A Cross-Sectional Study on Investment Behaviour of Information Technology Professionals

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Abstract

This paper investigates the investment behavior of Information Technology Professionals from the perspective of their sectoral preferences, investment avenues preferences, and sources of information that influence the investment decision-making of Information Technology Professionals. The paper uses the Garrett Ranking method and descriptive statistics as analytical tools. Henry Garrett and Woodsworth propound the Garrett Ranking method used in the study in 1969. Responses from investors obtained through the questionnaire method. A cross-sectional study conducted and data for analysis collected from 200 information Technology Professionals of Chandigarh, Mohali, and Panchkula cities. The findings of the study indicate that Information Technology investors prefer the banking sector as their first preference for investment, followed by the Information Technology sector. Moreover, bank deposits appear to be the first preference of Information Technology Professionals followed by land and buildings and Broker is considered an essential source of information that influences the investment behavior of Information Technology Professionals.

Keywords: Information Technology Professionals, Investment, information, options, investment behavior

Introduction

In an increasingly competitive business environment, the economic development of any nation depends upon the financial sector development as it ensures effective allocation and mobilization of monetary funds (Fauzi, Husniyah, Fazli, & Amim, 2017). Today, a clear understanding of investment and its related aspects are the key element for ensuring the smooth functioning of the financial system (Love & Zicchino, 2006). An investment creates a multiplier effect that helps in the generation of income, employment, and demand (Dai, Li, & Song, 2014; Lei, 2013; Wilson, 2008). Invest-

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ment helps the economy to enjoy high levels of consumption (Chen, Lou, & Hong, 2018; Zhi-xin & Ling-ling, 2007; Fengge & Meng, 2009).There is an immense emphasis on investment avenues for being the flow of capital for productive purposes (Mendoza Cota & Diaz Gonzalez, 2008). The level of investment participation by investors, both individuals and groups, have been increasing over the past few decades. There are ample investment opportunities available to investors in the form of various investment avenues (Lin, Wu, & Chen, 2018; Giriati, 2016; Hill & Hillier, 2009). In the fast-changing economic environment, Investment avenues offered to investors as per their financial requirements, risk appetite, return expectations, safety concerns (Birtch, Au, Chiang, & Hofman, 2018; Li, Yao, & Li, 2010; Mouna & Anis, 2017). Nowadays, investment avenues are liquid and illiquid, while others are marketable and non-marketable also (Shim, Lee, & Kim, 2008). The most critical challenge confronts by investors is in the zone of judicious investment decisions. Investors to arrive at decisions related to their investment requirements follow various sources so that they make informed decisions (Jiagui, 2017; Tan & Tan, 2012; Goulias & Yoon, 2011). Many researchers, through their studies, depicted that friends, family, relatives, internet, brokers, newspapers, and televisions are important sources of information for investment decisions (Goulias & Yoon, 2011; Tan & Tan, 2012).To arrive at an informed investment decision, Investor needs to adopt an optimism approach, foresight, determination, and persistence (Mendoza Cota & Diaz Gonzalez, 2008; Birdthistle, 2010). In reality, each investor is distinct from others in various aspects (Masomi & Ghayekhloo, 2011; Spelta, Flori, & Pammolli, 2018). Therefore, an optimum investment decision requires active participation and substantial consideration. Investor's behavior and investment decisions influenced by numerous factors (H.-W. Lin, 2011). Investor's behavior includes demographic factors, socioeconomic factors, behavioral factors, market related factors, lifestyle-related factors or other factors that have been mentioned and analyzed by academician or scholars time to time (Nilsson, 2008; Lan, Xiong, He, & Ma, 2018; Rath, Mahapatra, & De, 2014; W. Li & Teng, 2019). In realism, Investor's behavior reflects investor's attitude and perception in placing their savings in various types of financial assets for the productive purpose (Siyal, Sharif, & Athar, 2012; Sahi, Arora, & Dhameja, 2013; Fauzi et al., 2017; Ady, 2017). While designing the investment portfolio, the investor generally considers their financial and economic goals, risk tolerance level, and other foreseen or unforeseen constraints (Ming & Zhang, 2018). Investor's risk tolerance immensely depends upon his or her earning capacity and the profession they pursue (Zheng-lin & Hongna, 2008). Therefore, Investors belongs to different fields also behave distinctly according to their profession pursued. Informational Technology

Professionals also investment in various financial instruments (K J & PS, 2015). As their demand and requirement are increasing because of excessive reliance on economic development in Information technology. Due to this reason, Information Technology Professionals are well paid. The saving habits and Investment pattern of Information Technology Professionals defined by their return expectations from numerous preferred investment avenues (K J & PS, 2015). Suitable investment decisions require a complete understanding of distinct disciplines such as finance, economics, laws, tax, and accounting. (Fochmann, Hemmerich, & Kiesewetter, 2016). Though, IT professionals being belongs to a distinct field might not be to exhibit a comprehensive understanding of all such fields. At present, the financial service industry has become immensely expanded that offers the investors belongs to different professions with a wide range of investment options(Shreenivasan, Vaijayanthi, & Senthilnathan, 2014). The existing research attempted to analyze the behavior of Information Technology Professionals residing in the cities of Chandigarh, Mohali, and Panchkula to determine their sectoral preferences, sources of information for their investment decisions, and investment preferences towards investment avenues at the time of investment decision-making.

Literature Review

The investment comprises a large volume of funds and the potential for financial gain or loss (da Silva, Bazzan, Baraviera, & Dahmen, 2006). Investment is a risky action that involves the forecast of unknown realization of the market outcome at the time of purchase by the investors (Dulebohn, 2002; Fochmann et al., 2016). Information is crucial in making investment decisions as it perceived as high- consequence task in investment decision-making (Loibl, C., Hira, 2009). Also, information is essential in wealth maximization task in making investment decisions (Nagy & Obenberger, 1994). Therefore, sources of information or information search are crucial for making judicious investment decisions(Guo, Han, & Yuan, 2011). There are many researches on information sources that studied sources on information from distinct perspectives for instance, decision-making, influence, satisfaction and credibility (Tan & Tan, 2012; Kartika, Pramana, & Wibawa, 2017; Park, Gu, Leung, & Konana, 2014; Choi, Lee, & Kim, 2011). Both Professional and institutional investors depend on different sources of information for instance financial statements of companies, brokerage firm's reports, auditor's reports industry newsletters for comprehensive understanding and analysis of investment options (Pimenta, Lima Silva Borsato, & de Sousa Ribeiro, 2012; W. K. Tan & Tan, 2012). There are also counter-arguments that information sources to be to detail, difficult to un-

derstand, and expensive (W. K. Tan & Tan, 2012). There are studies where suggestions provided that investors should make purchase decisions after rational and unbiased processing. (H.-W. Lin, 2011). However, there are counter-arguments in certain studies that information search is selective and persuaded by social dynamics between groups (Gupta & Li, 2003; Oberlechner & Hocking, 2004; Koenig, 2014). Many sources help individual investors to get information from mass media, for instance, newspapers, television, and the internet and social networks (Goulias, Konstadinos G Yoon, Seo Youn, 2011; W.-Y. Lin et al., 2018). The information helps investors in the selection of various Investment alternatives. Investors prefer to invest in investment options according to their risk and return expectations (Hauff & Nilsson, 2017; Birtch et al., 2018; Karlan, Ratan, & Zinman, 2014). Investment options available to investors influence their portfolio choice (Brown, Liang, & Weisbenner, 2007). According to the neoclassical economics approach, the number of investment options available to an investor depends upon the investor's ability to diversify, and according to investment plans (Z. Li et al., 2010). In reality, investment plans offered by financial intermediaries do not restrict investments understandably. Investment plans offer investors a range of risk/return expectations (Andreu & Puetz, 2021). One of the researches on the contrary argument document that many investors invest in the default investment option. They feel slow or not able to move out of that investment option for expectation of higher returns (B. C. Madrian & Shea, 2001; Aguerrevere, 2003; J. J. C. D. L. B. C. Madrian, 2004) In support of later research, one of the researches also suggest that investors are slow to rebalance their portfolios. One of the researches evidenced that investors with below-average financial knowledge often exhibit an overwhelmed response by making investment decisions (Agnew, Szykman, Agnew, & Szykman, 2005). One of the studies also suggests that investors choose assets as a function of a menu available to them (Massa, Karlsson, & Simonov, 2006). Hence, plan investment design can impact various other investors' behavior factors as well (X. Li, 2012). Through previous studies, many factors identified that influence investment information and, thereby, investor's behavior (Yan-zhao, Jun-cen, & Xiao-he, 2018; Barros, 2016; Leka & Sharku, 2009). One of the research documents that knowledgeable information investors conduct more information search for less knowledgeable investors (Mouna & Anis, 2017). In support of the later research, one more study also documents that higher educated male investors with higher return expectations likely to practice high information strategy (Nilsson, 2008; Loibl, C., Hira, 2009). One study also suggested that investors selection of investment options also immensely depend upon age factor as the young age of investor positively related to information search and risk tolerance (Billing, Rosenqvist,

& Berglund, 2007; W.-K. Tan & Tan, 2012; Schroetgens & Boenigk, 2017; Hantula & Crowell, 2016). Moreover, few studies also found that foreign investors are more informed and performed better in investments that domestic investors (Grinblatt & Keloharju, 2000; Seasholes, 2000; Rubbaniy, van Lelyveld, & Verschoor, 2014). Moreover, one of the studies also documents that the speed of information transmitted influences the rise and fall in prices (Deng & Yang, 2008; Zheng, 2008; Jia & Wang, 2017; Fengge & Meng, 2009). Few pieces of research also document that investors' propensity to take risk differs from one another (Dulebohn, 2002).

Despite the review mentioned above paper by researchers Anju and Anuradha in 2015, there are limited studies available that analyze the investor's pattern of Information technology Professionals of Chandigarh, Mohali and Panchkula cities in the selection of investment options. Researchers Anju and Anuradha's study also belong to the review of the investment behavior of IT professionals of Bangalore. Therefore, existing research strives to fill the research gap and hopes to shed some light on how sources of information influence IT professionals? What are their sectoral preferences? Moreover, Which investment option they prefer the most?

Objectives

- To identify various sources influencing the investment decision-making of IT professionals.
- To analyze the sectoral preference of IT professionals.
- To analyze the investment preference of IT professionals related to various investment options.

Research Methodology

Research Approach: The existing research based on the cross-sectional study and a quantitative approach used for the computation of data.

Data collection: A questionnaire formed, and responses obtained from the survey method.

Sample Size: The actual sample size for the study was 225, but few questionnaires found not adequately filled by respondents. Therefore, only 200 questionnaires were found useful and selected as the sample size for analysis.

Sampling Technique: The convenience sampling technique is used to collect data from IT professionals(investors) working in Tri-city of Chandigarh, Mohali, and Panchkula. The main aim of existing research analysis is

to interpret and draw a conclusion from data collected from the responses of IT professionals.

Tools and techniques used: Descriptive statistics and Garrett ranking applied for computation of collected data. Garret ranking technique helps in research to convert the responses obtained from respondents into a rank by using formula propounded by the Garrett and Woodworth (1969).

Result and Discussion

The study intended to analyze the factors that influence investors' behavior of IT professionals. The first objective to identify various sources influencing the investment decision-making of IT professionals.

Table1.1: Sources used to seek information for investment

Source	Response	Frequency	Percentage
Brokers	No	102	51.0%
	Yes	98	49.0%
Friends	No	109	54.5%
	Yes	91	45.5%
Internet	No	101	51.5%
	Yes	99	48.5%
News Paper	No	127	63.5%
	Yes	73	36.5%
Colleagues	No	165	82.5%
	Yes	35	17.5%
Television	No	148	74.0%
	Yes	52	26.0%
Relatives	No	125	62.5%
	Yes	75	37.5%

Table 1.1 exhibits different sources that help respondents to seek investment decisions. The respondents choose more than one investment option because one could use more than one source of information. Around 49% of the respondents used to seek advice from their brokers, and 48.5% pre-

fer to search for information from the internet regarding the investment options that best suited to meet their investment needs. Around 45.5% used to discuss with their friends and take their views about the investment options. Around 37.5% of the respondents sought advice from their relatives. 36.5% of the respondents read newspapers and obtained information from financial experts and studied the key points and charts of investment. Only 26% of investors consider television as a relevant source of information for investment decisions. Only 17.5% of the respondents sought the advice of colleagues.

Table1.2: Perceived usefulness of sources of information used by the respondents

Source	N	Minimum	Maximum	Mean	Std. Deviation
Brokers	200	1	5	2.98	1.48
Friends	200	1	5	2.80	1.34
Internet	200	1	5	2.91	1.20
Newspaper	200	1	5	2.87	1.21
Colleagues	200	1	5	1.90	1.19
Television	200	1	5	2.44	1.16
Relatives	200	1	5	4.21	1.13
Overall Usefulness	**200**	**1.00**	**5.00**	**2.86**	**0.72**

Table 1.2 exhibits responses of respondent where they were asked to rate the usefulness of each of the sources of information, as perceived by them, on a scale of 5 from not at all useful (=1) to extremely useful (=5). Higher the score, the more useful the source of information was. The scores would lie between 1 and 5. Therefore, a score between 1 and 2 may be interpreted as a less useful source of information, between 3 and 4 as a slightly useful source of information, between 3 and 4 as a somewhat useful source of information, and between 4 and 5 as a beneficial source of information. Mean, and the standard deviation was used to describe the analysis of the responses.

The scores of brokers as a source of information ranged between 1 and 5, with an average of 2.98 (SD = 1.48), suggesting that brokers were perceived to be a slightly useful source of information. The SD suggested that there was sufficient variation in the data, and there were respondents who perceived brokers as a highly useful source of information and also includ-

ed respondents who perceived brokers as not at all useful. However, the overall score suggested it to be a slightly useful source of information (refer to table1.2). The results of the internet, friends, and newspaper found similar to the results of brokers. Therefore, similar interpretations (refer to table1.2).

The scores of newspaper as a source of information also ranged between 1 and 5 with an average of 2.92 (SD = 1.21), suggesting that newspaper were perceived to be an as less useful source of information. The SD suggested that there was a significant variation in the data. Some respondents perceived newspaper as a highly useful source of information whereas some respondents perceived newspaper as not at all useful (refer to table1.2).

The scores of relatives as a source of information also ranged between 1 and 5, with an average of 4.21 (SD = 1.13), suggesting that relatives were perceived to be a beneficial source of information.

Then, a composite mean score was also computed to assess the overall usefulness of all sources. The composite score of 2.86 (SD = 0.72) suggested that the overall sources of information were slightly useful only or useful to some extent only.

For the second objective of the study, respondents were asked to rank the sectoral preference considered by respondents at the time of investment. In the questionnaire, seven different sectors mentioned, and respondents were asked to rate those sectors from rank1-7 in order of their preference at the time of investment. Rank 1 stands for most preferred, and rank 2 stands for least preferred. Garrett ranking method was applied to evaluate the precise ranks of the sectors. Garrett ranking method calculate based on the number of observations in each item. Percentage positions and their corresponding Garrett's Table value was obtained for each sector from rank 1 to 7. The table would constitute a 7*7 matrix of ranks as exhibiting in table 1.3. The percentile position of each rank computed by the following formula:

Percent Position $=100*(R_{ij}-0.5)/N_j$

R_{ij} = Rank given for i^{th} item by the j^{th} sample respondents.

After calculating the percentile position with the help of the above-mentioned formula, the Garret score searched into Garrett's ranking table (Garrett and Woodworth, 1969). The Garett score for 7.14 percentile position is 79, for 21.43 percentile position is 66, for 35.71 percentile position is 57, for 50 percentile position is 50, and for 64.29 percentile position is 43 and so on. The Garrett scores and percentile positions are given in the table1.3 as well. With the help of percentile positions, the frequency of each sector then multiplied by the Garrett scores to calculate the Grand total of ranks.

The grand total score of banking sector is obtained as below:

97*79+76*66+15*57+3*50+6*43+1*34+2*21= 14018

The grand score for each sector evaluated, as mentioned above, in the calculation of the banking sector. The grand score divided by the sum of frequencies or the total number of respondents selected in the study, to compute the average score. The total number of respondents selected for research was 200. The average scores were ranked from 1 to 7 in highest to lowest score order. The average score ranged between 70.09 and 61.865. The highest score given rank1, the second-highest score of 69.005 awarded the second rank, and so on. The lowest score 61.865 awarded 7th rank.

Table1.3: Garrett ranking of sectoral preference of IT professionals

Sector	Rank1	Rank2	Rank3	Rank4	Rank5	Rank6	Rank7	Total Score	Sample	Mean Score	Rank
Banking sector	97	76	15	3	6	1	2	14018	200	70.09	1
Pharma sector	83	56	37	14	4	2	4	13386	200	66.93	5
Energy sector	78	76	32	6	2	3	3	13553	200	67.765	4
FMCG Sector	88	70	12	16	10	0	4	13570	200	67.85	3
Service sector	70	72	33	10	5	3	7	13127	200	65.635	6
IT Sector	85	73	28	10	4	0	0	13801	200	69.005	2
Infra-structure	56	60	34	20	15	7	8	12373	200	61.865	7
Percentile Position	***7.14***	***21.43***	***35.71***	***50***	***64.29***	***78.57***	***92.86***				
Garret Score	***79***	***66***	***57***	***50***	***43***	***34***	***21***				

Data collected through questionnaire

Table 1.3 exhibits that the banking sector was the most preferred sector for IT professionals from an investment point of view. The banking sector comprised of both public and private sector banks. The second most preferred sector for IT professionals for investment point of view is the IT sector (Rank 2). At rank 3 is the FMCG sector, which comprised of companies engaged in the production and distribution of consumer goods. Rank 4 awarded to the energy sector by IT professionals that was mainly due to tremendous opportunities in electricity generation in India. The Pharmaceutical industry obtains rank 5, followed by the service sector at rank 6. Rank 7 that denotes least preferred sector by IT professionals, is the in-

frastructure sector. It includes companies manufacturing machinery and infrastructure development companies.

Table1.4: Garrett ranking of investment preference of IT professionals

Investment preference	Rank1	Rank2	Rank3	Rank4	Rank5	Rank6	Rank7	Total Score	Sample	Mean Score	Rank
Bank deposits	87	88	10	12	2	0	1	13958	200	69.79	1
Bonds and debentures	76	55	40	20	4	2	3	13217	200	66.085	3
Gold and Bullion	79	58	28	10	15	7	3	13111	200	65.555	4
Post office schemes	80	44	30	20	12	12	2	12900	200	64.5	5
Land and building	85	75	20	12	6	2	0	13731	200	68.655	2
Mutual funds	50	54	25	35	24	8	4	12077	200	60.385	7
Shares	48	67	40	25	10	3	7	12423	200	62.115	6
Percentile Position	***7.14***	***21.43***	***35.71***	***50.00***	***64.29***	***78.57***	***92.86***				
Garret Score	***79***	***66***	***57***	***50***	***43***	***34***	***21***				

Data collected through questionnaire

Table 1.4 exhibited seven commonly preferred investment options. Respondents were asked to rank in order of their preference at the time of investment. Again, the Garrett ranking method used for computation. Rank 1 implies the most preferred, and rank 2 implies the least preferred investment option. Each investment option exhibits frequencies of ranks. The percentile scores and corresponding Garrett score mentioned in the last two rows. Each investment option's total score is analyzed by multiplying the frequencies with the Garrett score and then taking sum for each row independently. The average score then obtained by the total score divided by the total number of respondents, i.e., 200.

As shown in Table 1.4, the bank deposit is the most preferred investment among IT professionals, followed by land and building. The third most preferred investment option is bonds and debentures, followed by gold and bullion. The post office scheme is at number 5 on the preference list. Investment in Shares is at the rank of 6 — mutual funds at number seven, which is the least preferred investment option.

Conclusion

Indian economy is the tenth-largest world economy in the world (K J & PS, 2015). Information Technology plays a tremendous role towards India's GDP. Therefore, employment opportunities for Information Technology professionals are immense and due to this they are well paid also. The saving and investment patterns of IT professionals varies and determined by their return expectations from preferred investment options. The investment decisions of IT professionals influenced from various sources of information. These sources of information help them to arrive at decisions so that they can increase their wealth (Zhangand & Zheng, 2015). Analysis from the existing study also indicate that IT professionals seek advice of brokers and friends while making investments.

Moreover, due to advancement and innovation in technologies, Internet also becomes a pertinent source of information for IT professionals. They search and take knowledge of various investment product from internet. Internet also provides a platform to IT professionals to make comparisons of various investment options and also help to track previous and current financial statements of various companies and also help in analyzing annual reports of different industries. Moreover, study also indicate that television and newspaper prove to be useful source of information up to some extent. Through the computation of Garrett ranking method study also identified that individual investors also prefer to invest in banking sector followed by IT sector as this is one of booming industry (Fauzi et al., 2017). Knowledge revolution in India provides a substantial change in the domain of Information Technology industry (Lewellyn & Bao, 2015). Information technology industry offers a wide range of office automation, cloud computing, robotic solutions and hence provides various employment opportunities for qualified people (W. K. Tan & Tan, 2012).

Today more than 4 million people are employed in IT industry which makes IT industry one of the biggest job creation hub in India. Due to these reasons IT sector is becoming most preferred sector by investors as well. Moreover, through Garrett ranking also analysed that IT professionals seek to invest in safe investment options as most of IT professionals

preferred bank deposits followed by land and building. Still, IT professionals requires a comprehensive understanding of various investment options. Due to financial innovation, numerous structured financial products are offered by industry. There are many structured financial products that are available in financial industry that can help IT professionals to increase their wealth. IT professionals have immense potential to make investment as they are well paid (H.-W. Lin, 2011). Therefore, it is required by financial service providers and regulators to formulate financial planning and various investment strategies by keeping in mind the investment needs of IT professionals. Nowadays, Individuals with high earning and high disposable income prefer to invest in diversified portfolio with a view to minimize risk. The latest innovations in IT industry have expanded provisions and comprehensibility of various financial products that led investors to invest more. Increased personal wealth of investors contribute to higher economic development in nation. Therefore, from this perspective, the existing study becomes extremely important that identify areas required by regulators to look at form economic development.

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