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## **A Study of Portfolio Analysis and Selections for Investments with Reference to the Indian Information Technology (IT) Industry**

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Abstract:

The stock exchange offers free share transfers in addition to continuously evaluating the market's traded stocks. The goal of the current study is to investigate the risk and return analysis of a few Indian stocks. Risk is the possibility of variations in real return. Return is the increase in investment value. By reviewing the return on their portfolio, an investor may assess the financial performance of an investment. This article's primary goal is to examine the investor in order to choose an appropriate portfolio of securities. The information technology (IT) sector is the largest service sector and plays an important part in the economy; it also has the second greatest weightage of 14.70 percent in the NIFTY 50. This is a sector that is growing at a rapid pace and setting new records for offering services all over the world; soon, its market capitalization will surpass that of the banking industry.

Keywords : IT Industry, selections and Investment Decision, Portfolio Analysis

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### **1. Introduction**

A market where a variety of securities are traded includes the stock market. These securities include equity shares, debentures, bonds, insurance products, mutual funds, etc. In this market, existing securities are mostly exchanged. The Bombay Stock Exchange, which was founded in 1875, is the oldest stock exchange in Asia and is located in India. The Native Stock and Share Brokers Association served as its first name. The Indian stock market has developed into one of Asia's most active and effective stock markets today. As far as operating efficiency is concerned, the Indian market currently complies with international norms. It would be instructive to comprehend the history and expansion of the Indian stock market in this setting. With the exception of the founding of the Bangalore Stock Exchange in 1957, the number of stock exchanges stayed essentially stable for over three decades, from 1947 to 1977. The phrase "investment" may refer to a variety of activities, but they all have the goal of "employing" the funds over time in order to increase the investor's wealth. Investment funds originate from savings, loans, and already-owned assets. A portfolio is a collection of financial instruments including stocks, bonds, and money market instruments. Portfolio creation is the act of combining many broad asset types to achieve the best return with the least amount of risk.

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### **2. Objective of Study**

1. To choose the optimum securities portfolio
2. To make the portfolio selection process explicit
3. To assess the risk and profitability of a sample of equity scripts
4. To assist the investor in choosing a successful portfolio of securities

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### **3. Statement of the problem**

Every security has a risk factor as its foundation. This research aims to determine the return and risk associated with various Information Technology (IT) shares listed on the Indian stock market (NSE). There is an inverse relationship between risk and return. When the expected return is large, so is the risk that goes along with it. One may make logical decisions about the investment in the company to make by understanding the risk and return characteristics.

### 4. Data Analysis and Interpretation

#### Nifty market index return

OPENING YEAR	OPENING PRICE	CLOSING YEAR	CLOSING PRICE	RETURN
2018	10,531.70	2019	10,881.70	3.216409
2019	10,881.70	2020	12,202.15	10.82145
2020	12,202.15	2021	13,996.10	12.8175
2021	13,996.10	2022	17,387.15	19.5032
2022	17,387.15	2023	18,131.70	4.106344

Table 1

#### Calculation of rate of return

$$\text{Rate of return} = \frac{(\text{closing price} - \text{opening price}) * 100}{\text{closing price}}$$

#### 1. TATA CONSULTANCY SERVICES (TCS)

##### Calculation of rate of return

OPENING YEAR	OPENING PRICE	CLOSING YEAR	CLOSING PRICE	RETURN
2018	1344.9	2019	1905	29.4015748
2019	1905	2020	2170	12.21198157
2020	2170	2021	2879	24.62660646
2021	2879	2022	3744	23.10363248
2022	3744	2023	3265	-14.67075038
				Σ R = 74.67304493

Table 2

##### CALCULATION OF STANDARD DEVIATION

OPENING YEAR	OPENING PRICE	CLOSING YEAR	CLOSING PRICE	RETURN (R)	R- $\bar{R}$	(R- $\bar{R}$ ) <sup>2</sup>
2018	1344.9	2019	1905	29.4015748	14.46697	209.2931
2019	1905	2020	2170	12.21198157	-2.72263	7.41270006
2020	2170	2021	2879	24.62660646	9.691997	93.93481506
2021	2879	2022	3744	23.10363248	8.169023	66.73294484
2022	3744	2023	3265	-14.67075038	-29.6054	876.4773033
				Σ R = 74.67304493		
				$\bar{R} = 14.93460899$		1253.850863

Table 3

Interpretation: Average rate of return per year of 5 year is  $\bar{R} = \Sigma R/N = 14.93460899$

#### CALCULATION OF STANDARD DEVIATION

$$\bar{R} = \Sigma R/n, \frac{74.67304493}{5} = 14.93460899, \quad \Sigma (R-\bar{R})^2 = 1253.850863$$

$$\text{STANDARD DEVIATION} = \sqrt{\frac{\Sigma (R-\bar{R})^2}{n}} = 15.83572457$$

#### CALCULATION OF BETA (β)

YEAR	market return(x)	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>	security return (y)	Y- $\bar{Y}$	(Y- $\bar{Y}$ ) <sup>2</sup>	(X- $\bar{X}$ )(Y- $\bar{Y}$ )
2018-2019	3.216409201	-6.876571283	47.28723262	29.4015748	14.46697	209.2931	-99.4831217
2019-2020	10.8214536	0.728473112	0.530673075	12.21198157	-2.72263	7.41270006	-1.98336087
2020-2021	12.81749916	2.724518676	7.423002017	24.62660646	9.691997	93.93481506	26.40602813
2021-2022	19.50319633	9.410215842	88.55216219	23.10363248	8.169023	66.73294484	76.87227429
2022-2023	4.106344138	-5.986636347	35.83981475	-14.67075038	-29.6054	876.4773033	177.2365204
		Σ(X- $\bar{X}$ ) <sup>2</sup>	179.6328846				
Σ x =		50.46490242		Σ y =		74.67304493	Σ (X- $\bar{X}$ )(Y- $\bar{Y}$ ) = 179.0483403
$\bar{X}$ =		10.09298048		$\bar{Y}$ =		14.93460899	

Table 4

$$\text{Beta } (\beta) = \frac{\text{Co Variance } \Sigma(X-\bar{X})(Y-\bar{Y})}{\text{Variance } \Sigma(X-\bar{X})^2} = \frac{179.0483403}{179.6328846} = 0.996745895$$

**SHARPE RATIO** :  $\frac{\bar{R}_p - R_f}{SD}$       Average return = 14.93460899  
 Standard deviation = 15.83572457  
 Risk free rate (India 1 Year Government Bond) = 6.771

$$\text{Sharpe ratio} = \frac{14.93460899 - 6.771}{15.83572457} = 0.515518501$$

Interpretation: the sharpe's ratio of stock is 0.515518501

**Calculation of rate of return**

OPENING YEAR	OPENING PRICE	CLOSING YEAR	CLOSING PRICE	RETURN	
2018	520	2019	661	21.33131619	
2019	661	2020	733.6	9.896401309	
2020	733.6	2021	1258.95	41.72921879	
2021	1258.95	2022	1890	33.38888889	
2022	1890	2023	1513	-24.91738268	
				Σ R	81.4284425

**Table 5**

**CALCULATION OF STANDARD DEVIATION**

OPENING YEAR	OPENING PRICE	CLOSING YEAR	CLOSING PRICE	RETURN	R-R	(R-R) <sup>2</sup>
2018	520	2019	661	21.33131619	5.045628	25.458359
2019	661	2020	733.6	9.896401309	-6.38929	40.822991
2020	733.6	2021	1258.95	41.72921879	25.44353	647.37323
2021	1258.95	2022	1890	33.38888889	17.1032	292.51946
2022	1890	2023	1513	-24.91738268	-41.2031	1697.6931
				Σ R=	81.4284425	
				R̄ =	16.2856885	2703.8671

**Table 6**

INTERPRETATION : Average rate of return per year of 5 year is  $\bar{R} = \Sigma R/N = 16.2856885$

**CALCULATION OF STANDARD DEVIATION**

$$\bar{R} = \Sigma R/n, \frac{81.4284425}{5} = 16.2856885, \quad \Sigma (R-\bar{R})^2 = 2703.867122$$

$$\text{STANDARD DEVIATION} = \sqrt{\frac{\Sigma (R-\bar{R})^2}{n}} = 23.25453557$$

**CALCULATION OF BETA (β)**

YEAR	market return(x)	X-X̄	(X-X̄) <sup>2</sup>	security return (y)	Y-Ȳ	(Y-Ȳ) <sup>2</sup>	(X-X̄)(Y-Ȳ)
2018-2019	3.216409201	-6.876571283	47.28723262	21.33131619	5.045628	25.458359	-34.69661847
2019-2020	10.8214536	0.728473112	0.530673075	9.896401309	-6.38929	40.822991	-4.654423923
2020-2021	12.81749916	2.724518676	7.423002017	41.72921879	25.44353	647.37323	69.32137348
2021-2022	19.50319633	9.410215842	88.55216219	33.38888889	17.1032	292.51946	160.9448073
2022-2023	4.106344138	-5.986636347	35.83981475	-24.91738268	-41.2031	1697.6931	246.6678035
		Σ(X-X̄) <sup>2</sup>	179.6328846				
Σ x=	50.46490242			Σ y=	81.4284425	Σ(X-X̄)(Y-Ȳ)=	437.5829419
X̄=	10.09298048			Ȳ=	16.2856885		

**Table 7**

$$\text{Beta } (\beta) = \frac{\text{Co Variance}}{\text{Variance}} = \frac{\Sigma(X-\bar{X})(Y-\bar{Y})}{\Sigma(X-\bar{X})^2} = \frac{437.5829419}{179.6328846} = 2.435984607$$

**SHARPE RATIO :**  $\frac{\bar{R}_p - R_f}{SD}$  Average return = 16.2856885  
 Standard deviation = 23.25453557  
 Risk free rate (India 1 Year Government Bond)= 6.771  
 Sharpe ratio =  $\frac{16.2856885 - 6.771}{23.25453557} = 0.409154097$

Interpretation: the sharpe's ratio of stock is 0.409154097

**3. HCL TECH**

**Calculation of rate of return**

OPENING YEAR	OPENING PRICE	CLOSING YEAR	CLOSING PRICE	RETURN	
2018	442.63	2019	482.5	8.263212435	
2019	482.5	2020	572	15.64685315	
2020	572	2021	943	39.34252386	
2021	943	2022	1315	28.28897338	
2022	1315	2023	1039	-26.56400385	
				Σ R=	64.97755898

**Table 8**

**CALCULATION OF STANDARD DEVIATION**

OPENING YEAR	OPENING PRICE	CLOSING YEAR	CLOSING PRICE	RETURN	R-R	(R-R) <sup>2</sup>
2018	442.63	2019	482.5	8.263212435	-4.7323	22.394657
2019	482.5	2020	572	15.64685315	2.651341	7.029611
2020	572	2021	943	39.34252386	26.34701	694.16504
2021	943	2022	1315	28.28897338	15.29346	233.88997
2022	1315	2023	1039	-26.56400385	-39.5595	1564.9553
				Σ R=	64.97755898	
				R̄ =	12.9955118	2522.4346

**Table 9**

INTERPRETATION : Average rate of return per year of 5 year is  $\bar{R} = \Sigma R/N = 12.9955118$

**CALCULATION OF STANDARD DEVIATION**

$$\bar{R} = \Sigma R/n, \frac{64.97755898}{5} = 12.9955118, \quad \Sigma (R-\bar{R})^2 = 2522.434558$$

$$\text{STANDARD DEVIATION} = \sqrt{\frac{\Sigma (R-\bar{R})^2}{n}} = 22.46078609$$

**CALCULATION OF BETA (β)**

YEAR	market return(x)	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>	security return (y)	Y- $\bar{Y}$	(Y- $\bar{Y}$ ) <sup>2</sup>	(X- $\bar{X}$ )(Y- $\bar{Y}$ )
2018-2019	3.216409201	-6.876571283	47.28723262	8.263212435	-4.7323	22.394657	32.54199388
2019-2020	10.8214536	0.728473112	0.530673075	15.64685315	2.651341	7.029611	1.931430886
2020-2021	12.81749916	2.724518676	7.423002017	39.34252386	26.34701	694.16504	71.78292643
2021-2022	19.50319633	9.410215842	88.55216219	28.28897338	15.29346	233.88997	143.9147745
2022-2023	4.106344138	-5.986636347	35.83981475	-26.56400385	-39.5595	1564.9553	236.8284342
		$\Sigma(X-\bar{X})^2$	179.6328846				
$\Sigma x =$	50.46490242			$\Sigma y =$	64.97755898		
						$\Sigma(X-\bar{X})(Y-\bar{Y}) =$	486.9995599

Table 10

Beta (β) =  $\frac{\text{Co Variance}}{\text{Variance}} = \frac{\Sigma(X-\bar{X})(Y-\bar{Y})}{\Sigma(X-\bar{X})^2} = \frac{486.9995599}{179.6328846} = 2.711082444$

**SHARPE RATIO :**  $\frac{\bar{R}_p - R_f}{SD}$  Average return = 12.9955118  
 Standard deviation = 22.46078609  
 Risk free rate (India 1 Year Government Bond)= 6.771

Sharpe ratio =  $\frac{12.9955118 - 6.771}{22.46078609} = 0.277127959$

Interpretation: the sharpe's ratio of stock is 0.277127959

4. TECH MAHINDRA

**Calculation of rate of return**

OPENING YEAR	OPENING PRICE	CLOSING YEAR	CLOSING PRICE	RETURN
2018	500	2019	715	30.06993007
2019	715	2020	764.5	6.474820144
2020	764.5	2021	973.05	21.43260881
2021	973.05	2022	1791.5	45.68518002
2022	1791.5	2023	1018	-75.98231827
		$\Sigma R =$		27.68022077

Table 11

**CALCULATION OF STANDARD DEVIATION**

OPENING YEAR	OPENING PRICE	CLOSING YEAR	CLOSING PRICE	RETURN	R- $\bar{R}$	(R- $\bar{R}$ ) <sup>2</sup>
2018	500	2019	715	30.06993007	24.53389	601.91156
2019	715	2020	764.5	6.474820144	0.938776	0.8813004
2020	764.5	2021	973.05	21.43260881	15.89656	252.70077
2021	973.05	2022	1791.5	45.68518002	40.14914	1611.9531
2022	1791.5	2023	1018	-75.98231827	-81.5184	6645.2434
				$\Sigma R =$	27.68022077	
				$\bar{R} =$	5.536044153	9112.6901

Table 12

INTERPRETATION : Average rate of return per year of 5 year is  $\bar{R} = \Sigma R/N = 5.53604415$

**CALCULATION OF STANDARD DEVIATION**

$\bar{R} = \Sigma R/n, \frac{27.68022077}{5} = 5.536044153, \quad \Sigma (R-\bar{R})^2 = 9112.690149$

STANDARD DEVIATION =  $\sqrt{\frac{\Sigma (R-\bar{R})^2}{n}} = \sqrt{\frac{9112.690149}{5}} = 42.69119382$

**CALCULATION OF BETA (β)**

YEAR	market return(x)	X- $\bar{X}$	(X- $\bar{X}$ ) <sup>2</sup>	security return (y)	Y- $\bar{Y}$	(Y- $\bar{Y}$ ) <sup>2</sup>	(X- $\bar{X}$ )(Y- $\bar{Y}$ )
2018-2019	3.216409201	-6.876571283	47.28723262	30.06993007	24.53389	601.91156	-168.709
2019-2020	10.8214536	0.728473112	0.530673075	6.474820144	0.938776	0.8813004	0.683873
2020-2021	12.81749916	2.724518676	7.423002017	21.43260881	15.89656	252.70077	43.31049
2021-2022	19.50319633	9.410215842	88.55216219	45.68518002	40.14914	1611.9531	377.812
2022-2023	4.106344138	-5.986636347	35.83981475	-75.98231827	-81.5184	6645.2434	488.0208
		$\Sigma(X-\bar{X})^2$	179.6328846				
$\Sigma x =$	50.46490242			$\Sigma y =$	27.68022077		
$\bar{X} =$	10.09298048			$\bar{Y} =$	5.536044153		$\Sigma(X-\bar{X})(Y-\bar{Y}) =$ 741.1182

Table 13

Beta (β) =  $\frac{\text{Co Variance}}{\text{Variance}} = \frac{\Sigma(X-\bar{X})(Y-\bar{Y})}{\Sigma(X-\bar{X})^2} = \frac{741.1181707}{179.6328846} = 4.125737736$

**SHARPE RATIO :**  $\frac{\bar{R}_p - R_f}{SD}$  Average return = 5.536044153  
 Standard deviation = 42.69119382  
 Risk free rate (India 1 Year Government Bond)= 6.771

Sharpe ratio =  $\frac{5.536044153 - 6.771}{42.69119382} = -0.028927648$

Interpretation: the sharpe's ratio of stock is -0.028927648

5. WIPRO

Calculation of rate of return

OPENING YEAR	OPENING PRICE	CLOSING YEAR	CLOSING PRICE	RETURN
2018	235.05	2019	250.88	6.309789541
2019	250.88	2020	247	-1.570850202
2020	247	2021	385.85	35.98548659
2021	385.85	2022	718.3	46.28289016
2022	718.3	2023	392.75	-82.88987906
			Σ R=	4.117437026

Table 14

CALCULATION OF STANDARD DEVIATION

OPENING YEAR	OPENING PRICE	CLOSING YEAR	CLOSING PRICE	RETURN	R-R	(R-R) <sup>2</sup>
2018	235.05	2019	250.88	6.309789541	5.486302	30.099511
2019	250.88	2020	247	-1.570850202	-2.39434	5.7328526
2020	247	2021	385.85	35.98548659	35.162	1236.3662
2021	385.85	2022	718.3	46.28289016	45.4594	2066.5573
2022	718.3	2023	392.75	-82.88987906	-83.7134	7007.9277
				Σ R=	4.117437026	
				R̄ =	0.823487405	10346.684

Table 15

INTERPRETATION : Average rate of return per year of 5 year is  $\bar{R} = \Sigma R/N = 0.82348740$

$$\bar{R} = \Sigma R/n, 4.117437026 = 0.823487405, \Sigma (R-\bar{R})^2 = 10346.68357$$

$$\text{STANDARD DEVIATION} = \sqrt{\frac{\Sigma (R-\bar{R})^2}{n}} = \sqrt{\frac{10346.68357}{5}} = 45.48996279$$

CALCULATION OF BETA (β)

YEAR	market return(x)	X-X̄	(X-X̄) <sup>2</sup>	security return (y)	Y-Ȳ	(Y-Ȳ) <sup>2</sup>	(X-X̄)(Y-Ȳ)
2018-2019	3.216409201	-6.876571283	47.28723262	6.309789541	5.486302	30.099511	-37.7269
2019-2020	10.8214536	0.728473112	0.530673075	-1.570850202	-2.39434	5.7328526	-1.74421
2020-2021	12.81749916	2.724518676	7.423002017	35.98548659	35.162	1236.3662	95.79952
2021-2022	19.50319633	9.410215842	88.55216219	46.28289016	45.4594	2066.5573	427.7828
2022-2023	4.106344138	-5.986636347	35.83981475	-82.88987906	-83.7134	7007.9277	501.1615
		Σ(X-X̄) <sup>2</sup>	179.6328846				
	Σ x=	50.46490242		Σ y=	4.117437026		
	X̄=	10.09298048		Ȳ=	0.823487405		Σ(X-X̄)(Y-Ȳ)= 985.2726

Table 16

$$\text{Beta } (\beta) = \frac{\text{Co Variance}}{\text{Variance}} = \frac{\Sigma (X-\bar{X})(Y-\bar{Y})}{\Sigma (X-\bar{X})^2} = \frac{985.2726395}{179.6328846} = 5.484923551$$

$$\text{SHARPE RATIO : } \frac{R_p - R_f}{SD} \quad \text{Average return} = 0.823487405$$

$$\text{Standard deviation} = 45.48996279$$

$$\text{Risk free rate (India 1 Year Government Bond)} = 6.77$$

$$\text{Sharpe ratio} = \frac{0.823487405 - 6.771}{45.48996279} = -0.130743404$$

Interpretation: the sharpe's ratio of stock is -0.130743404

Rate of return of portfolio

Stocks	Return
WIPRO	0.823487405
TECH MAHINDRA	5.536044153
TCS	14.93460899
INFOSYS	16.2856885
HCL TECH	12.9955118
	Σ R= 50.57534084

Table 17

Standard deviation of portfolio

Stocks	Standard deviation	Risk%
WIPRO	45.48996279	30.3809%
TECH MAHINDRA	42.69119382	28.5117%
TCS	15.83572457	10.5760%
INFOSYS	23.25453557	15.5308%
HCL TECH	22.46078609	15.0006%
	Σ SD= 149.7322028	

Table 18

$$\text{Average rate of return} = \Sigma R/N = \frac{50.57534084}{5} = 10.11506817$$

Interpretation: the average return of portfolio is 10.12 for 5 stocks, and better returned gained by Infosys 32.2%.

Standard deviation of portfolio (Table 18)

$$\text{Average rate of SD is} = \frac{149.7322028}{5} = 29.94644057$$

Interpretation: the average rate of standard deviation is 29.946 for 5 stocks and the highest risk is facing stocks is WIPRO (30%)

Beta (β) of Portfolio

SHARPE Ratio of portfolio

Stocks	Beta ( $\beta$ )	RANK	Stocks	Share Ratios
WIPRO	5.485	5	WIPRO	-0.130743404
TECH MAHINDRA	4.126	4	TECH MAHINDRA	-0.028927648
TCS	0.997	1	TCS	0.515518501
INFOSYS	2.436	2	INFOSYS	0.409154097
HCL TECH	2.711	3	HCL TECH	0.277127959

Table 19

Table 20

Interpretation: TCS and INFOSYS gained better rank compare to other stocks on the behalf of beta.

**Interpretation:**The Sharpe ratios of TATA CONSULTANCY SERVICES (TCS) are linking specific stocks to high risk and return bereavement. INFOSYS has the highest return, followed by TATA CONSULTANCY SERVICES, HCL TECH, TECH MAHINDRA, and WIPRO, according to the aforementioned figures. The most systematic risk is carried by WIPRO, followed by TECH MAHINDRA. These two companies also have the largest beta and a negative Sharpe ratio, which means they do not outperform a risk-free or minimum return. Currently, stocks are unable to deliver a sufficient return to beat inflation.

## 5.FINDINGS

- ❖ Using NIFTY 50 firms listed on NSE, it is unquestionably achievable to create an ideal portfolio.
- ❖ Companies respond negatively to market returns because their average return is negative.
- ❖ Among the 5 equities, INFOSYS produced the highest return percentage (32%).
- ❖ Investors are encouraged to purchase and hold equity shares in INFOSY, TATA CONSULTANCY SERVICES (TCS) and HCL TECH given the other 2 stocks' losses and inconsistent profitability.
- ❖ The risk for WIPRO is 30%, which is significant.
- ❖ The ranks linked to e changes or the residual variance that has an impact on the portfolio are also used to calculate the excess beta.
- ❖ The cut-off rate is also used to identify the companies with greater portfolio weight.
- ❖ The excess return to beta ratio reveals the stock's performance and aids in the elimination of inefficient enterprises.
- ❖ The risk connected with its stock is not the same for the entire five years of data because it varies from day to day, sometimes, monthly, etc.

## 6.Suggestions

- ❖ Stock volatility or fluctuations change over time, as do beta and variance. As a result, investors must eventually keep a steady eye on the market.
- ❖ Stocks with lower beta and better returns must be picked for investing.
- ❖ Investors can invest in TCS because of its strong returns and low beta value, as well as their ability to manage risk.
- ❖ The ideal portfolio is prone to change since the proportion of investment in each security varies over time.
- ❖ Regular market analysis or modifications must be performed in order to profit and limit the implications of incurring losses.
- ❖ Continuous stock review is required, and the portfolio must be changed on a regular basis to keep up with developments.
- ❖ The investor must be aware of the efficacy of securities screening in optimizing portfolio creation.
- ❖ It is strongly advised or guaranteed to invest in these three companies to earn a decent return at the lowest possible risk, and this may or must be repeated on an ongoing basis.
- ❖ Market movements might keep an investor or decision to be taken against securities based on their portfolio weights.
- ❖ Thus, the study helps to understand the concept of optimal portfolio management model by analyzing the performance of the portfolio of the organizations using Sharpe's single index model, and it aids in investigating the unpredictability of different organization stocks in relation to examination with the business sector.
- ❖ The investors who take less risk with minimum returns they can go to the less Beta.

## 7. Conclusion

The research risk return investigation assists the investor in selecting stocks depending on his preferences. This type of research gives data on the performance of various securities in the market in terms of risk and return. The study may be finished for assessing the utility of Sharpe's single index model, which is being undertaken and in accordance with the goal; here the portfolio is constructed with selected companies out of 50 companies enlisted on NSE and it also reports the investor to decide whether he has to buy or not. This approach is extremely useful and realistic in the study of optimum portfolio because revision of the ideal portfolio must be done continually as an ongoing activity to ascertain the exact outcome of the market and the changes in the portfolio. The usage of a cut-off point illustrates how securities over the cut-off point produce a sensible conclusion in terms of returns that may be invested in. The excess beta ratio is also important in weeding out organizations that are inefficient for the research. Thus, the construction of an optimal portfolio for the long run is suited and found to be very useful in determining the causes and changes of various stocks listed along with the changes or volatility in the market, and it also sheds light on the factors that must be considered when investing in the capital market.

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## 8. References

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