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Artificial Neural Network assisted decision making models towards intention of investment: A study among young investors in South India

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Abstract:

Many investor particularly young people now invest in a wide range of securities and financial instruments due to the growth of the financial markets. The behavioral finance has provided insight into the traits and cognitive functions that affect investors intents and choices while making investments. The aim of the present is study is propose a decision making model that suits for the responsible individual young investors. Initially, the proposed model was constructed based on the recent studies and research gaps that exist. Further, various indicators such as perception, benefits and investment options, factors linked to safety, dependability and risk,technical knowledge, financial literacyand digital marketing platforms were included in this proposed model. Mathematical expression are used to predict the factor scores. Later, verification of models was performed and the best suited model was selected based on the indicator performance. Furthermore, crucially, various strategies related to implications and scalability of the proposed model are included in this study. Thus, assisting the young investors on decision making using the proposed model can create potentially wealthier nation and industry.

Keywords: *Intention of investment; Young investors; investment questionnaire; Decision tools: Artificial neural network.*

1. Introduction

Technology and innovation have improved accessibility to a variety of commercial operations, including investment management (Chong et al., 2021). Usually, investors allocate funds to debt or equity assets in order to earn profits. (Lathief et al., 2024). Given the recent events in the market, investors can think about making changes to their investment portfolios(Knollenberg et al., 2022).At present, India is experiencing fast urbanization.India's economy is now the third biggest in Asia in terms of gross domestic product(GDP) and is among the fastest growing in the world (Pulicherla et al., 2022). It is also projected that about 6.8% increase in GPD per annual could result to attain substantial financial status (IMF)(n.d.). In several industrial sectors, India leads the globe; thus, rising industries should use the lessons learnt from these more developed sectors (Pulicherla et al., 2022). Remarkably, the Indian government has started the "Make in India" initiative, which seeks to create as much as possible in India utilising local resources and expertise, in an attempt to replicate the success of other rising areas(Nayyar and Nayyar, 2024). Thus, wide opportunity exists for the Indian market particularly in the financial sector.

Over the past three decades, a substantial extent of behavioral finance research has examined how risks affect people's investing choices. Investment decision-making is a crucial component of financial management, since it integrates present needs with future goals. For individuals and families, planning for financial can be a time-consuming and resource-intensive process that requires thorough assessment and exploration of numerous investment possibilities (Baker et al., 2021). Investors depend on outdated rules of thumb or trial and error when making judgements in an unpredictable and uncertain environment. In

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actuality, however, emotional and cognitive factors are taken into consideration while assessing investing options, which might invalidate judgement in the process(Lim et al., 2016).

Individuals use a variety of sources to get information prior to deciding financial choices, including friends, family, variations in real estate values, stock prices and social media(Sahi et al., 2013). Financial status, loan accessibility, and return rate are other variables that impact investment choices (Adhikari, 2020). The growth of the financial industry has given people the chance to invest in a range of financial products. Therefore, by clarifying the unique characteristics and psychological practises that impact investors' investing intentions and consequent actions, the field of behavioural finance has improved our knowledge of the behaviours of individual investors(Che Hassan et al., 2023).

Numerous studies have shown that process of decision-making process regarding investments can be impacted by dissimilar qualities and attributes as well as their perception that investments work as a hedge against inflation(Raut et al., 2021; Shehata et al., 2021; Yang et al., 2021).Though investment in various sectors such as mutual funds, stock market and retirement plans have increased comprehensively, not much study has been done to recognize the elements that impact and forecast intention of young investors to participate in India.

Importantly, the role of artificial intelligence towards decision making analysis is becoming as a vital technology (Sun et al., 2024). Research on the financial sector has used a number of machine learning techniques, including Support Vector Machines (SVM), Decision Trees (DT), Random Forests (RF) and Naive Bayes (NB). In terms of financial prediction, these algorithms have shown varied degrees of performance(Beniwal et al., 2024). The algorithm used will determine how accurate the forecasts are, according to a margin of error (Nikou et al., 2019). Comparatively, in 2021, Li and Wu, reported that with the practice of ant colony optimization, investment decision particularly in the field of real estate revealed the important aspects that are need to be considered while investing in such field(Li and Wu, 2021).

With regard to the association between young people and their intention towards investment assistance, this study provides new and fascinating results that have strategy consequences. In the financial advice sector, where a lack of involvement of young people for financial guidance, greater effort is mandatory both immediately and over time. With the ultimate power of young generation and their involvement towards financial market with successive approaches could lead to attain economically established stage. This study intended to find out the potential strategies to assist the intention of investment among the present young generation.

2. Theoretical groundwork and hypotheses

Based on the literature survey executed the factors influencing the decision making on financial investments among youngsters were identified which included both dependent and independent factors. The dependent factor suitable investment decision relies on the various independent factors such as perception, benefits and investment options, factors linked to safety, dependability and risk, technical knowledge, financial literacyand digital marketing platforms.

2.1 Perception

Perception is the awareness towards investment and particularly, includes the usage of forthcoming financial information influences such as the investment nature, quality and magnitude he/she plans to make because, when multiple investment options are adopted simultaneously. It offers enough knowledge and capabilities to assist the investor in selecting the best investment(Gui et al., 2024).The principal duty of market participants is to encourage awareness among investors in the stock market. Understanding financial markets enables investors to make informed investment choices and decrease risk.The crucial aspects for investors are market awareness and market information. If investors lack sufficient knowledge about market factors in a particular sector, it will lead to significant losses. Investors must possess sufficient understanding of the identified elements that will enable them to make informed decisions to

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succeed in the financial market(Filippini et al., 2024).

2.2 Benefits and investment options

One efficient approach to use money and can lead to increase wealth is by investing that is the main benefits of investment include to increase wealth and maintain liquidity. Money investment can lead to maintain a lead over inflation(Anderson et al., 2021). Investment options are necessary to display the financial statements of the fundamental data about the investment and lead to help youngsters about the decision making judgements(Vasantha Lakshmi and Udaya Kumara, 2024). Investment options are the information about the financial status of the various investment portfolio and are highly valued since it increases and influences the decision-makers. Further, it reduces the uncertainty of the decision-making progression and future prediction, collectively it positively affects the validity and accuracy of the decisions made(Gleißner et al., 2022).

2.3 Factors linked to safety, dependability and risk

Sustainability in the investing industry is often embodied by the social, environmental and governance pillars. The goal of safety investments is to avoid or minimize uncertainty under any situations in the future.The fact that it is unpredictable how many uncertainties could happen in the future implies that choices about safety investments are made in such environment(Ma et al., 2016). Invention values are boosted by information when investors believe it to be accurate and relevant(Ma et al., 2016).Dependability is necessary for information on sustainability to help investors determine the market worth (Popescu et al., 2021).

2.4 Advanced technical knowledge

Current advanced technology creates investors to do investment more quickly, transparently, and flexibly. The financial market has changed due to the current technological innovation. The investing industry's technology innovation enables traders and investors to manage their financial portfolios actively from any location in the world and perform business transactions instantly (Zolas et al., 2020). Investors in the financial markets have a number of technical concerns while making investments online, including perceived risk, system security, and trust. With the development and usage of online tools for investing, the financial market experienced a pronounced transformation. Online investors engage in a variety of activities, such as monitoring stock prices and utilizing their portable devices to analyse corporate data and stock performance (Paskaramoorthy et al., 2020). Advanced technical knowledge includes utilization of computers, related software, hardware, services, and resources that are used to support the various stages of work. As a result, it helps to speed up and improve the accuracy of data collection, entry, and processing when creating financial statements, which in turn speeds up the investment making decisions process. Importantly, the role of artificial intelligence in economic investment sector has massive growth and assist to take financial investment intention. The financial services sector is undergoing continuous innovation, which has led to a wide range of investment possibilities.(Khan et al., 2024). As technology has advanced, a new way to provide financial services internationally is now available.

2.5 Financial literacy

Financial literacy can be described as the comprehension of risk, motivation, skills, and financial concepts. It gives assurance to utilize this knowledge effectively in various financial situations, thereby enhancing the financial well-being and facilitating engagement in profitable activities. Particularly, financial literacy relates with the comprehension of fundamental financial principles and the capability to perform basic calculations (Goyal and Kumar, 2021). A fundamental understanding of financial investment fundamentals, including interest rate calculation, inflation, and risk diversification, is known as financial literacy. Financial capacity creates freedom that stimulates a person's capabilities by linking together external factors and internal capabilities (Garg and Singh, 2018). The financial literacy of customers influences their investing behavior. It has been determined that clients must

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first acquire financial awareness and expertise by participating in financial education initiatives run by various organisations. Additionally, it has been shown that objective financial literacy has a favorable correlation with knowledge and purpose(Mishra, 2018).The significance of financial literacy among young investors need to investigate in order to actively engage in various investment sectors.

2.6 Digital marketing platforms

Digital marketing platforms include influences on social media, search engine optimization, email marketing and content writing(Keke, 2022).Business framework organisations have started to take use of the new framework's chances to serve their target interest groups as a result of technological advancements, the Internet's widespread use, and the emergence of new demands. The role of digital marketing in various financial sectors are not well studied. However, in the new era, digital marketing involves the propagation of various plans and features of financial investment sectors that can help young investors to invest in proper channel (Peter and Dalla Vecchia, 2021). At present two factors such as youth and digital marketing cannot be separated (Boustani and Chammaa, 2023). For these reasons, this study included the digital marketing platforms as a independent factor towards the selected dependent factor. Table 1 lists the six independent variables that were chosen for this study in order to investigate their effects on intention of young investor based on the literature review mentioned above.

Table 1 Frameworks of this research and their origins

S.No	Framework	Origins
1	Perception	(Gui et al., 2024).(Filippini et al., 2024).
2	Benefits and investment options	(Gleißner et al., 2022; Vasantha Lakshmi and Udaya Kumara, 2024)
3	Factors linked to safety, dependability and risk	(Ma et al., 2016)(Popescu et al., 2021).
4	Advanced technical knowledge	(Khan et al., 2024; Paskaramoorthy et al., 2020; Zolas et al., 2020)
5	Financial literacy	(Goyal and Kumar, 2021; Mazzoli et al., 2024)
6	Digital marketing platforms.	(Boustani and Chammaa, 2023; Keke, 2022; Peter and Dalla Vecchia, 2021)

2.1 Hypotheses used in this study In orientation with the research topic, objectives, and hypothesis framework, the following hypotheses have been designed to address the survey questions and to evaluate their significance for identifying the connection between the dependent and independent factors:

Test Hypothesis 1

The most crucial variables for intention of investment are significantly correlated with one another. The association between these variables were analyzed by using Spearman correlation coefficient for the rank correlation among each dimension of the independent variables. The correlation coefficient of Spearman's rank is the second non-parametric test. It describes the degree to which two traits are correlated. For a limited number of observations, it is used to investigate the correlation between quantitative characteristics. Using the following formula, Spearman's rank correlation coefficient is determined (Klepacki et al., 2021),

$$r = 1 - \frac{6\sum d_i^2}{n(n^2-1)} \quad (1)$$

Here, n and r are the number of observations and the Spearman's correlation coefficient, respectively and d_i is the difference between the two ranks of each observation.

The range of values for the correlation coefficient is $-1 \leq r \leq +1$. The negative correlation and positive correlation can be related by the sign of the integer values. The higher the correlation between the variables under investigation, the closer the correlation coefficient's modulus (absolute value) is to one(Klepacki et al., 2021).

Test Hypothesis 2

The independent variables affecting the intention of invest among young investors have a significant impact link. Engaging simple linear regression

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models to examine how independent factors affect young investors on decision-making when choosing their financial investments.

The following simple linear regression equation (2) was used to measure the effect of variables on the intention of investment.

$$y = a + \beta_i X_i \quad (2)$$

Here, y is the dependent variables, Xi is the independent variables and β_i and a are the slope and intercept, respectively.

The variance that remains after controlling the factors influencing the investment intention is taken into consideration using the coefficient of determination (R^2).The significance of a regression equation is assessed using the test (F).

Test Hypothesis 3

Ranking the independent factors according to their significance for young investor's decision-making when choosing their financial investments using the Artificial Neural Network technique.

3. Methodology

3.1 Data collection and sample

According to a report stated by National Stock Exchange (NSE), investors under age of 30 are considered youthful in India (NSE, 2024). Particularly, between the ages from 18 to 30 has the potential to invest in various field. Since this study focused on the intended strategies among young investors in south India, the study population is selected from the youthful demographic, specifically those aged from 18 to 30.

A questionnaire was created to collect research data based on previous studies conducted in this field (Chong et al., 2021; Mehrtens et al., 2001). It has 45 questions, one of which allows one to recognize the utmost significant variables that could influence intention of investment. As shown in Table 2, Likert scale was used to design the questionnaire (Aslan, 2018).From August 2024 to November 2024 was the time frame for the questionnaire survey.There are two parts to the questionnaire. The respondents' background information is provided in Part A, and questions on the theoretical framework's suggested constructs are asked in Part B. About 400 hardcopy questionnaires disseminated along with online forms and 320 replies were obtained from young south Indian. The questionnaire was mostly provided in hard copy at various venues such as seminars and workshops hosted by financial education providers. All study participants have provided their informed permission to the questionnaire questions before we reveal the practical aspect of the research, which relied on the questionnaire.

Table 2Summary of the Likert Scale

Influence	Limits of Likert Scale	Likert Scale
Very low	1.00 ≤ 1.80	1
Low	1.81 ≤ 2.60	2
Moderate	2.61 ≤ 3.40	3
High	3.41 ≤ 4.20	4
Highest	4.20 ≤ 5.00	5

4. Results and discussion

4.1 Characteristic analysis

The demographic information of the respondents is represented in Table 3. In this study, the respondents involved consisted of 43.75% of female and 56.25% of male. Further, the age group used in this study were in the range from age of 18 to age of 30. The evenly distributed age group can be identified with the average age of 24 and it confirms that this study targeted young people. Importantly, the most of the respondents hold under graduate with 70.31% and followed by majority hold post graduate or Ph.D. About 76.56% respondents have full time employment and only 4.69% have self-employment. Thus, totally about 81% (employment and self-employment) have the potential to invest in various field which can be analyzed with less than 4% respondents of unemployed. Interestingly, about 77.5% of respondents are interested to invest however, few respondents about 2.19% are known to be

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previously investing in various sectors. Therefore the suitability of this study with interested respondents can be recognized from these data. The cumulative average salary per month of respondents is about 38,000 INR. With 77.5% of young respondents interested in investment, there is an excellent opportunity to draw young investors by utilising technology advancements.

Table 3 Demographic information of the respondents

S.No	Information	Category	Count	Percentage
1	Gender	Total	320	100
		Female	140	43.75
		Male	180	56.25
2	Age	From 18 < 20 years old	66	20.63
		From 20 < 23 years old	87	27.19
		From 23 < 26 years old	102	31.88
		From 26 < 30 years old	65	20.31
		Total	320	100
3	Qualification	Secondary school	22	6.88
		Under graduate/ Diploma	225	70.31
		Post graduate/ Ph.D	67	20.94
		Others	6	1.88
		Total	320	100
4	Interested in investment	Yes	248	77.50
		No	46	14.38
		May be in future	19	5.94
		Performing	7	2.19
		Total	320	100
5	Position	Student	24	7.50
		Self employed	15	4.69
		Employed	245	76.56
		Not in employment	11	3.44
		Others	25	7.81
		Total	320	100.00
6	Income per month	Less than 18000 INR	75	23.44
		18001 to 25000 INR	94	29.38
		25001 to 40000 INR	85	26.56
		41000 to 60000 INR	24	7.50
		Above 60000	31	9.69
		Others	11	3.44
		Total	320	100.00
7	Sector	Finance	25	7.81
		Information technology	92	28.75
		Engineering	84	26.25
		Service	32	10.00
		Sales and marketing	45	14.06
		Healthcare	28	8.75
		Others	14	4.38
		Total	320	100.00

4.2 Characteristic statistics

The mean values were computed by exploiting the following formula (1), the mean values were determined.

$$\mu = (\sum X)/N \quad (1)$$

Here, N and $\sum X$ are the counts of observations and sum of all the data set (X), respectively. Then, using the following formula (2), the standard deviation values were determined,

$$\sigma = \sqrt{\sum (X-\mu)^2}/N \quad (2)$$

Here,$\sigma$and μ are the standard deviation and mean, respectively.

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The factors influencing the intention to invest were examined from the viewpoint of the sample under study. The variables impacting intention of investment are shown in Table 4together with their means, standard deviations with rank. The total mean for all the variables was found to be 4.02 and which is in the range of 3.41 – 4.20 using Likert Scale and falls under high influence. Further, the overall standard deviation for it is 0.275, which suggests that only a small portion of the study examines the variables that young investor should take into account in order to make investment decisions. Further, using co-efficient of difference of each variable, sorting of all the variables was accomplished in which perception has low level of co-efficient of difference as 8.46. Later, factors linked to safety, dependability and risk hold second place with co-efficient of difference of 9.58. In similar way, the third and fourth place of variables were identified as financial literacy and benefits and investment options, respectively. With the co-efficient of difference of 11.42, advanced technical knowledge variable holds sixth place. Importantly, in the occurrence of proper investment decision among young investor, digital marketing platforms is higher than the variable of advanced technical knowledge.

Table 4Sorting the aspects of the variables affecting intention of investment choices using co-efficient of difference

S.No	Independent variable	N	Maximum	Minimum	Mean	Standard deviation	Co-efficient of difference	Weight percentage	Sort
1	Perception	320	5	2.66	4.16	0.262	8.46	83.2	1
2	Benefits and investment options	320	5	2.25	3.95	0.258	10.47	79.0	4
3	Factors linked to safety, dependability and risk	320	5	2.74	4.08	0.378	9.58	81.6	2
4	Advanced technical knowledge	320	5	1.85	3.88	0.221	11.42	77.6	6
5	Financial literacy	320	5	2.58	4.18	0.289	10.26	83.6	3
6	Digital marketing platforms.	320	5	2.45	3.92	0.245	11.02	78.4	5
Total					**4.02**	**0.275**			

4.3 Reliability study

To confirm the suitability of the data, the reliability was examined using SPSS software. Cronbach's alpha evaluates reliability through the comparison of the covariance or shared variance among the variables to the entire variance. Calculating Cronbach's alpha is the same as averaging all potential split-half reliabilities (Collins, 2007). The accepted level of internal consistency can be recognized by Cronbach's alpha values of 0.7 or more(Taber, 2018).Table 5 represents the results of internal consistency of all the independent variables using reliability analysis. All six variables had Cronbach's Alpha values between 0.724 and 0.824, which guarantees that the data was highly reliable and internally consistent. Thus, the data collection scale was precise and adequate for the study.

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Table 5 Reliability analysis of the selected factors

Factors	Number of items	Cronbach's Alpha	Internal Consistency
Perception	5	0.824	Acceptable
Benefits and investment options	4	0.724	Acceptable
Factors linked to safety, dependability and risk	3	0.784	Acceptable
Technical knowledge	4	0.745	Acceptable
Financial literacy	5	0.771	Acceptable
Digital marketing platforms.	5	0.758	Acceptable

4.4 Testing of hypothesis

4.4.1 Correlation Test: Testing of major hypothesis 1 using Spearman correlation coefficient

Hypothesis 1: The most crucial variables for intention of investment are significantly correlated with one another.

Spearmen correlation coefficient was used to rank the independent variables such as perception, benefits and investment options, factors linked to safety, dependability and risk, technical knowledge, financial literacy and digital marketing platforms towards intention of investment. The first overarching concept in the investigation is composed of six minor hypotheses. MATLAB version 20 software was used to compute the Spearmen correlation using t test analysis and the results of this analysis is shown in Table 6. The terms significant level of 0.01 and 0.05 are indicated by (*) and (**), respectively.

The overall T value for the Spearman correlation coefficient between the intention of investment and the influencing factors was 635.0, a positive value that indicates the existence of a strong correlation with significance at the significant level of 0.01 and 0.05.

At the significant level of 0.01 and 0.05, the Spearman correlation coefficient between the investment intention and the influencing variables had an overall T value of 635.0, a positive result that suggests a high correlation. It suggests that addressing these factors will improve the intention of investment among youngsters which is made by financial organizations. The hypothesis of this study, that "The most crucial variables for intention of investment are significantly correlated with one another," is supported by this result.

Testing of Minor-Hypotheses

HA1: The intention of investment is significantly correlated with perception.

Table 6 shows that the Spearman correlation coefficient between the intention to investment and the perception is 0.548, a positive, direct value with significance at the significant level 0.01 and 0.05; the computed value of (T) is 9.373, which is higher than its tabular value at the same level of significance. This will improve the intention of investment among young investors and can help make wiser investment decisions. Hence, HA1 is correct.

HA2: Significant correlation between benefits and investment options and the intention of investment decision.

The estimated(T) value of 9.115 is greater than 1.883 and 2.255, respectively, sharing the information about benefits and investment options is associated with an increase in effective investment decision-making. The benefits and investment options and the desire to invest have a positive, direct Spearman correlation coefficient of 0.624, which is significant at 0.01 and 0.05 levels.

HA3: There is a strong correlation between making the intention of investment in financial sector and the factors linked to safety, dependability and risk.

The estimated (T) value of 7.778 was higher than 1.883 and 2.255, respectively, indicating that the Spearman's correlation coefficient between the intention of investment and the factors linked to safety, dependability and risk and was 0.427, a

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positive, direct value that is significant at the 0.01 and 0.05 levels.

The third sub hypothesis is supported by this observation, according to which investment sectors can concentrate on the factors linked to safety, dependability and risk towards investment options would increase the intention of investment among youngsters.

HA4: Technical knowledge have a strong correlation with the intention of investment.

As shown in Table 6, the obtained value of (T) is 10.254, is greater than its tabular equivalent, which is 1.883 and 2.255, respectively. There is a positive direct-directional Spearman correlation coefficient of 0.588 between the technical knowledge and the intention of investment. This result is significant at the levels of 0.01 and 0.05, respectively. Thus, the fourth sub hypothesis is accepted and priority given to obtaining ultimate technical knowledge gained by young investors could lead to improve the intention of investment.

HA5: Financial literacy and the intention of investment are strongly correlated.

Table 6 indicates that the Spearman correlation coefficient between the financial literacy and the relevant intention of investment variable was 0.458. There is a positive direct-directional value and significant at the levels of 0.01 and 0.05. Further, the estimated (T) value of 4.887 is greater than 1.883 and 2.255, respectively. This research implies that a greater emphasis on financial literacy among young investors will lead to take suitable investment intention. This supports that the fifth sub hypothesis is accepted.

HA6: Digital marketing platforms and investment intention are significantly correlated.

There is a positive directional value of coefficient of the Spearman correlation is 0.455 between the digital marketing platforms and the intention of investment and represents the significance levels at 0.01 and 0.05, respectively. The calculated (T) value of 6.097 is greater than 1.883 and 2.255. Lastly, digital marketing platforms pay attention to young investors to boost their intention of investment option. Hence, the sixth null hypothesis is accepted at both the 5% and 90% levels of significance.

Table 6 Estimated Spearmen correlation coefficient and T value with significance level of 0.01 (*) and 0.05 (**)

S.No	X	Y	Calculated T value	Spearman Correlation Coefficient (r)	Significance
1	Perception	Intention of investment	9.373	0.548	**
2	Benefits and investment options		9.115	0.624	**
3	Factors linked to safety, dependability and risk		7.778	0.427	**
4	Technical knowledge		10.254	0.588	**
5	Financial literacy		4.887	0.458	**
6	Digital marketing platforms.		6.097	0.455	**

4.4.2 Effect Test: Testing of major hypothesis 2 using simple linear regression model

Hypothesis 2: The independent variables affecting the intention of invest among young investors have a significant impact link.

Linear regression is used to ascertain the connection between a continuous dependent variable and one independent variable. The simplest scenario, known as “simple linear regression” has only one independent variable. Simple linear regression is used to fit a straight line that best depicts the relationship between the data points (Schober and Vetter, 2021).The software version 18 of Mini Tab was used to analyze the equation for the basic linear regression model. A basic linear regression equation is computed using the collected data prior to deciding on the second major hypothesis, which serves as the foundation for the six supporting hypotheses. In Table 7, the tabular values of F are 4.125 and 8.568 at the 0.01 and 0.05 significant levels, respectively. Likewise, at the significance level of 0.05 and 0.01, the tabular values of T are 1.921 and 2.442,

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respectively. The developed simple linear regression model has overall F value of 145.82 which exceeds the tabular analogue value of 4.125 and 8.568. The estimated value of (F) showed that the two variables were correlated. At the 0.05 significance level, the variable had a significant impact, according to the statistical analysis in Table 3. The total estimated coefficient of determination (R^2) is 0.9185, which means that about 91.85% was contributed by the independent variables that affect the intention of investment. The rest of 8.15% is ascribed to the involvement of additional factors not covered by t.

$$Intention\ of\ investment = 1.84 + 0.91\ factors\ affecting\ the\ intention\ of\ investment \quad (3)$$

The aforementioned equation indicates that about 91% rise in intention of investment will follow a 100% increase in the variables influencing intention of investment among youngsters, with an impact size of 0.91. The limit value suggests that there is a significant sign as the calculated (T) value of 13.548 is more than 1.921 and 2.442 at the significant levels 0.01 and 0.05. Thus, the second major hypothesis of this study is accepted.

Testing of Minor-Hypotheses

HB1: The perception has a substantial influence on intention of investment.

According to Table 7, the estimated (F) value of (28.643) for perception dimension related to intention of investment exceeds the tabular analogue value of 4.125 and 8.568, indicating a substantial influence at the significant levels of 0.01 and 0.05. With 42% being due to the impact of other factors and about 58% of the variance in intention of investment can be attributed by the independent variable (perception), according to the determination coefficient value. The computed regression equation to explain how perception affects the intention of investment among young investors is given below,

$$Intention\ of\ investment = 3.48 + 0.68\ perception \quad (4)$$

The aforementioned equation shows that a 100% increase in young people's intention to invest is due to about 61% increase in perception. The calculated (T) value is 8.667, which exceeds the tabular analogue values of 2.442 and 1.921 and significant at the levels 0.01 and 0.05, respectively. Thus, the minor hypothesis HB1: The perception has a substantial influence on intention of investment is accepted.

HB2: Investment intention is significantly influenced by benefits and investment options.

According to Table 7, there is a significant effect for the benefits and investment options in the relevant intention of investment at the (0.01) and (0.05) levels of significance, as the calculated (F) value of (84.044) exceeds the values of 4.125 and 8.568. The intention of investment and the benefits and investment had a strong correlation. The determination coefficient accounts for around 82% of the variation, with other factors having an influence on the remaining 18%. The impact of the benefits and investment options on the intention of investment is therefore described by the regression equation that follows:

$$Intention\ of\ investment = 2.28 + 0.47\ benefits\ and\ investment\ options \quad (4)$$

The aforementioned equation shows that about 47% increase in benefits and investment options could lead to 100% increase in the factors affecting young people's intention. Further, the estimated T value is 10.586, which exceeds the value of 1.921 and 2.442 and significance at the levels of 0.01 and 0.05, respectively. Thus, the minor hypothesis HB2 is accepted.

HB3: Investment intention is significantly influenced by factors linked to safety, dependability and risk.

Table 7 represents the estimated F value for HB3 is 58.687, exceeds the tabular analogue value 4.125 and 8.568. There is a significant effect for factors linked to safety, dependability and risk in the relevant intention of investment at the (0.05) and (0.01) levels of significance. Less than half of the variation in intention of investment was governed by the factors linked to safety, dependability and

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risk. It is hypothesized that the remaining 55% originates from variables beyond the scope of this paradigm. The calculated regression equation for the impact of factors linked to safety, dependability and riskon the dependent variable is given below,

$$Intention\ of\ investment = 2.87\ 0.74\ factors\ linked\ to\ safety, dependability\ and\ risk \quad (5)$$

A +1 increase on the factors linked to safety, dependability and risk will result in a +74 increase on intention of investment, according to the regression coefficient's value of (0.74) in the equation above. The HB3has the positive connection between the intention of investment and the level of significance which is based on the calculated t value of 7.894. Thus, the minor hypothesis HB3 is accepted.

HB4: Investment intention is significantly influenced by advanced technical knowledge.

The estimated F value is 72.598 and which exceeds the value of 12.693 in Table 7 and it concludes that the significant levels at 0.05 and 0.01 for the advanced technical knowledge in the intention of investment. The advanced technical knowledge accounts for over half of the variance in the values of the intention of investment, according to the determination coefficient value (0.6287) and it is accepted at the levels of 0.01 and 0.05 significance levels. About 37% of the variance is due to other variables. The subsequent regression equation represents (6) the relationship of the advanced technical knowledge with the intention of investment among young investors:

$$Intention\ of\ investment = 3.11 + 0.42\ advanced\ technical\ knowledge \quad (6)$$

With a regression coefficient of 0.42 in the above equation, a 42 % rise in the intention of investment is predicted for every unit increase in the advanced technical knowledge. Importantly, the fourth sub hypothesis is accepted due to the estimated T value is 6.783 and exceeds the value of 4.363 at the significant level (0.05) and (0.01), respectively. Thus, the minor hypothesis HB4 is accepted.

HB5: Investment intention is significantly influenced by financial literacy.

The substantial relationship is seen at the level of significance (0.05) and (0.01) when examining the financial literacy on the intention of investment. The predicted (F) value of 79.542 exceeds the value of 12.693 as shown in Table 7. The financial literacy accounts for more than 80% with respect to intention of investment and it is significant at the levels of 0.01 and 0.05. Further about 16% of the variance is due to other variables. The subsequent regression equation represents (7) the connection between financial literacy and intention of investment among young investors:

$$Intention\ of\ investment = 2.56 + 0.56\ financial\ literacy \quad (7)$$

With a regression coefficient of 0.56 in the above equation, a 56 % rise in the intention of investment is predicted for every unit increase in the financial literacy. Importantly, the fifth sub hypothesis is accepted due to the estimated T value is 8.688 and it exceeds the value of 4.363 at the significant level (0.01) and (0.05), respectively. Hence, minor fifth hypothesis is accepted.

HB6: Investment intention is significantly influenced by digital marketing platforms.

The estimated F value for digital marketing platforms is 34.894 as shown in Table 7 and exceeds the value of 12.693, suggesting the significance at the levels of (0.05) and (0.01), respectively. Further, the independent variable digital marketing platforms accounts for more than 70% of the variance in the values of intention of investment, according to the determination coefficient value (0.7588). It is significant at 0.01 and 0.05. About 24% of the variance is due to other variables. The subsequent regression equation represents (8) the relation of the financial literacy on the intention of investment among young investors:

$$Intention\ of\ investment = 3.54 + 0.35\ digital\ marketing\ platforms \quad (7)$$

With a regression coefficient of 0.35 in the above equation, a 35% rise in the intention of investment is predicted for every unit increase in the digital

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marketing platforms. Importantly, the sixth sub hypothesis is accepted due to the estimated T value is 6.855 and it exceeds the value of 4.363 at the significant level (0.05) and (0.01), respectively. Hence, minor sixth hypothesis is accepted.

Table 7 Simple linear regression coefficients to determine the relative significance of various factors involved in intention of investment.

S.No	X	Y	Fixed limit (a)	Coefficient of determination (R^2)	Regression Parameter (β)	Estimated (F) Value	Estimated (T) Value	Significance
1	Perception	Intention of investment	3.48	0.5758	0.68	28.643	8.667	**
2	Benefits and investment options		2.28	0.8205	0.47	84.044	10.586	**
3	Factors linked to safety, dependability and risk		2.87	0.4567	0.74	58.687	7.894	**
4	Technical knowledge		3.11	0.6287	0.42	72.598	6.783	**
5	Financial literacy		2.56	0.8404	0.56	79.542	8.688	**
6	Digital marketing platforms.		3.54	0.7588	0.35	34.894	6.855	**
Overall			1.84	0.9185	0.91	145.82	13.548	**

4.4.3 Testing of hypothesis using artificial neural network

Hypothesis 3: There is a strong relationship between the independent variables and the intention of investment among young investors.

The independent variables are ranked based on their importance in young investor intention of investment decision-making process using the Artificial Neural Network (ANN) approach. In order to forecast the importance of various factors affecting decision-making for investment intention within south India, this research uses artificial neural networks (ANNs). To determine their statistical significance, the selected independent variables under consideration for study were initially statistically analyzed. The data set consisting of both testing and training in which testing consisted of about 20% and training consisted of about 80%. The Levenberg-Marquardt training method was used for the data.

In this study, a triple layer network architecture as shown in Figure 2 was attained by varying the hidden layer (3–12) and choosing the right number of hidden layers based on evaluation indicators (RMSE) for every data set. The developed topology had 6, 1, 10 as input, output and hidden layers, respectively. Further, the R value of the testing and training were found to be 0.9725 and 0.9643, respectively. This ensures that the created ANN model is adequate.

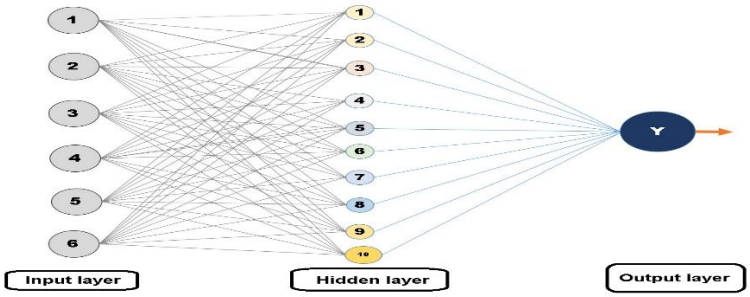

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Figure 2 Triple layer topology of 6 – 10 -1 ANN network

The statistical metrics derived from the testing and training datasets are shown in Table 4. Additionally, to prevent over fitting, a 10-fold cross-validation was carried out.The accuracy was evaluated using formula (4)

$$Overall\ accuracy = (TN + TP)/N*100 \qquad (4)$$

Here, N is the No. of datasets. Further, TN and TP are True negative and True positive, respectively. A high degree of performance is indicated by the total accuracy values shown in Table 8, which varied from 79.30 to 95.88%. Therefore, the goal of elucidating the link between the variables is effectively fitted by the neural network model.

Table 8 Number of testing and training datasets used and strategy of 10-fold ANN cross-validation

Network	Number of testing	Number of training	Overall accuracy (%)	
			Testing	Training
1	64	256	80.54	95.88
2	60	260	82.47	85.64
3	70	250	91.33	82.92
4	75	245	84.66	87.58
5	55	265	88.26	85.49
6	68	252	83.42	84.05
7	72	248	86.57	85.49
8	76	244	91.92	79.30
9	65	255	92.46	86.50
10	62	258	89.84	85.44

Using the analysis of ANN, the obtained results are represented in Table 9. With the normalized importance of 100%, the variable financial literacy holds first position followed by benefits and invest option hold second position with 82% of normalized importance. The variable of perception holds third position with 75% of normalized importance percentage. Subsequently, the fourth and fifth position hold by factors linked to safety, dependability and risk and technical knowledge, respectively. Unfortunately, through this study, the involvement of digital marketing platforms towards making intention of investment among young investors hold sixth position among the selected six variables.

Table 9 Importance of independent factors

Independent factor	Normalized importance (%)	Importance	Rank
Perception	75	0.154	3
Benefits and investment options	82	0.241	2
Factors linked to safety, dependability and risk	54	0.115	4
Technical knowledge	48	0.104	5
Financial literacy	100	0.282	1
Digital marketing platforms.	45	0.084	6

5. Conclusion

The purpose of the research is to examine the variables related to intention of investment among young people. The results and analysis of this research have significant consequences. It is clear from the descriptive analysis that every component has a major influence on the intention of investment among young people. According to correlation analysis and simple linear regression model, the selected variables are significantly correlated with one another. Later, these independent variables are ranked based on their importance in young investor intention of investment decision-making process using the Artificial Neural Network (ANN) approach. Importantly, the first three positions were predicted as financial literacy, invest option and perception based on the acquired normalized importance percentage. The primary limitation of this study is that it ignores alternative investing methods in favour of concentrating on intention of investment among young people. Future studies related to strategies to increase intention of investment can be

considered. Thus, this study could assist the intention of investment among the present young generation.

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