

Equity Investment Decisions: Determinants for Retail Investors

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Abstract

Evolution and rationale of management lies in making choices for building the most of resources that are limited in availability. Money is taken as the one amongst the most scarce resources. Therefore, decisions relating to money are taken with extreme caution. Investing is an activity that leads to sacrifice of current consumption of money to some future period with an intention of accumulating some economic value in the meanwhile. Investment in equity has its own specific characteristics. Since individuals differ from each other, retail perspective brings in more complexity to equity investment by adding the element of subjectivity to it. The purpose of this article is to identify variables and their inter-relationships that turn into selection or rejection of equity as an investment avenue by retail investors. It is an attempt to analyze various factors that contribute toward the decision of investing or not investing in equity. Sixteen factors using literature and expert opinion were identified. Interpretive structural modeling (ISM) is applied for developing a generally relevant framework that establishes relationship among these variables. Further, these variables are identified to be operational, strategic, and outcome variables. The developed framework can be used for optimizing the outcome variables for enhancing the investment efficiency.

Keywords

Interpretive Structural Modelling, equity investment, investment decisions, investment efficiency

Introduction

As money is the primary resource that is required to build all other resource, managing financial resources is considered to be one of the crucial tasks at organizational level. Individual's financial management is no exception to this. Analogous to an organization, an individual also has to take financial decisions, investment decisions, and surplus decisions for optimizing its own financial resources. In order to bridge the gap between the financial resources required and available considering present and futuristic needs, investment decisions are crucial. Inefficient investment decisions may lead to deepen this gap wherein good decisions in this regard help in not only narrowing down this gap but also may leave the investor

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with some surplus as well. That is the reason why investors are expected to be very cautious while making investment decisions. Investment as a concept has various dimensions to understand. Maximization of returns is considered as the supreme objective of making investment in order to accumulate the deficient fraction of monetary resources. There are various other objectives also that an investor tries to achieve through investment process. Investment is, therefore, a complex process. This process requires some input variables to enhance the output of the process. This optimization depends upon some other factors that affect the process performance. In general, investment in equity is considered to be a bit more complicated. Input–output relationship of this process is clumsy. For example, minimization of investment risk can act as an objective of investment and simultaneously since equity investment is very dynamic in its returns, hence the so far experience or any specific experience of an investor may change its perception about investing in equity as process output. Retail investors in India are reflected to be the chunk of investors that usually end up making losses out of their investment in this segment as they enter at high valuation and exit at lower levels. These facts originate the requirement of developing a model which may guide the investors to identify the nature of various factors associated with the investment process for retail investors. Following are the variables that are identified as factors influencing investment decisions of individuals.

1. **Macro-economic Environment:** Macro-economic environment is an aggregation of various economic factors including inflation, interest rate, fiscal policy, monetary policy, and so on. Domestic factors were identified to be more impactful in terms of stock market pricing mechanism as well as its return generation process. Industrial production and wholesale price index were found to be major domestic factors to influence stock markets in India (Srivastava, 2010). Relationship amongst the selected macro-economic variables and with the stock market was studied in Indian context using vector error correction model. This study came to a close that inflation is the utmost restraining economic variables for stock market performance in India. Growth in domestic output was found to be its predominant driving force (Naka, Mukherjee, & Tuft, 1998).
2. **Age of Investor:** A study conducted by means of Canadian Survey of Consumer Finance data concluded that in general increase in age lead to an aversion of risk amongst investors (Morin & Suarez, 1983). Another study, conducted to investigate asset allocation and individual risk aversion in a sample of US household by deriving relative risk aversion risk indexes from actual asset allocation observed a decrease in risk aversion with the age up to 65 years followed by a significant increase (Riley & Chow, 1992). Other studies also concluded a relationship between risk aversion and aging of population (Bakshi & Chen 1994; Cohn et al., 1975).
3. **Income of Investor:** Value of money lies in its purchasing power, and investment is a tool to bridge the gap between available monetary resources and required. Based on the capital asset pricing model (CAPM), outcomes of the study indicated a statistically significant relationship between net worth and risk attitude for investor of the age 35 years and more. It is not found to be holding statistical significance for investors of less than 35 years of age (McInish, Ramaswami, & Srivastava, 1993).
4. **Investor's Gender:** Across various real-world provinces, men involve in more risky behaviors in comparison to their female counterparts. In an attempt to understand the impact of gender on investment, data were collected from 182 US students. Research proves that women make less risky investment choices than male investors (Montford & Goldsmith, 2016). A study with a sample size of 200 respondents concludes the significant difference in investment behavior of male and female investors. This study concludes strong risk-taking behavior of men and risk aversion behavior of women (Deo & Sundar, 2015).

5. **Educational Level of Investor:** IQ and stock market participation of retail investors was found to be strongly positively related to each other (Grinblatt, Keloharju, & Linnainmaa, 2011). Linkage between genetic differences among people and their portfolio structure was investigated. This came to a close that personal investment education is correlated with investment knowledge and savings behavior of investors (Cesarini, Johannesson, Lichtenstein, Sandewall, & Wallace, 2010). Professionals were found to exhibit behavior consistent toward myopic loss aversion while comparing them with students (Haigh & List, 2005).
6. **Amount of Investment:** Amount under consideration for making investment should be taken as significant factor that influence the inclusion/exclusion of an asset to/from the portfolio of an investor. Investment amount is expected to influence the perceived risk of investment.
7. **End Objective of Making Investment:** Money is a medium to procure other resources and, hence, considered to be one amongst the most scarce resources because of its limited availability in relation to its multiple usages. Money itself has no value rather value of money reflects in its purchasing power. Therefore, money is accumulated to fulfill certain other objectives of investors. The gap between available and required funds can be bridged through generating returns by way of doing investment. Hence, the end objective of investment becomes significant while making investment decisions. Criticality of achievement of end objective is expected to have a significant impact upon the investment choice of the investor.
8. **Planned Duration for Investment:** The traditional school of thought in management suggests that in case of equity investment, longer the investment horizon more will be the benefits for the investors in form of increasing returns. During an attempt to quantify the risk instigated by burst of a pricing bubble in the stock market in United States, stocks are identified to be more attractive investment avenues to park funds in long term than in short run (Kaliva & Koskinen, 2008). Therefore, planned duration of investment is expected to be a decisive factor of choice of investment avenue by the investor.
9. **Attractiveness of Alternative Use of Money:** Money is either to be spent or saved. Savings usually goes to investment with a specific purpose. Investment usually aims to future consumption for utility maximization. An investor is required to trade-off between consumption and investment. Therefore, alternative use of money becomes an important determinant for investment. If the current consumption is critical over future consumption, funds are likely to be used at present and hence investment decisions get influenced.
10. **Past Experience of Investing in Equity:** It was identified that past investment experience, in terms of return generation results in increasing propensity of selecting risky portfolio (Chou, Huang, & Hsu, 2010). Investment experience is identified to influence investment decision-making process (Corter & Chen, 2006).
11. **Risk Appetite of Investor:** Attitude of investors toward risk found to have significant impact on investment behavior (Campbell, 2006; Grable & Lytton, 2003). Researchers identified that risk tolerance acts as a significant determinant for household investment behavior (Yao, Hanna, & Lindamood, 2004) which further has an implication on the saving behavior of the household (Fisher & Montalto, 2010).
12. **Perceived Risk of Investing in Equity:** The guiding factor of investment is that return on investment is positively correlated with the risk associated with. Individuals with low ability to bear risk are expected to stay away from investing in risky investment options. The CAPM explicitly identifies the systematic element of risk, named as beta. Assumptions, in context of investment decision-making behavior of investors of CAPM on which the theory was laid down were questioned by various researchers. This resulted into identification of certain estimation

problems with beta. During the attempt to identify the way investor treat risk in actual practice, it was recognized that amount of risk to be perceived by the investor is a subjective matter and its subsequent effect on investment behavior also vary from individual to individual. Therefore, it is evident that subjective assessment of risk acts as a significant factor during investment decision process and do not contribute toward estimation of beta (Farrelly & Reichenstein, 1984).

13. Preferred Form of Returns: Form of return varies across various avenues of investment. Periodic return is one form of return wherein investors will keep on enjoying return over the investment tenure since the returns are generated at regular intervals. Another form of return is of capital gain nature. Equity as investment carries both the return components (dividend and market price appreciation), although dominance of capital gain is clearly visible in context of equity. Investment objectives lay down by the investor play a crucial role in regard to investment decisions and required rate of return to achieve those objectives then becomes vital. Therefore, it becomes important to understand what form of return will enable investor to achieve its desired objective.
14. Required Rate of Return Required to Achieve the End Objective: As mentioned earlier that risk perceived by investor impacts investment choice significantly. Therefore, all those factors that contribute toward the risk perceived by investors by investing in respective investment avenues are vital determinants of investment decisions. Studies identified that relationship of expected return to the investors' determined target is important in this regard (Cooley, 1977; Crum, Laughhunn, & Payne, 1981; Gooding, 1975).
15. Required Rate of Return for Compensating Risk: Each rationale investor tries to optimize its investment process by maximizing returns. Greater is the risk of investing, more will be the return demanded for compensate the level of risk. In order to optimize the investment process, return required to compensate the level of risk is imperative for selecting or dropping an investment choice.
16. Estimated Rate of Return: Term "estimated rate of return" here is used in the context the most likely rate of return to be achieved on investment. If estimated rate of return is not in line with required rate of return to compensate risk and the desire rate of return to achieve the end objective.

Research Methodology

Expert opinion and cautious review of literature identify various variables that are deterministic during the process of investment decision making. The available literature explains the significance of identified variables independently since during the decision-making process these variables interact with each other and the mutual impact becomes more complex and crucial to understand. This originates the scope of exploring the mutual linkages for optimizing the investment process. Therefore, primary objective of this article is to draw and develop a model to demonstrate the relationship of various identified variables. This article also attempts to identify these variables as strategic, operational, and performance outcome variables. In order to achieve the desired objectives, interpretive structural modeling (ISM) was used to carry out data analysis. When standalone variables are reviewed independently, each of them seems to carry equal weightage in terms of its respective impact. Moreover, a few of these variables (variables 7, 9, 13, 15, and 16) even sometimes seems to supersede each other. This leads to a scenario of difficulty about estimating the exact problem with holistic perspective. Therefore, for the purpose of identifying

the problem more accurately, these variables are required to look at in relation to each other considering their mutual linkages of direct and indirect nature. ISM sets a hierarchy of these variables by classifying them into strategic, operational, and performance categories. Hence, ISM helps in conceptualization of problem more efficiently (Attri, Dev, & Sharma, 2012). Since equity is a non-conventional investment avenue in Indian context, it leads to a curiosity to understand the investment decision-making process of investing in equity by individuals. The rationale of this research article is to address development of the investment decision making is relevant in order to optimization of the process by maximizing the value of returns. Consequently, it involves using a methodology that supports in ascertaining the structure of the system. ISM facilitates a framework for fitting various variables in a specific order amongst various other elements of a system (Sage, 1977; Singh, Shankar, Narain, & Agarwal, 2003). Due to its certain specific advantages, ISM was used to explore various areas by researchers. Some of the key areas wherein the methodology was used are listed in Table 1.

ISM, like all other tools, requires certain steps to be followed for analyzing data. Following are the required steps for using the methodology:

1. Identification of enablers (determinants of investment decisions by individuals in the context of equity).
2. Development of a structural self-interaction matrix (SSIM) by defining the mutual relationships of identified enablers by expert opinion.
3. Development of a reachability matrix (RM) from SSIM.
4. Identification of existence of transitivity within RM and rationalize its inclusion for finalization of the matrix.
5. Conversion of RM into the conical matrix that represents mutual relationships between enablers into numeric form (0 and 1).
6. Drawing desired levels from the conical matrix.
7. Development of a digraph based on levels drawn from conical matrix after eliminating all indirect linkages between enablers except those that are critical to interpret for model development.
8. Construct the ISM model from the digraph.
9. Evaluating the ISM model for any discrepancy and essential revisions are taken up.

Analysis and Interpretation

Structural Self-interaction Matrix

Various variables that the deterministic in the context whether a retail investor will pick up or drop equity as an avenue were identified from the literature. In order to analyze the impact of these variables on investment decisions, the possibility of contextual relationship between them is required to be evaluated. Consequently, the relationships require to be established to move in the process. Expert panel opinion was used to achieve the same. However, during the expert interaction, some more variables were suggested by panel members. After the rigorous discussion of experts in the domain on the suggested enablers, these were also included in the process as enablers. The association amongst any two variables (signified by i and j) is defined and the flow of relationship is represented by four codes V, A, X, and O in SSIM (Table 2).

Table I. ISM Application Areas

1	Business management	Alawamleh and Popplewell (2011); Kedia (2013)
2	Manufacturing system	Dubey and Ali (2014); Bag and Anand (2014)
3	Supply chain	Ravi and Shankar (2005); Qureshi, Kumar, and Kumar (2007); Parikshit, Shankar, and Baisya (2008); Luthra, Kumar, Kumar, & Haleem (2011); Ravi and Shankar (2005); Qureshi, Kumar, and Kumar (2007); Parikshit, Shankar, and Baisya (2008); Luthra, Kumar, Kumar, & Haleem (2011); Grzybowska (2012)
4	Quality management	Sahney, Banwet, and Karunes (2010); Faisal, Rahman, and Qureshi (2011); Attri et al. (2012)
5	R&D	Jyoti, Banwet, and Deshmukh (2010); Kumar, Khan, and Haleem (2012)
6	Six sigma	Soti, Shankar, and Kaushal (2010)
7	Vendor selection	Mandal and Deshmukh (1994); Pravin, Shankar, and Yadav (2008); Faisal (2010); Ramesh, Banwet, and Shankar (2010); Singh (2011); Bag and Anand (2014)
8	Production planning	Haleem, Sushil, Quadri, and Kumar (2012)
9	Risk management	Gorvett and Liu (2006)

Source: Author's own.

Reachability Matrix

The SSIM matrix is required to convert into an initial RM. This is done by substituting 1s and 0s for each entry of the SSIM. Following are the guiding rules for constructing initial RM:

1. If (i, j) entry in SSIM is V, it leads to (i, j) entry in RM as 1 and (j, i) entry as 0.
2. If (i, j) entry in SSIM is A, it leads to (i, j) entry in RM as 0 and (j, i) entry as 1.
3. If (i, j) entry in SSIM is X, it leads to (i, j) entry in RM as 1 and (j, i) entry as 1.
4. If (i, j) entry in SSIM is O, it leads to (i, j) entry in RM as 0 and (j, i) entry as 0.

On the basis of above rules, initial RM is prepared for the selected variables. Transitivity was identified, rationalized, and incorporated into initial RM to get the final RM.

Table 2. Structural Self-interaction Matrix (SSIM)

Elements	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2
1	V	V	O	O	V	V	O	V	V	O	V	O	O	V	O
2	O	O	O	V	V	V	O	V	V	V	O	O	O	O	
3	O	O	V	V	O	V	O	O	O	O	V	X	O		
4	O	V	O	O	V	V	O	O	O	O	O	O			
5	O	O	O	O	V	V	O	O	O	O	O				
6	O	O	V	V	O	V	V	O	O	O					
7	O	O	V	V	O	O	O	V	V						
8	V	V	X	V	V	A	A	A							
9	O	O	O	O	O	O	O								
10	O	V	O	V	V	V									
11	O	V	O	V	V										
12	O	V	O	V											
13	O	O	O												
14	O	O													
15	O														

Source: Author's own.

Notes: V: To be assigned when variable *i* help in achieving variable *j*.

A: To be assigned when variable *i* help in achieving variable *j*.

X: To be assigned when both variables *i* and *j* help in achieving each other.

O: To be assigned when variables *j* and *i* are not related to each other.

Partitioning the Reachability Matrix

Reachability set and antecedent set are derived for each variable from the final RM. Antecedent set comprises the factor itself and other factors that may influence it. However, reachability set signifies the factor itself and other factors that it can influence. In the next step, intersection from antecedent and reachability sets is derived. First level consists of factors that have identical reachability set and intersection set. In order to derive subsequent levels, variables comprising top level are removed from the process. Similar process is followed to identify variables for next levels and continued till each factor is identified into levels. Digraph and ISM model are developed with the help of these levels. Above process was followed in the current context and eight levels were identified as summarized in Table 3.

Developing a Conical Matrix

For emergence of a conical matrix, factors that are at the same level are put together across the columns and rows of the final RM. First level factors are kept first and following the subsequent levels. Driving power of a variable is the summation of 1s in respective row and dependence power is an aggregation of 1s in corresponding column. Variable with highest dependence power is ranked I at this parameter. Similarly, the variable that has maximum dependence will be ranked as I for this aspect.

Table 3. Iterations

Elements (Pi)	Reachability Set R (Pi)	Antecedent Set A (Pi)	Intersection R (Pi) ∩ A (Pi)	Levels
13	13	1,2,3,4,5,6,7,8,9,10,11,12,13,14	13	I
15	15	1,2,4,7,8,9,10,11,12,14,15	15	I
16	16	1,2,3,4,7,8,9,10,11,14,16	16	I
12	12	1,2,3,4,5,6,7,8,9,10,11,12,14	12	II
8	8,14	1,2,3,4,5,6,7,8,9,10,11,14	8,14	III
14	8,14	1,2,3,4,5,6,7,8,9,10,11,14	8,14	III
9	9	1,2,7,9	9	IV
11	11	1,2,3,4,5,6,10,11	11	IV
4	4	4	4	V
7	7	2,7	7	V
10	10	1,3,6,10	10	V
2	2	2	2	VI
6	6	1,3,5,6	6	VI
3	3,5	1,3,5	3,5	VII
5	3,5	1,3,5	3,5	VII
1	1	1	1	VIII

Source: Author's own.

Development of Digraph

Conical form of RM is used for development of digraph. Initial draft of the digraph is likely to carry transitive links between variables. These indirect links are removed for development of final digraph (Figure 1). Digraph helps in segregation of enablers into three broad categories of outcome variables, operation (linkage) variables, and strategic variables. Variables at higher levels are designated as outcome variables which are required to be achieved. Variables at middle level are classified as operational variables as this set of variables are acted upon for achieving the desired results. Variables that construct the bottom levels represent the strategic variables. These variables are critical from strategy formulation point of view.

MICMAC Analysis

By way of analyzing the dependence power and driving power of variables in the current context, MICMAC analysis fulfills the objective of classifying variables under study as autonomous, dependent, independent, and linkage variables. Figure 2 exhibits the stated clusters in MICMAC for retail investment in equity.

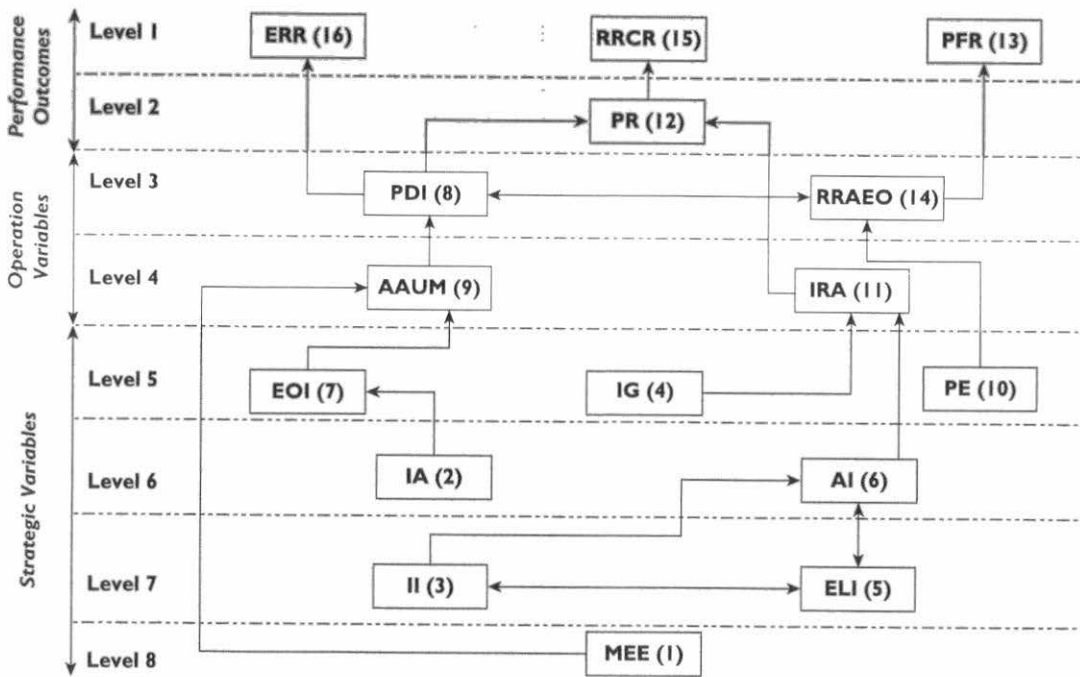


Figure 1. Model based on ISM for Understanding Retail Investment in Equity

Source: Author's own.

Interpretation from Digraph and MICMAC Analysis

Results of ISM technique that are represented through digraph along with the MICMAC analysis formulate the foundation of drawing interpretations. Strategic, operational, and outcome variables demonstrated in the digraph are parallel to independent, linkage, and dependent variables of MICMAC analysis. Lower levels of ISM digraph (refer to Figure 2) consist of macro-economic environment (1), income level of investor (3), educational level of investor (5), investor age (2), amount of investment (6), end objective of making investment (7), investor's gender (4), and past experience of investing in equity (10). These variables are strategic in nature and hence are independent variables. All of these variables are positioned in cluster II of MICMAC analysis (refer to Figure 2). Cluster II is the zone of high driving power and low dependence. Therefore, all of these variables that are placed in cluster II are likely to have a strong influence on decision of retail investors regarding investing in equity. Consequently, these factors must be cautiously evaluated by investment advisors during planning process. Operational variable includes attractiveness of alternative use of money (9), risk appetite of investors (11), planned duration of investment (8), and rate of return to compensate the risk (14). These variables are lying in the middle of the digraph (refer to Figure 1). These variables must be taken into action by investment advisors. These variables act as a linkage between strategic and performance variables. Despite being positioned in cluster IV, due to higher driving power comparing to other cluster IV variables (dependent variables), variables 8, 11, and 14 are taken as linkage variables. However, no variable is falling in cluster III. Moreover, attractiveness of alternative use of money (9) has occupied a place in cluster I due to its weak driving power. Such variables are considered to be relatively decoupled and non-significant for the system (refer to Figure 2) and are recognized as autonomous variables and recommended to be

ignored. Top levels in the digraph are consisting of perceived risk of investing in equity (12), preferred from of return (13), rate of return to achieve the end objective (15), and estimated rate of return (16). This level represents performance outcome variables. Variables 12, 13, 15, and 16 are falling in cluster IV of MICMAC analysis (refer to Figure 2). These factors have high dependence power and low driving power; therefore, these variables depend upon other variables for being attained. Interaction of operating and strategic variables evolves as performance or outcome. In the current context, equity investment by retail investor is the outcome. Variables as outcome reflects the impact of variables at lower levels.

Research Implications

Sixteen variables that are taken to study the current context are considered to be significant for attainment of desired objectives (also discussed in the earlier section). To understand the specific role and interplay of these factors play while a retail investor decides whether to invest in equity or not is imperative to understand. The framework developed during the study is likely to prove as a basis in order to conceptualize the plan by investment advisors for their respective clients. ISM digraph indicates that macro-economic environment at the time of investment, age, gender, income, and educational level of investors along with their specific end objectives to be achieved and their past experience of investing in equity play a vital role in deciding whether they will choose to invest in equity or not. These factors are critical in nature because of holding high driving power and hence are likely to act as constraints during

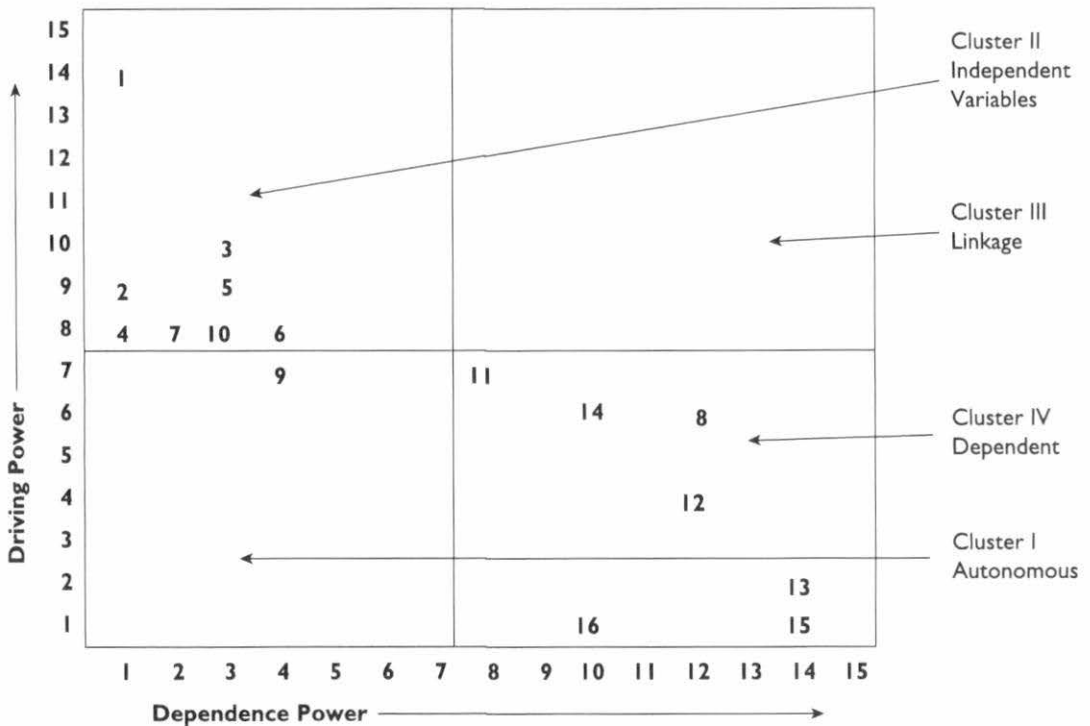


Figure 2. Cluster of Variables

Source: Author's own.

the process. Therefore, investment planners are suggested to take advantage of these factors when being favorable for offering equity to the client's portfolio. Planned duration of investment, attractiveness of alternative use of money, risk appetite of investors, and rate of return which is required to achieve the desired objective of making investment by investors are the factors that comprise the second set of variables. While planning the investment, advisors are suggested to act upon these variables in consultation with constraint variables. For instance, if advisors can manage to make a shift in the planned duration of investment for their clients, it helps in bringing them to the equity segment for parking their funds. Similarly, an increase in the risk appetite, downgrading the alternative use of available funds will also help advisors in chipping equity to client's investment preferences. Planned duration of investing in equity may also take into consideration to manage the required rate of return by the investor to meet its end objectives. It is advisable to use respective status of these variables tactfully for individual investor in order to enhance their preference of equity for investment. Perceived risk of investing in equity, estimated rate of return, preferred form of return and required rate of return happen to be the outcome of the interaction of other variables. Being these variables in the desired direction and state is of utmost significance for an investor to include equity into its investment portfolio. Perceived risk of investing in equity is primarily depends upon macro-economic environment. Likewise, preferred form of return, which is an outcome of factors from strategic and operational level. These factors play a direct role while an investor includes/rejects equity in/from its investment portfolio. If an investor with low risk appetite is looking equity as an avenue of high risk if not getting enough return to compensate the risk, most likely investor would not invest in equity. Investors are also expected not to invest in equity if estimated rate of return is not in accordance with desired rate of return by them to compensate the risk taken. Capital gain is dominant form of return provided by equity and therefore, if an investor is looking forward for a regular income investment, they would prefer other investment option over equity. ISM digraph developed during the current study may contribute to the planning process of investment advisors by providing them a conceptual framework of decision-making process in the concerned context.

Limitations and Further Scope of Research

The current study explores 16 variables for modeling decision of investment in equity by retail investors. Moreover, literature review along with expert and author's opinion is taken into account for evolving the framework. Current established model merely signifies a relationship among selected variables in the specified context. The present study does not validate the model statistically. Moreover, author's understanding of investing decisions of retail investors regarding equity constructs the foundation of recommendations made here and hence requires to be validated. For validation of the ISM framework, additional techniques can be used by researchers during further studies.

Conclusion

The current article is an attempt to understand how individual investors choose to invest in equity or not to consider it. A framework has been designed during this study that can be used as instrument by investment advisors to understand the variables of equity investment preference of their retail clients. During the effort, it was identified that mainly demographic factors and economic conditions are strategic in nature which set the tone of other factors that affect the decision of investing in equity. However, various

dimensions of return and risk perception of investors are the immediate factors that are considered by them to take the investment decision. Other particulars of investment that include risk bearing capability, planned duration, end objective attainment, and other uses of money are the factors that play an operational role in the process of investment. These factors are very important as these factors can be shaped to turn the investment decision in either of the direction. Although the developed framework in the article is grounded on the opinion of few domain experts and results are generalized. Though further exploration of observed perceptions is likely to facilitate investment planners in developing the significant understanding of the process of investment and hence, help them optimizing the investment planning services toward the real need of their clients.

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