



# Development of marketing-driven measure of risk perception

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## Abstract

**Purpose** – The purpose of this paper is to measure the risk perception of the employees in respect of equity shares, from the perspective of elements of marketing mix and to ascertain the degree of influence of elements of marketing mix on equity-related risk perception.

**Design/methodology/approach** – Primary data based on the interview schedule were collected from the employees of Oil India Limited and various tables prepared. For analysis of data, Cronbach's alpha and Friedman test analysis were employed.

**Findings** – Out of the four elements of marketing mix considered in the study, the degree of influence of price driven measure of risk perception is highest and others in order are product, promotion and place driven measure of risk perception, respectively.

**Originality/value** – The paper is the first of its kind and hence original in nature.

**Keywords** Employee behaviour, Shares, Risk assessment, Marketing mix, Equity capital

**Paper type** Research paper

## 1. Introduction

Risk is a concept that denotes a potential negative impact to an asset or some characteristic of value that may arise from some present process or future event. Risk perception is the subjective judgment that people make about the characteristics and severity of a risk. Risk perception examines the opinions of people when they are asked to evaluate hazardous or risky activities, substances and technologies (Slovic, 1987). Perceptions of risk play a prominent role in the various decisions people make like the decision to invest in equity shares. In this paper, the risk perception is measured in the context of equity share investment of the salaried investors.

### *1.1 Risk perception and equity investment*

Investment in equity shares involves certain degree of risk as the return from equity share is not certain. While going for investment in shares, people try to make proper tradeoffs between risks and return (Fischer and Jordan, 2006). Moreover, people are generally risk averse (Kahneman and Tversky, 1979). They like to invest in such instrument, which give higher return for same amount of risk, or same return for less amount of risk. It is found in the earlier research that the people's level of risk perception affects their equity share investment decisions (Singh and Bhowal, 2009).

### *1.2 Marketing of equity shares*

A product is an offering which satisfies the needs and wants of the people to whom it is targeted (Kotler *et al.*, 2006). Hence, equity share is also a product because it satisfies the investment needs of the investors. Shares are intangible rights of ownership over



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the company and these are bought and sold in the market and this requires marketing (Kotler *et al.*, 2006). As equity share is a product the elements of marketing mix are equally applicable to the marketing of equity shares. The success and failure of any public issue of equity share is largely dependent on the brand image of the company, the advertisement for the equity shares, the promotional steps taken by the company, the timings of the issue, etc. (Hong, 2005). Similarly, the trading of the existing shares in the stock exchange also depends on the performance of the company and through the media company releases the information relating to the performance of the company. This helps in maintaining the price of the shares of the company intact and hence the market capitalisation of the company remains intact. One of the main objectives of the financial management function of the company is to keep the market capitalisation of the company intact (Khan and Jain, 2004). All this emphasizes the applications of the principles of marketing management in marketing the equity shares of the company. Therefore, the companies put efforts to market their shares which will help it in building the brand of the company in the stock market and enhance the market capitalisation of the company. So, it is believed that all the 4Ps of the marketing mix (i.e. product, price, place and promotion) is also applicable to the marketing of the equity shares (Kotler *et al.*, 2006).

### *1.3 Equity-related risk perception measurement*

Psychologists are interested in finding ways of measuring perception of risk, since it is an important component in any decision-making process. It has been established from the earlier studies that the risk perception can be managed if one is aware of the various dimensions of risk and the reason for the said level of risk perception (Singh and Bhowal, 2008). The policy makers should try to manage the risk perception of people for implementing various policies (Singh and Bhowal, 2006). This is possible only if one is aware about his/her level of risk perception. There are several studies which have been conducted to measure the risk perception. MacCrimmon and Wehrung (1990) have published a paper where they have devised a tool for measuring risk propensity of the top executives of the top 509 companies in the world. MacCrimmon and Wehrung have measured the risk propensity in three ways:

- (1) measure derived from behaviour in hypothetical, standardized situations framed using a basic risk paradigm that has an underlying theory of risk;
- (2) measures derived from behaviour in naturally occurring risky situations; and
- (3) measures derived from self-reported attitudes towards taking risks.

Sitkin and Weingart (1995) wrote a paper highlighting the determinants of risky decision-making behaviour and the role of risk perceptions. Sitkin and Pablo (1992) published a paper re-conceptualizing the determinants of risky behaviour. There were studies conducted to design the appropriate measure of risk and to establish relation between risks and return (Powers, 2009). Doff (2008) has conducted the study to define business risk and to investigate business risk measurement methodologies. Singh and Bhowal (2010) found that the employees perceive the shares of their own company as less risky than the shares of other company but they have not attempted to measure the level of risk perception. From the above, it is evident that there very few studies conducted to measure the level of risk perception of the employees in respect of equity shares.

So, in the present study, the risk perception of the salaried investors has been measured in respect of equity shares. Equity shares are traded in the market as a product

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as stated in Section 1.3. Therefore, the elements of marketing mix are also applicable in case of equity shares. There are four element of marketing mix as suggested by Philip Kotler which is popularly known as 4Ps of marketing (Kotler *et al.*, 2006). These are product, price, promotion and place. The different features of equity shares with respect to the 4Ps are different.

The risk perception in respect of equity shares may arise out of any of these dimensions. For certain categories of investors product-related features may seems to be risky for example whether it will be able to provide the adequate return or not? Certain categories of investors may consider equity share investment as risky because of the price features of equity shares for example whether the price at which it is purchased is the correct price or there is a possibility of further fall in prices, similarly the promotion and place-related features of equity shares may influence the risk perception in respect of equity shares. The example of promotion features driven risk perception is reporting of scandals in news papers and example of place feature driven risk perception is existence of place of grievance handling related to the disputes related to equity shares.

In this study, several features were identified to describe the product, price, promotion and place features of equity shares. All these items are designed to measure the risk perception arising out of product dimension, price dimension, promotion dimension and place dimension as a latent variable.

## **2. Scope of the study**

The employees of Oil India Limited (OIL) are taken as case for this purpose. The study measures the risk perception in respect of equity shares from the perspective of elements of marketing mix. As stated earlier in this study, only four elements of marketing mix have been considered. The study was done during the time period of 1 April 2007-31 March 2008.

### *2.1 Objectives of the study*

The objective of the study is to identify the level of risk perception arising out of four elements of marketing mix along with the degree of influence of elements of marketing mix on the equity-related risk perception.

### *2.2 Working hypotheses*

In this study, working hypothesis considered is: there is no difference in the degrees of influences of the elements of marketing mix on the risk perception of the employees of OIL in respect of investment in equity shares.

## **3. Methodology of the study**

### *3.1 Population*

All the employees' working in OIL at Duliajan Head Office constituted the population of the study. The size of the population was 8,480.

### *3.2 Sample and sample unit*

Here each employee was considered as the unit of the study. Sample selection was based on simple random sampling basis. Considering the time and resources constraints, the sample size of only 378 employees were finally selected.

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### 3.3 Questionnaire design

After pilot survey and discussions with the employees as well as the people who are experts in this area of research and after reviewing the literature, questionnaire was framed to measure the risk perception of the employees. Several items or statements were generated to measure the overall scores as regards the risk perception from the perspective of four elements of marketing mix stated earlier. In total, 40 items were identified. The first 21 items indicate the product feature of the equity shares, next four items were related to the price features of the equity shares, third nine items were signifying the promotion feature of the equity shares and lastly six items were highlighting the place features of the equity shares. All the items were on a five-point scale and measuring the term risk perception arising out of four dimensions of marketing mix as the latent variable. The overall scores were designed to measure the degree of risk perception of employees arising out of different dimension of marketing mix. The statements with regard to the different items relating to risk perception of equity share investment were as follows.

The first 21 items are related to the product feature driven measure of risk perception. These are as follows:

- Item 1 related to idea about the investment in equity shares.
- Item 2 related to certainty of income.
- Item 3 related to steady income.
- Item 4 related to guarantee of income.
- Item 5 related to guarantee of assured income.
- Item 6 related to the difficulty in calculating income from equity investment.
- Item 7 related to awareness of the complex rules and regulations of equity.
- Item 8 related to the understanding of complex rules and regulations of equity investments.
- Item 9 related to the amount of money required to invest.
- Item 10 related to the certainty of the return of the invested sum.
- Item 11 related to the guarantee of the return of the invested sum.
- Item 12 related to the monitoring of the share market.
- Item 13 related to the time for monitoring the share market.
- Item 14 related to utilizing market information for investment-related decisions.
- Item 15 related to the complexity in share investment.
- Item 16 related to the hassles in investment in share market.
- Item 17 related to the difficulty in monitoring macro economic data.
- Item 18 related to the selection of a company for the investment.
- Item 19 related to the selection of number of equity shares for investment.
- Item 20 related to monitoring the financial and non-financial performance of the company.
- Item 21 related to the fear of to be victimized of fraud committed by others.

The next four items are related to price features driven measure of risk perception:

- Item 22 related to the confidence of investor regarding time and the price at which equity shares are to be bought and sold for a best bargain.
- Item 23 related to de-motivation from the pattern of change in the price of equity shares.
- Item 24 related to the difficulty in tracking the daily price movement of equity shares.
- Item 25 related to understanding the buying and selling price fixation mechanism.

The third sets of items which are nine in numbers are related to promotion features driven measure of risk perception:

- Item 26 related to the education required for investment in equity shares.
- Item 27 related to the opinion of others that investment in equity shares is risky.
- Item 28 related to availability of coaching/counseling/share investors' forum locally.
- Item 29 related to availability of the information/article/papers in vernacular medium regarding the equity share investment.
- Item 30 related to the irregularity of information/article/papers in vernacular medium regarding the equity share investment.
- Item 31 related to the amount of information/article/paper in vernacular medium regarding the equity share investment.
- Item 32 related to equity shares scandals reported in papers.
- Item 33 related to experience of others that they suffer loss in share investment.
- Item 34 related to advice about the investment in equity shares.

The last sets of items are related to place features driven measure of risk perception:

- Item 35 related to local availability of equity shares.
- Item 36 related to the office of the company locally.
- Item 37 related to the integrity of the local agents.
- Item 38 related to grievances handling and redressal procedure and place.
- Item 39 related to the reliability of service of post office/courier service.
- Item 40 related to the confidence about the existence of the company of interest.

Respondents were asked to rate on a scale starting from strongly agree to strongly disagree in a five-point scale. In the questionnaire, some of the items were under reverse scaling method to ensure the accuracy of the response.

### *3.4 Method of data analysis and interpretation*

In the present research work, various tools of statistical analysis, using SPSS statistical software are used. Several tables were prepared. mean value, variance, SD, reliability analysis and Friedman test analysis were done as and when required to arrive at logical conclusion on the sample data. Reliability analysis allows studying the properties of measurement scales and the items that make them up. The reliability analysis procedure calculates a number of commonly used measures of scale reliability and also provides

information about the relationships between individual items in the scale. Alpha (Cronbach) is a model of internal consistency, based on the average inter-item correlation. Nunnally (1978) has indicated 0.7 to be an acceptable reliability coefficient. The Friedman test is the nonparametric equivalent of a one-sample repeated measures design or a two-way analysis of variance with one observation per cell. Friedman tests the null hypothesis that k-related variables come from the same population. For each case, the k variables are ranked from 1 to k. The test statistic is based on these ranks (Sigel and Castellan, 1988).

**4. Findings of the study**

The analysis, findings and interpretations of the study is given in the following paragraphs.

*4.1 Reliability of the scale*

The result of Cronbach’s alpha for the scale used for measuring level of risk perception arising from the elements of marketing mix is given in the Table I.

As the value of Cronbach’s alpha in all the four cases are more than 0.70, so it can be inferred that the items chosen for measuring the four different latent variables are actually measuring those latent variables (Nunnally, 1978).

*4.2 Product driven risk perception measurement*

The item statistics of 21 items are calculated and the results are interpreted using the Table II, which is used for the interpretation of measure of risk perception arising out of different dimensions of marketing mix.

The item statistics of these 21 items are given in Tables III-V, on the basis of their impact on product driven measure of risk perception.

Elements of marketing mix driven measure of risk perception	Value of Cronbach alpha
Product driven risk perception measurement	0.931
Price driven risk perception measurement	0.763
Promotion driven risk perception measurement	0.710
Place driven risk perception measurement	0.818

**Table I.**  
Cronbach’s alpha for the scales measuring 4Ps driven measure of risk perception

**Source:** Compiled from the questionnaire

Mean values	Interpretation of mean values
Less than 3.00	Relatively lower impact on measure of risk perception
Between 3.00 and 3.50	Relatively moderate impact on measure of risk perception
Above 3.5	Relatively higher impact on measure of risk perception

**Table II.**  
Interpretation of individual item mean score

Variables	Mean
Requirement the huge sum of money and not having the same	2.8862

**Table III.**  
Variables which are having relatively lower impact on the product driven measure of risk perception

**Source:** Compiled from the questionnaire

**Table IV.**  
Variables which are having relatively moderate impact on the product driven measure of risk perception

Variables	Mean
Fear of likely to become a victim of fraud committed by others	3.0397
Requirement of daily monitoring of the equity share market and not having the know-how and information from where to get it	3.0476
Idea about the investment in equity shares	3.0608
Not knowing how to utilize share market information for investment-related decision making	3.1455
Certainty of income	3.2063
Complexity of investment in share market	3.2222
Difficulty to select a company for the investment	3.2381
Difficulty to select number of equity shares for investment	3.2831
No guarantee of the return of the invested sum	3.2857
No guarantee of income	3.3016
Not having certainty of the return of the invested sum	3.3968
Complexity to understand the rules and regulations of equity shares investments	3.3995
Not having any steady income	3.4074
Hassles of investment in share market	3.4153
Low awareness of the complex rules and regulations of equity	3.4497

**Source:** Compiled from the questionnaire

**Table V.**  
Variables which are having relatively high impact on the product driven measure of risk perception

Variables	Mean
Difficulty to monitor macro economic data	3.5
Not having any guarantee of assured income	3.5026
Requirement of daily monitoring of the share market and not having time to track and monitor	3.5212
Difficult to calculate income from investment from equity shares	3.5317
Difficult to monitor the financial and non-financial performance of the company	3.545

**Source:** Compiled from the questionnaire

The various scale statistics like mean, variance and SD as a whole of these 21 items are given in Table VI.

The scale contains 21 items. The maximum one respondent can score in each of the items is 5. Therefore, maximum possible score is 105. Similarly, the minimum one respondent can score in each of the items is 1. Therefore, minimum possible score is 21. The interval of score from 21 to 105 was divided into five equal classes to represent five different levels of risk perception. In other words, if the total scores in respect of any respondent lies between 21 and 37.8, the respondent will be considered to have very low level of “product driven risk perception” in respect of equity shares, and so on. Based on the above, following scale has been developed and an interpretation of the scale is done using the Table VII.

The mean value of the product feature related scale statistics is found to be 69.3862 in Table VI, which is within the range of 54.6-71.4, which means that the product

**Table VI.**  
Product feature related scale statistics

Mean	Variance	SD	No. of items
69.3862	235.304	15.33962	21

**Source:** Compiled from the questionnaire

driven measure of risk perception is having moderate level of impact on the overall risk perception in respect of equity shares of the employees of OIL.

*4.3 Price driven risk perception measurement*

The item statistics of four items chosen for measuring price driven risk perception in respect of equity shares are given in the Tables VIII and IX and interpreted using Table II.

It is found that none of variables have relatively lower impact on the price driven measure of risk perception as the mean value of all the variables are more than 3.00.

The various scale statistics like mean, variance and SD as a whole of these four items are given in the Table X.

The scale contains four items. So, the maximum score possible is 20 and minimum score possible is 4. Similar to Table VII and based on the above, the following scale has been developed and interpretations of the scale are given in Table XI.

The mean value of the price feature-related scale statistic is found to be 13.9286 as per Table X which is within the range of 13.6-16.8, which means that the price driven measure of risk perception is having high level of impact on the equity-related risk perception of the employees of OIL.

Scale value	Interpretation of scale value
21-37.8	Very low level
37.8-54.6	Low level
54.6-71.4	Moderate level
71.4-88.2	High level
88.2-105	Very high level

**Table VII.**  
Interpretation of product feature driven risk perception scale value

Variables	Mean
Demotivation coming from pattern of change in the price of equity shares	3.3598
Low confidence regarding time of and the price at which equity shares are to be bought and sold for a best bargain	3.4656
Difficulty to track the daily price movement of equity shares of the companies	3.4894

**Source:** Compiled from the questionnaire

**Table VIII.**  
Variables which are having relatively moderate impact on the price driven measure of risk perception

Variables	Mean
Difficulty to understand the buying and selling price fixation mechanism related to equity shares	3.6138

**Source:** Compiled from the questionnaire

**Table IX.**  
Variables which are having relatively high impact on the price driven measure of risk perception

Mean	Variance	SD	No. of items
13.9286	9.414	3.06822	4

**Source:** Compiled from the questionnaire

**Table X.**  
Price feature related scale statistics

4.4 Promotion driven risk perception measurement

The item statistics of nine individual items considered for measuring promotion driven risk perception are given in Tables XII-XIV and interpreted using Table II.

The various scale statistics like mean, variance and SD as a whole of these nine items are given in Table XV.

As the scale contains nine items, the maximum and minimum possible score is 45 and 9, respectively. Similar to Tables VII and XI, the following scale has been developed and interpretations of the scale values are given in the Table XVI.

The mean value of the promotion feature-related scale statistic is found to be 29.955 as per Table XV, which is within the range of 23.4-30.6 which means that the promotion driven measure of risk perception is having moderate level of impact on the risk perception of the employees of OIL.

**Table XI.**

Interpretation of price feature driven risk perception scale value

Scale value	Interpretation of scale value
4-7.2	Very low level
7.2-10.4	Low level
10.4-13.6	Moderate level
13.6-16.8	High level
16.8-20	Very high level

**Table XII.**

Variables which are having relatively lower impact on the promotion driven measure of risk perception

Variables	Mean
Advice by somebody to investment in equity shares	2.9974

**Source:** Compiled from the questionnaire

**Table XIII.**

Variables which are having relatively moderate impact on the promotion driven measure of risk perception

Variables	
Afraid to invest due to very often equity shares scandals reported in papers	3.1164
Not having sufficient education required for investment in equity shares	3.1772
Others saying that investment in equity shares is risky	3.1878
Seen others to suffer loss in share investment rather than amassing huge money	3.3439
Little availability of the information/article/papers in vernacular medium regarding the equity share investment	3.3915

**Source:** Compiled from the questionnaire

**Table XIV.**

Variables which are having relatively high impact on the promotion driven measure of risk perception

Variables	
Irregular availability of information/article/papers in vernacular medium regarding the equity share investment in papers of vernacular medium	3.5026
Little information/article/paper in vernacular medium regarding the equity share investment in papers of vernacular medium	3.5053
Lack of coaching/counseling/share investors' forum locally	3.7328

**Source:** Compiled from the questionnaire

4.5 Place driven risk perception measurement

The item statistics of six items used for measuring the place driven measure of risk perception are given in Tables XVII-XIX and these are interpreted using the Table II.

The various scale statistics like mean, variance and SD as a whole of these six items are given in Table XX as follows.

Similar to the Tables VII, XI and XVI, the following scale has been developed and interpretations of the scale are given in the Table XXI.

The mean value of the place feature-related scale statistics is found to be 19.1667 which is within the range of 15.6-20.4, which means that the place driven measure of risk perception is having moderate impact on the overall risk perception of employees.

Mean	Variance	SD	No. of items
29.955	28.6	5.34791	9

Source: Compiled from the questionnaire

**Table XV.**  
Promotion feature related scale statistics

Scale value	Interpretation of scale value
9-16.2	Very low level
16.2-23.4	Low level
23.4-30.6	Moderate level
30.6-37.8	High level
37.8-45	Very high level

**Table XVI.**  
Interpretation of promotion feature driven risk perception scale value

Variables	Mean
Doubt regarding the integrity of the local agents	2.9259
Not sure about the existence of the company in which the person is interested	2.9815

Source: Compiled from the questionnaire

**Table XVII.**  
Variables which are having relatively lower impact on the place driven measure of risk perception

Variables	Mean
Service of post office/courier service is unreliable and this influences the decision regarding investment in shares	3.0688
Not availability of equity shares locally	3.2196
In case of grievances, not sure where to register protest and get grievances redressed	3.4074

Source: Compiled from the questionnaire

**Table XVIII.**  
Variables which are having relatively moderate impact on the place driven measure of risk perception

Variables	Mean
Not having office of the company locally	3.5635

Source: Compiled from the questionnaire

**Table XIX.**  
Variables which are having relatively high impact on the place driven measure of risk perception

*4.6 Ranking of risk perception scores arising out of elements of marketing mix (4Ps)*

After ascertaining the level of risk perception arising out of 4Ps, there is a need to test whether the difference amongst product driven risk perception score, price driven risk perception score, promotion driven risk perception score and place driven risk perception score is significant or not. For this purpose, Friedman test is done.

From the Table XXII, it is evident in the sample that price driven measure of risk perception is having highest impact on the overall level of risk perception followed by product driven measure of risk perception and promotion driven measure of risk perception, respectively. Place driven measure of risk perception, given the methodology and test, has got relatively least impact on the overall measure of risk perception.

Since under Friedman test, the calculated  $\chi^2$ -value is 85.576 and Asymp. Significance value (0.00) is less than 0.05(5 per cent level of significance) it can be concluded that the data relating to product driven measure of risk perception, price driven measure of risk perception, promotion driven measure of risk perception and place driven measures of risk perception are not coming from the same population which means that the difference in the risk perception scores arising out of several dimensions of 4Ps is significant (Table XXIII).

**Table XX.**  
Place feature related  
scale statistics

Mean	Variance	SD	No. of items
19.1667	20.855	4.56678	6

**Source:** Compiled from the questionnaire

**Table XXI.**  
Interpretation of place  
feature driven risk  
perception scale values

Scale value	Interpretation of scale value
6-10.8	Very low level
10.8-15.6	Low level
15.6-20.4	Moderate level
20.4-25.2	High level
25.2-30	Very high level

**Table XXII.**  
Table of mean of ranks  
given to the various  
dimension of measuring  
risk perception

	Mean rank
Level of risk perception arising from product dimension	2.55
Level of risk perception arising from price dimension	2.81
Level of risk perception arising from promotion dimension	2.50
Level of risk perception arising from place dimension	2.13

**Source:** Compiled from the questionnaire

**Table XXIII.**  
Friedman test statistics

N	378
$\chi^2$	85.576
Df	3
Asymp. sig.	0.000

**Source:** Compiled from the questionnaire

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## 5. Conclusion

The purpose of this study is to identify the level of risk perception in respect of equity share investment arising out of four elements of marketing mix along with their degree of influence. It is found from the study that out of the four dimensions of marketing mix (product, price promotion and place) considered for the study and their impact on the equity-related risk perception of the employees of OIL, the impact of price feature driven measure of risk perception is highest. Others in order are product driven measure of risk perception, promotion driven measure of risk perception and place driven measure of risk perception. There is high degree of impact of price driven measure of risk perception on the overall equity-related risk perception of the respondents and product feature driven measure of risk perception, promotion feature driven measure of risk perception and place feature driven measure of risk perception are having moderate degree of influence on the overall risk perception in respect of equity shares.

### 5.1 Directions for future research

The present study is an attempt to measure the impact of elements of marketing mix on the risk perception of the employees. In future, study can be made to investigate the impact of 4Ps on the risk perception related to the shares of the own company of the employees and the risk perception in respect of other than own company.

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