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Case Study on Intel's Stock Investment: Is it Still Worth to Invest in Intel Stock?

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Abstract
The case study analysis had been focusing on expanding the understanding on the Intel's stock investment where the current business of Intel had been facing many challenges from the industry as well as the recent economy. The dominant of Intel's business had been threatened by the rising competitors which put the investors in doubt on the decision in investing in Intel's stock (INTC). Therefore, this study had been motivated to investigate the worthiness of the investment return from the Intel's stock investment. Based on the reflection of the literature review, the ideal model to include for the comparative analysis had target the comparison drawn against the market index as well as the CAPM estimation model. With this, the quantitative analysis method had been put into the practice where the comparative analysis method will assist the study to explore the quantitative data based on the five years' historical performance from 2018 to 2022 for the Intel's stock return, NASDAQ market return as well as the expected return derived from the CAPM. The findings of the study had provided strong suggestion on the highlight for the underperformance for the Intel's stock price over the past five years' trend. This is because the return of Intel's stock is significantly lower in comparison against the market return of NASDAQ and the expected return by CAPM. In short, the investment for Intel may not be worthy for the current timeline as the investors may experience higher risk of the Intel's stock investment which is not reasonably compensate by the higher premium return. Therefore, the investment for Intel may not be recommended to the investors as investors should seek for other alternative investment opportunity.

Keywords- Intel, NASDAQ market index, CAPM, stock return, comparative analysis.

INTRODUCTION

The stock price of a publicly traded company is its current market value per share in the stock market exchange. The stock market price is the amount at which buyers and sellers are willing to exchange ownership in the company (Javanmard & Hasani, 2017). Several factors can influence the price of a company's stock, including the company's financial performance, market trends, the state of the global economy, and the mood of investors. Factors that affect the value of a stock include changes in the company's earnings and dividends as well as supply and demand in the market (Grnholdt et al., 2015).

Since investors' returns and earnings in a company's stock are directly tied to its price performance, both up and down, stock performance is a crucial metric for investors (Altig et al., 2020). So, the market price of a stock is a measure of the wealth of stock market investors because it reflects the value of the company and the stock. Investment in stocks, with earnings

coming from dividends and capital gains, is a relatively straightforward game for those who understand the basics within the concept of investment (Alsabban & Alarfaj, 2020).

It is common practice for investors to estimate their return on the risk they take by combining the risk they are willing to take with the return on the stock market. This would imply that investors should contribute more money if there was a higher expected return (Vinodkumar & AlJasser, 2020). This means that the evaluation of market risk is increasingly used as a yardstick against which to measure the potential for profit. With the reference value of 1 representing the market risk, Beta will take its place as the definitive value representing the measurement of market risk (Spelta et al., 2020). The Capital Asset Pricing Model (CAPM) is widely used by investors for analyzing potential stock investments because it provides a common model for estimating return. This will allow you to adjust your risk tolerance in relation to the return offered by the stock performance, as well as provide close analysis on the comparison towards the current market performance (Bhuva, Mankad & Bhatt, 2017).

Although it is possible to compare market index performance as representing overall market performance, the future of individual stock performance remains as subjective manner. A market index's performance may be skewed by the inclusion of high- and low-performing stocks that collectively have little bearing on the market's overall performance (Vinodkumar & AlJasser, 2020). While the Capital Asset Pricing Model (CAPM) does provide estimates of expected returns, which are used as a benchmark by investors when making important stock-buying decisions, it does not, however, ensure that those returns will actually be realized (Wibowo & Darmanto, 2020) This statement of the problem prompted further investigation into the feasibility of assessing market performance and CAPM estimation.

The research study had been driven to explore the performance of the Intel’s stock investment as the company of Intel remained as one of the big names in the corporation world with long success track that convince major investors and stakeholders. However, the recent competition in the microchip industry had saw the struggle of the powerhouse to the recent uprising companies including companies like AMD, Micron, Microchip as well as the potential new entries for the industry. The current pressure for Intel had put many doubts into the question of the investment in the stock market where the well-known Intel’s stock may no longer become the preference choice of stock investment among the investment decision for the investors. However, the outlook had not provide any concrete evidence on the potential return and performance of the Intel’s stock price leading to the motivation to conduct this current topic of interest. With this, the research objective for the research had been drawn to investigate the worthiness of the Intel’s stock investment for the future investors.

With this, the research question will be raised with three separate focal area of study where the first research question will address "How is the stock performance of Intel compared against the NASDAQ market return?". This will aid in exploring the study's potential in terms of the correlation and trend of the market and the stock assessment inside the overall performance. Furthermore, the second research question was raised, which asked, How is the stock performance of Intel compared against the CAPM estimation model?”. Whereas the third research inquiry will raise the issue on "What is the outlook for Intel’s stock investment in the future?". This will provide vital advice for investors to understand whether Intel’s stock will

be viewed as a solid stock investment preference based on the results of the comparability study versus market performance as well as the risk and return calculation via the CAPM assessment.

LITERATURE REVIEW

The stock price behavior had brought the definition on the understanding of the variables that inspire the movement of the stock price causing up and down pressure resulting to stock price fluctuation (Adeyeye, Aluko & Migiro, 2018). It is customary to classify the stock price as uncertain because there is no certain outcome on the stock price anticipation due to several external elements' surroundings (Abdullahi, 2020). This will emphasize the need of measuring the risk and return for the stock price in order to understand stock price behavior, particularly for investors making large investment decisions. The stock price behavior is frequently utilized to translate stock performance that is out of sync with business performance on the company organization (Adeyeye, Aluko & Migiro, 2018). For example, during the Great Depression, the financial crisis in 2008 saw a significant drop in the majority of stock values due to the recession of the economy, putting the entire business market in peril due to inability to commit further revenues during the period (Ruhani, Ahmad & Islam, 2018).

A market index, often known as a stock market index, is a statistical measure of the performance of a specific group of stocks or the overall performance of a stock market (Vintila, Gherghina & Toader, 2019). A market index is typically calculated by taking a weighted average of the underlying stock values. Market indices give investors and analysts a picture of the overall market's performance and serve as a standard against which to compare the performance of individual equities or investment portfolios (Alsabban & Alarfaj, 2020). The S&P 500, Dow Jones Industrial Average, Nasdaq Composite, and Russell 2000 are some of the most well-known market indices. These indices monitor the performance of a diverse set of corporations from various sectors, industries, and market capitalizations (Vasileiou, 2021).

However, the previous study found considerable discrepancy when it came to using the market index as a reference indication to anticipate the stock price performance of particular stocks. Previous research revealed that some individual stocks did not share the same direction of correlation with the market index, resulting in a distinct influence on stock performance when compared to market index performance (Alsabban & Alarfaj 2020). According to a recent study, the Covid-19 pandemic had a significant impact on the majority of businesses, resulting in a significant reduction in stock prices around the world (Vasileiou, 2021). Yet, data from stock performance revealed that some companies in the healthcare and technology industries showed a negative link with the direction of the market index performance (Vasileiou, 2021). This would provide the inverse concept of projecting stock performance during a pandemic, when the reference on the decrease in the market index had been demonstrated not to represent the entire performance of the particular stock's performance (Al-Awadhi et al., 2020).

Several perspectives have been expressed on a comparable issue of interest in connection to the relationship of the performance of the market index and the stock price. According to the findings of a different study, Jin (2016), the findings revealed a considerable positive correlation shared between individual stock success and total market index performance. The study's findings had drawn a majority in the overall understanding of stocks within the stock market, with the positive correlation shared posing different Pearson Correlation Coefficients,

indicating that the difference in the comparison of stock price and market index performance had been different in demonstrating the strength of the positive correlation (He at al., 2020). The strength of the positive correlation will define the understanding on the stock price movement to show the closeness of the business impact towards the current market with high positive correlation strength, while the stock is not highly affected by changes in the economic condition with low positive correlation strength (Chien et al., 2015).

According to the present research, the CAPM estimation model will become the primary application for calculating the projected return for individual stocks based on the evaluation of market risk in Beta (Wahyuny & Gunarsih, 2020). The Beta has evolved into an accurate indicator of market risk, with the value of Beta representing the degree of representation of market risk in an individual stock. The greater the value of Beta, the higher the expectation of return due to the higher risk bearing by the investors, leading to the notion of risk and return in the investment to be applied to stock investing (Vergara-Fernández, Heilmann, & Syzmanowska, 2023). Based on earlier research, the CAPM had provided effective estimation to investors in predicting the future growth and return for the stock, which had become the typical analysis for stock market investing. For example, the CAPM estimation will provide an assessment of the risk compensation needed for the stock in order to establish a baseline for investors to make sound investment decisions (Vinodkumar & AlJasser, 2020).

But, the risk of uncertainty had been posed the possibility of a difference in the outcome of the return and risk obtained from an individual stock (Chia, Liew & Rowland, 2020). Previous research have revealed that particular stocks have varying exposure in terms of risk and return level, making it difficult to provide an accurate calculation of the expected return, resulting in disparities between the expected and actual return of the stock investment (Wibowo & Darmanto, 2020). Despite the uncertainty, the previous study suggested that stocks that outperform the designated expected return derived from the estimation model will be regarded as the higher preference for investment purposes among investors because the higher return is rewarded with the risk bearing of the stock investment, making it a worthy investment option (Vinodkumar & AlJasser, 2020). Yet, this could be a very subjective judgment in which the performance of the stock varies with various factors, making it difficult to estimate the stock's performance in the future despite the guidance from an estimation model such as CAPM (Bhuva, Mankad & Bhatt, 2017).

The lack of case study analysis on a particular Intel stock was discovered during preliminary research for the preceding study, revealing a gap in the literature review that was filled by the present investigation and providing academics with a new and useful body of knowledge. In addition, the current study will appear to provide new insight for the study to understand the gap that exists for the academic, allowing the study to provide substantial evidence on the performance gap of individual stock study, by comparing stock performance to market index performance and conducting a CAPM estimation analysis. This realization became the impetus for the present investigation, which was conducted for the benefit of financiers and academics.

METHODOLOGY

Since the data for this study will be numerical, a quantitative methodology was selected for the current study as the quantitative data analysis will provide the fitting analysis for the data input

(Sharela, 2016). Depending on the nature of the research problem at hand, the quantitative analysis study will serve as a solid foundation for collecting data and drawing meaningful conclusions (Apuke, 2017). Besides the quantitative study allow the study to focus on the longer timeline for the study. For this case study analysis, we will use data for the stock price of Intel (INTC) over the period of five years, from 2018 to 2022, as our focal point population. The purpose of this five-year trend illustration is to evaluate the stock's Beta value in relation to the market's performance over the last five years (Vinodkumar & AlJasser, 2020).

The study relies on data from the secondary data market, with input based on Intel's stock price history. The data comes from publicly available online sources including the source like Yahoo Finance and Investing.com. There may be savings in both time and cost during the research data collection phase by using a secondary source of information which would put the overall data collection process to be more efficient (Cooper & Schindler, 2014). The research period will focus on historical period of five years, which is sufficient to collect and analyze enough data to calculate the stock's Beta value for the individual stock (Vinodkumar & AlJasser, 2020). The collection of the data input between stock performance, market performance, and CAPM computation will become more relevant to the study within a five-year comparison timeframe (Apuke, 2017).

The quantitative study relied on comparative analysis, which served as a framework for comparing the quantitative data used in the study against predetermined criteria (Sekaran & Bougie, 2016). The comparative analysis's benefits lie in the fact that it paves the way for quantitative research that compares large data differences objectively in order to draw conclusions that help researchers accomplish their objective and aim of the study (Cooper & Schindler, 2014).

The quantitative comparative analysis in the present study will center on two major components. As a first step, the research will evaluate how Intel's stock price growth compare up against the growth of the NASDAQ market index. Further insight into the growth trend and pattern of both variables will be gained through a correlation analysis (Sekaran & Bougie, 2016). Next, the study will center on the capital asset pricing model (CAPM) estimate to derive the return for the expected return for the stock, where the expected return will be drawn for the comparative analysis against the actual growth for the stock performance of Intel over the last five years (Wahyuny & Gunarsih, 2020). Therefore, the data outcome will be defined by the comparative analysis in order to provide an appropriate reflection on the research question posed at the conclusion of the research study.

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DATA ANALYSIS

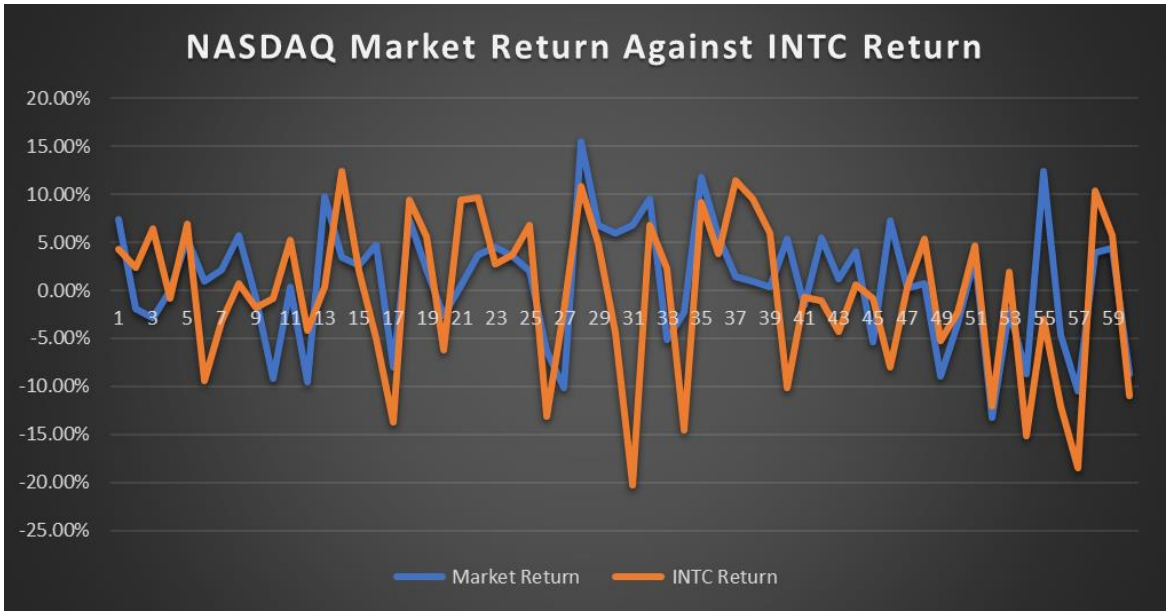

Figure 1: NASDAQ Market Return Against INTC Return

The Figure 1 had introduced the graph on the NASDAQ market return against INTC return which provide the virtual overview on the comparison of the performance of the Intel's stock against the market overall performance. Based on the outlook in Figure 1, the INTC return appear to be fluctuating inconsistently and not within the boundaries of the NASDAQ market return. This could provide the indication that the stock of Intel had been sharing a higher fluctuation and movement which posed higher uncertainty for the stock performance in the market.

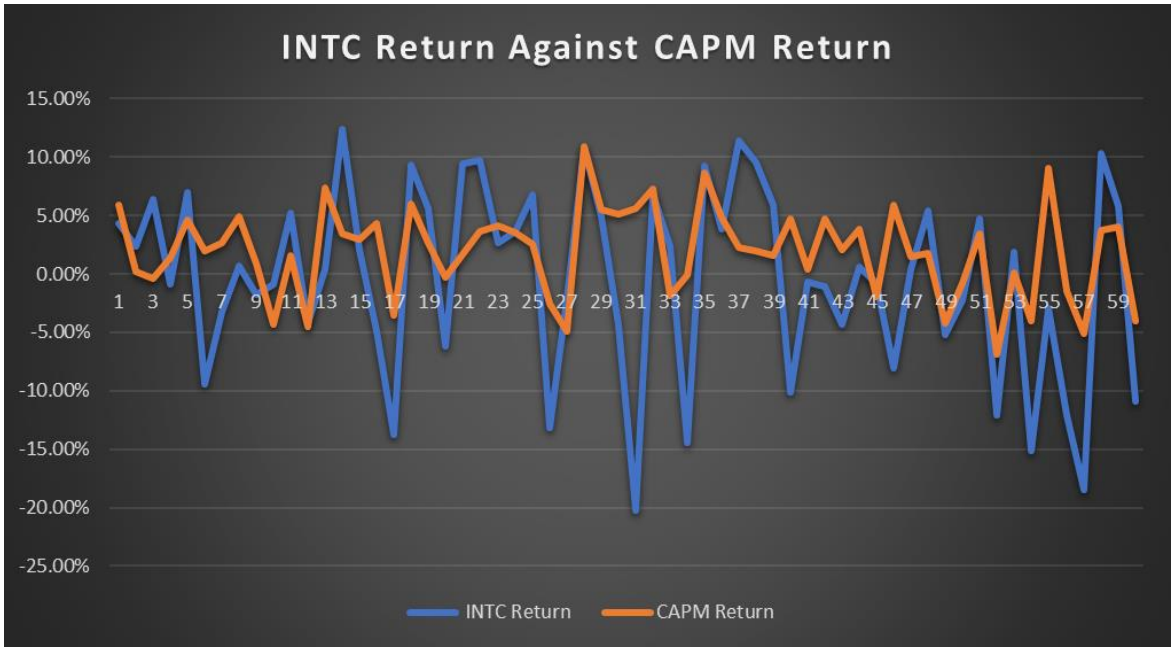

Figure 2: INTC Return vs CAPM Return

On the other hand, the Figure 2 had been demonstrating the comparison on the performance for the growth and return for the stock of Intel against the expected return computed through the CAPM theory. AS refresher, CAPM is the common model that is applied for estimation to compute the expected return on a stock investment based on the level of market risk which is measured by Beta. Just for the reference, the Beta for Intel's stock was calculated based on the 5 year's monthly return which recorded the Beta value of 0.6186. Referring back to the result in Figure 2, the INTC return appear to be highly fluctuate exceeding the CAPM return as derived from the estimation model. This observed that INTC stock had been frequently performing outside the expectations on the return within the market risk level. In other words, the risk and return for INTC stock is not aligned with the estimation derived from the CAPM return. With this, it can be assumed that the risk for the INTC stock could be higher than the market estimation which will not become a favourable factor among the investors.

Table 1: Correlation Analysis

	Market Return	*INTC Return*	*CAPM Return*
Market Return		0.481256568	0.999999620
INTC Return	0.481256568		0.481250407
CAPM Return	0.999999620	0.481250407	

The correlation analysis is part of the quantitative study that helps to understand the correlation relationship between two identifiable variables. With reference to Table 1, the correlation analysis had been conducted between the three variables which include the NASDAQ market return, INTC return as well as CAPM return. Based on the output in Table 1, the INTC return seems to share a moderate positive correlation with both the NASDAQ market return as well as CAPM return with both recording approximately 0.4813 under the Pearson Correlation Coefficient. On the other hand, the NASDAQ market return and the CAPM return had shared very strong positive correlation with the Pearson Correlation Coefficient recording almost at 1. This significantly means that the CAPM expected return had been predicting the similar return with the current growth of the market. For Intel's stock, the positive correlation existed but does not appear to be significant in terms of the strength of the correlation showing that INTC return may likely to deviated from the market performance as well as from the expected return with the CAPM estimation.

Table 2: Average 5 Years' Return

Variable	NASDAQ Market Return	INTC Return	CAPM Return
5 Years' Average Return	0.89%	-0.37%	1.91%

Based on the requirement in the comparative analysis, the average of the historical five years' return will be analyzed through the compare on the average performance of the investment return. Based on the information in Table 2, the average five years' return for NASDAQ market return, INTC return and CAPM return had been gathered to provide the visibility on the overall investment performance. The result in Table 2 had showed that average CAPM return appear to be higher than the market return which showed that the stock of Intel should be rated as

higher risk which should be compensated with higher return. Unfortunately, INTC return appeared to be negative which signals the potential negative growth for the stock price based on the previous five years performance. Despite the average negative return from INTC stock, the NASDAQ market return appear to still be positive even with the fall of the NASDAQ market index during the period of the pandemic in the year 2020. This had provided a clear summary that the INTC stock had failed to perform up to the expected return where the high risk appears to observe the uncertainty which is on the negative side of the impact towards the INTC stock performance.

Based on the result and findings through the comparative analysis, the outcome for the research had been achieving the objective of the study to develop the answer to the research questions raised in the beginning stage of the research study. The INTC stock had been comparing with the NASDAQ market performance as well as the CAPM estimation where the results draw out obvious observation where the INTC stock appear to be underperforming against the market expectations. First, the NASDAQ performance appear to still record positive average return despite the pressure on the downturn of the market index in NASDAQ in the period of the year 2020 due to the pandemic. However, the INCT stock had only recorded a negative average which induce the interpretation of the overall negative growth on the return for the stock based on the five years stock investment performance. On the other hand, the CAPM had been utilized as the projection model to compute the expected return based on the market risk of Beta for INTC stock where the expected returns had shown significantly higher than the INTC actual return. This had shown that the investors will likely to engage higher risk bearing in the INTC stock investment while earning lower return from the level of risk for the investment. However, the low Beta value did not represent lower risk as the uncertainty for INTC stock is higher which provide higher possibility for the stock to underperform at times especially with the current unconditional and instability of the financial market and economic situation.

CONCLUSION

The research had arrived at the outcome of the study to resolve the problem statement arises from the initial stage of the study leading to the conclusion of the objective of research. Based on the first objective of the study, the study is aimed to investigate the worthiness of the Intel's stock investment for the future investors. This will lead to the reflection of the research questions that are being raised to conclude the significant outcome of the research study.

Based on the first research question, the target question had addressed "How is the stock performance of Intel compared against the NASDAQ market return?" which triggered the comparison of the performance between the INTC stock and NASDAQ market return. The results in the findings had provide solid evidence to point out the unfavorable performance in the INTC stock's return where the average return had shown negative overall growth compare with NASDAQ overall market return which remained consistent achieving positive average for the past five years performance.

The second research question had put up the study to focus on the addressed of "How is the stock performance of Intel compared against the CAPM estimation model?" which draw the need for the comparative analysis between the expected return derived from the CAPM model against the actual return recorded in INTC. Despite the low Beta value for INTC stock, the

level of uncertainty had still occurred with major discrepancies observed between the expected return from CAPM against the actual return of INTC stock. The five years' expected return from the CAPM expected return had achieved significantly higher positive return where the INTC stock had been achieving negative return over the five years' growth. This showed that potentially higher risk incurred for the INTC investment, but the risk is not compensated with the return from the INTC stock return.

Moving to the third research question, "What is the outlook for Intel's stock investment in the future?" had been addressed based on the problem statement. The most important consideration for the investors is to know whether an investment is still worthy to proceed with as investors had been actively seeking for higher return and growth for the investment. As mentioned earlier, Intel had been the top companies in the industry, but the business had been suffering multiple business and market challenges which affect the confidence of the investors. Therefore, the recommendation on the investment advice will be crucial for the investor's future planning. To summarize the outcome of the study, the findings had significantly agreed that the INTC stock had failed to achieve the expectations of the market based on the previous five years' performance. The return of Intel's stock had not only record lower than the NASDAQ market return and the expected return derived from the CAPM estimation model but also record negative return for the previous investors. Despite the low Beta value, the high uncertainty in the growth of the INTC stock making it not favourable for investment consideration among the investors for the current timeline. The investors probably can revisit some time in the future on the investment decision for INTC once the business achieved higher and stable growth in the business industry.

SUGGESTION FOR FUTURE RESEARCH

The outcome of the study had been achieved which is to investigate the worthiness of the stock investment on Intel company, but the outcome of the research does not stop future research with similar areas and interest to be developed for the benefits of the academic as well as external parties.

The research study had been focusing on the case study of Intel stock which had provide significant insight based on the conclusion of the study. However, this study is mainly focusing on the historical data performance with the application of the comparative analysis on the market index as well as applying the logic from the CAPM computation. The study can be extended in applying the econometrics and finance model to predict the future growth of INTC stock which could provide better sense of understanding on the expectations for the future performance of INTC stock.

Besides, the study had been company focus based on the current case study analysis where the study can provide the wider focus on the industry to understand how well the INTC stock performance fare against the other competitors in the similar market. This is important not only for investors but as well as other stakeholders to understand the business positioning of Intel in the industry. This will be significant for the study to express the potential outlook for the business moving forward in the competitive industry.

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