect future growth potential rather than current earnings. Such elevated ratios underscore investor optimism but also suggest overvaluation risks.
2) High PB Ratios: The Price-to-Book (PB) ratios for companies like Servotech Power Systems Ltd, with a PB ratio of 46.2, and Wardwizard Innovations & Mobility Ltd at 12.4, indicate that market values far exceed their book values. This substantial divergence points to inflated market enthusiasm, as PB ratios above 3-5 are typically considered high. The elevated PB ratios across EV companies reflect a premium placed on growth potential but may not align with current fundamentals.
3) Short-term Investment Horizons: Among surveyed investors, 44% focus on short-term gains (less than one year), 33% on medium-term (1-3 years), and 23% on long-term (3+ years). This high short-term focus implies a speculative trend, where investor behavior may contribute to the inflated stock valuations, especially when driven by immediate returns rather than long-term growth.
4) High Portfolio Allocation in EV Stocks: 47% of investors allocate 20-30% of their portfolio to EV stocks, demonstrating a significant sector commitment. This high allocation percentage reflects confidence in EVs as a transformational investment, though it also introduces risks if the sector faces valuation corrections or fails to meet growth expectations.
5) Strong Growth Expectations: According to primary survey data, 42% of investors expect rapid growth in the EV industry, while 28% anticipate moderate growth. This strong demand-driven outlook contributes to higher valuations but could also lead to overvaluation if actual industry growth doesn't align with these expectations.
6) Low Intrinsic Value Alignment: Calculated intrinsic values for several EV stocks, such as Olectra Greentech Ltd, with an intrinsic value of 828.17 against a current market price of 1720, reveal a significant divergence from market valuations. This misalignment suggests that prices may be driven more by market sentiment than by intrinsic financial metrics, increasing the risk of price correction if growth expectations aren't met.
7) Negative Free Cash Flow (FCF) for Some Companies: Companies like Servotech Power Systems Ltd show negative Free Cash Flow (FCF) at -25.94, which reflects operational cash constraints. Negative FCF indicates that these companies may need additional external financing to sustain growth, highlighting financial risks in cash flow sustainability without meeting revenue expectations.
8) Positive FCF in Established Firms: Companies such as Amara Raja Energy & Mobility Ltd have a positive FCF of 872 (calculated from operating cash flow of 1,314 and capital expenditure of 442), indicating a robust cash flow position. Positive FCF enables these companies to reinvest in growth, highlighting their potential stability relative to newer EV market entrants with cash flow constraints.
9) Mixed Profitability Growth: EV companies exhibit diverse profitability growth, with Olectra Greentech Ltd at 23.73% and Sona BLW Precision Forgings Ltd at 26.44%, both above traditional industry averages of approximately 15-20%. However, others, like Servotech Power Systems Ltd, report negative profitability growth at -15.51%, indicating that while some firms excel, others may face challenges converting potential into profit.
10) High Capital Expenditure (CAPEX): Companies like Sona BLW Precision Forgings Ltd exhibit substantial CAPEX of 320, impacting FCF and short-term financial performance. Such high CAPEX can weigh on financial health, especially if the returns on these investments do not materialize quickly, underscoring the importance of revenue growth to justify high expenditures.
11) High Investor Expectations: Survey data reveals that 63% of investors cited growth potential as a key driver of EV stock investments, while 42% expected rapid growth in the sector. This sentiment may contribute to inflated valuations, as investor confidence in the sector's growth potential fuels capital inflow.
12) Inconsistent Intrinsic Value Assessments: Intrinsic values for companies like Wardwizard Innovations & Mobility Ltd (with intrinsic value 23.95 vs. market price 43.85) suggest potential overvaluation. Many EV companies show similar discrepancies, indicating that current valuations may be inflated relative to actual earning potential, as assessed through intrinsic valuation methods.
13) Speculative Behavior Impact: The combination of 47% of investors allocating 20-30% of their funds to EV stocks and 44% holding short-term investment horizons points to a speculative trend. High allocation to EVs within a short-term framework may add volatility to the stock market, further increasing the risk of overvaluation if growth expectations are not fulfilled.
14) Limited Revenue Performance Relative to Expectations: Despite the high valuations, some EV companies show slower-than-expected revenue growth, raising concerns about their ability to justify market prices through actual earnings. This

misalignment between revenue performance and valuation poses a risk, especially for companies where market expectations are based on rapid revenue growth that may not yet be realized.

VIII. CONCLUSION

The EV stock market is shaped by a complex interplay of valuation dynamics, investor behavior, financial metrics, emerging market trends, and technological advancements. While high valuations persist due to strong growth expectations, concerns about speculative investment and financial metric applicability remain relevant. Additionally, government policies and innovations continue to play a crucial role in shaping the industry's future. Understanding these factors is essential for making informed investment decisions in the evolving EV landscape.

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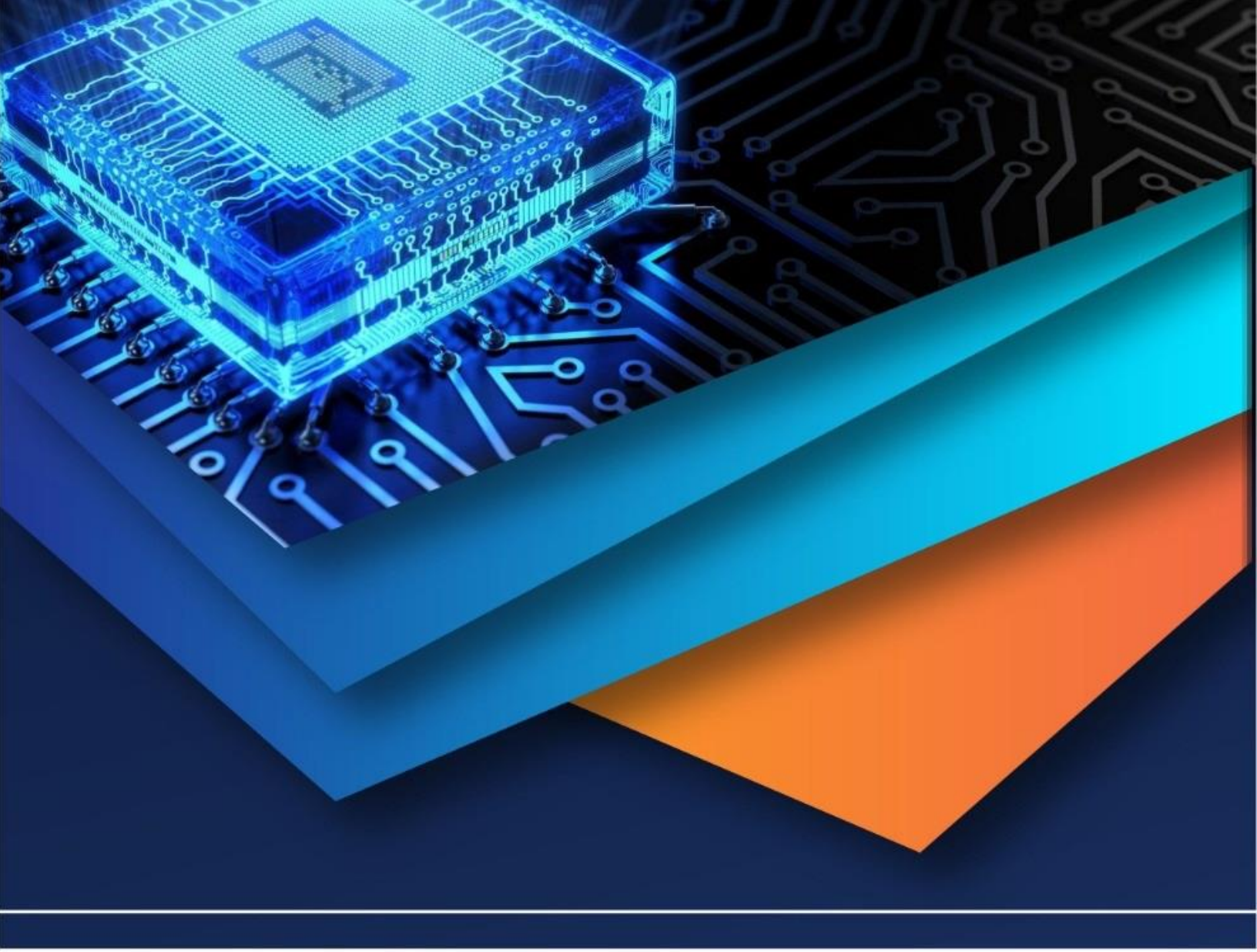

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