

Investing behaviour of the IT Millennials with respect to retirement planning

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ABSTRACT

The objective of this study is to identify the demographic factors and behavioural biases affecting the financial planning of the Millennials. For this purpose the investing behaviour of the Millennials in the IT Industry as a representative sample with respect to retirement planning has been studied using the Retirement Wellness Score. Logistic regression analysis was performed to determine the likelihood of whether the Millennials are ready for retirement with the main aim of showing the relationship between the study variables. An attempt has been made to develop a predictive model that would help in determining the Millennials' readiness for retirement given their demographic variables and dominant bias presence. This research contributes to developing an understanding of Millennials' financial planning for retirement.

Contribution/ Originality

The study aims to establish a relationship between the Millennials' behavioural biases and demographic factors with readiness for retirement using the Retirement Wellness Score. This predictive model built with logistic regression would help financial advisors to measure investment readiness and undertake exhaustive and customized portfolio planning for the Millennials.

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1. INTRODUCTION

It is important for financial planning to understand an individual's risk return appetite, tolerance, and various other constraints such as liquidity, time, and tax etc. before a suitable investment portfolio can be build (Kannadhasan, 2015). Conventional finance assumes that each individual is a rational human being, but in reality it is not the case. Hence we need to understand the behaviours and biases that influence investors' choices (Nofsinger, 2002).

Financial planning, especially with respect to readiness for retirement, has a relationship with behavioural biases as well as demographics such as age, gender, income, marital status, and the number of dependents etc. It involves multiple financial goals, risk, return, and constraints over a long-term horizon. To determine the required retirement funds one needs to understand the spending pattern, expected longevity, standard of living, and the returns to be earned to have the necessary funds (Shaliza, 2015). This is also important because of the trend shifting from Defined Benefit (DB) pension plans to Defined Contribution (DC) plans which transfers the risk of retirement readiness from governments and employers to individual Millennials (Yao, 2017). The Millennials form a significant portion of the work force in various countries today, especially India (Das, 2016). It is therefore important to understand the effect of demographics and behavioural biases on financial planning by these Millennials for their readiness for retirement (DeVaney, 2015).

This research is an attempt to study and build a model to predict whether Millennial individuals are likely to be financially ready for retirement. The study is to understand the Millennials' behaviour especially working in IT sector towards the investment for their retirement. While understanding their behaviour, the demographic factor and the biases are playing vital role in form of cognitive errors and the emotional biases. The study also investigates upon whom Millennials consult regarding financial planning for their retirement. Average age of Indian IT employees is 30 years (Dhawan, 2017), and their income also being higher than in comparison to other industries. The study has been divided into following sections. The first section highlights the existing literature. An effort has been made to identify and confirm the selection of the essential variables in order to meet the objectives. The last section of the paper emphasizes the primary data analysis on the basis of the received responses. The conclusion contains the findings and suggestions based on the analysis.

2. LITERATURE REVIEW

Millennials are individuals born between 1981 to 1996. They form a significant portion of the work force in various countries, especially India. Millennials believe in pursuing passion, adventurous attitude, possess short attention spans, and they think unconventionally (Cutler, 2015). They comprise of young, educated, ethnically diverse, and economically active individuals. This working-class group is considered as the 'powerhouse of the global economy' (DeVaney, 2015). These Millennials are in their adult lives where they need to undergo financial decision making (Yakoboski, 2014). However, this generation has been the most difficult to manage in the world (Black, 2012). Every generation has a transformative effect on the economy, but the actions of Millennial Generation, promise to carry special impact (Carlo, 2014). Their mind-set is radically different from preceding generations and that applies to the money matters as well (Cheong, 2016).

The investment decisions of the Millennials depend on their level of financial literacy (Mottola, 2014). Generally, lack of financial knowledge is the biggest constraint in taking the investment decisions (Agunga, 2017). Millennials are highly tech savvy and explore on various websites, about financial planning though they do not completely rely on it (Ronald, 1993). The President's Advisory Council on Financial Literacy (PACFL, 2008) in U.S. defined "financial literacy as the ability to use knowledge and skills to manage financial resources effectively for a lifetime of financial well-being."

A union of various definitions by [Mandell \(2008\)](#) and [Tufano \(2010\)](#) shows that financial literacy is a specific knowledge, ability or skills to apply in good financial behaviour, and experiences. Pension finance literacy facilitates individuals for retirement planning, make informed choices of pension products and contribute effectively in management of their pension schemes ([Otsola, 2011](#)). It also influences the saving behaviour and pension schemes of individuals and in turn contributes to economic growth of countries ([Julie, 2009](#)). On the other hand, [Remund \(2010\)](#) defines it as a degree of understanding of key financial concepts and ability to process economic information and make informed decisions about financial planning, wealth accumulation, pensions, and debt ([Annamaria, 2011](#)).

[Zaiton \(2016\)](#) entailed that on average, individuals are not interested in retirement finances till the age of 48 years. An individual is considered to be prepared for retirement when accumulated savings are sufficiently high and generates income at least equal to a given pre-retirement level of consumption ([Yuh, 1998](#)). Retirement planning as defined by [Magera \(2015\)](#) is a systematic way of planning resources with the aim of satisfying income in the retirement age. [Lusardi \(2003\)](#) explained that the unfortunate occurrence where many individuals encounter late life financial shortfall, in part, from a failure to set aside sufficient personal savings during their working years. [Joo \(2005\)](#) observed that not all individuals nearing retirement age are financially prepared to do so. To ensure one is adequately preparing for retirement, [Agunga \(2017\)](#) posit one's behaviour has to be aligned with it. An individual must be motivated to retire at a certain age and be curious to seek information and advice, and finally take necessary steps to save for retirement. According to [van Rooij \(2011\)](#) those individuals who have low risk-taking ability are less likely to invest. Hence, risk taking ability is a significant determinant of whether the person will possess shares & stocks and that may explain some of the differences among individuals ([Yong, 2017](#)).

[Douglas \(2008\)](#) argued that financial literacy, knowledge and cognitive ability may influence preferences such as risk aversion, investment duration and the general effect on financial decision-making. A handful research on financial literacy is conducted in India, especially with respect to retirement planning. Moreover, with a focus on Millennials, there is only some realization stemming from the burden on provident funds system as well as lukewarm response to the National Pension Scheme (NPS) ([Baskaran, 2016](#)). Millennials which are in adulthood are known to be financially risk averse and conservative investors, who maintain their savings in cash and less in stocks ([Debevec, 2013](#)); Most of the Millennial's immediate priority is to spend on whatever gives them the instant gratification. Any decision of investing should be backed up by a sound financial planning that caters to all of your financial goals. Investment strategies are guided by how much money you need and by what time do you need it ([Tarun, 2017](#)).

Investment priorities and the investment options which Millennials choose depend on their behavioural biases. Most of the economic and financial theories assume that each person takes rational decisions particularly after considering all the available information (REM-Rational Economic Man). But behavioural finance denies this and explores the psychological aspects of the individual and the market. Behavioural finance attempts to explain the reasoning patterns of investors, including the emotional processes involved and the extent to which they influence the decision-making process. [Statman \(2000\)](#) describes behavioural finance as the interaction of psychology with the financial actions and performance of the investors. [Brad \(1999\)](#) stated that "people systemically depart from optimal judgment and decision making.

Behavioural biases are classified into two types, one based on cognitive errors and other is based on emotions. Cognitive errors are the basic information processing or the memory errors which leads to irrational decisions. Emotional biases stem from the various human emotions like fear, greed, anxiety and others. Further, cognitive errors are further classified into two categories, one Belief Perseverance Biases and other is Information-Processing Biases.

Belief perseverance biases are the biases based on cognitive dissonance, which arises out of the conflict between new and old information. There are a number of belief perseverance biases: *Conservatism*: When things change, people tend to be slow to pick up on the changes (Ritter, 2003). *Confirmation*: People ignore or undermine that information which does not confirm with their beliefs. They tend to search and accept only that information which supports their beliefs. *Representativeness bias*: People tend to classify all the new information based on their past experiences. *Hindsight bias*: *Hindsight bias* is the inclination of the people to misleadingly believe that they predicted the consequence of an event (Pompian, 2005).

The *Cognitive errors*; Information processing biases includes, *Mental Accounting*: which is the tendency to separate or segregate money into different accounts based on perceived uses. Ritter (2003) said framing is the notion that how a concept is presented to individuals' matters. Emotional biases are based on irrational impulses and can drive investors to take suboptimal decisions by influencing the decision-making process.

Most of the Millennials are not conscious about the retirement and the financial requirements. They need to identify the age they would like to retire and what kind of life they want to lead after retirement (Mottola, 2014). It is necessary to identify the responsibilities to be fulfilled once they retire. This planning is required to be done at early stage of life. More it is planned early in the life; better they can have a vision which helps them to chart out the entire course of their life. Planning for retirement in advance can help in gaining a sense of control over one's future (Githui, 2011). Financial preparedness implies planning on how to gain control of future financial requirements (Hershey, 2000). Many retirees often live miserable lives as a result of reduced income upon retirement due to lack of forward planning (Douglas, 2008). To understand the extent of the retirement planning and to know whether they are prepared or not, we need to know whether individuals think ahead and make the future plans (Lusardi, 2007).

3. RESEARCH METHODOLOGY

3.1. Research objectives

The tenacity of this research is to understand the aspects that influence the Millennials in the IT industry to save for building a retirement corpus. The aim of the research is to explore whether the Millennials in the IT industry in India are ready for retirement or not. The study also attempts to develop a predictive model which would help to determine the retirement readiness of the Millennials given their demographic variables and dominant bias presence.

3.2. Significance of the study

It is essential to recognize that as the economy improves, financial wellbeing of the respective generations also improves compared to their predecessors. The Millennials are one generation which is widely believed to be bucking this trend and may end up poorer compared to their parents. This is largely due to the characteristics and behavioural attributes of this generation. This research contributes to developing an understanding of the Millennials' financial planning for retirement readiness. Financial advisors can use the model to gauge the financial readiness based on a few sets of parameters and deliver customized portfolio planning to the Millennials.

3.3. The scope of the study

People born between 1981 and 1996 are considered since they constitute a significant portion of the workforce. Within this group the focus is on IT and ITES employees since that segment has seen a substantial rise in income levels and is now faced with technological shifts which question the business model of the industry. It also entails alternate choices of investment instruments, whom the Millennials consult for retirement advice, their level of risk tolerance, and which behavioural biases they demonstrate as a group.

3.4. Research design

The Millennials employed in the IT sector have been taken as the population spread across the IT hub of Bangalore and Pune. According to the digital Indian Cities Survey 2016 the Bangalore, Delhi, Mumbai and Pune are the biggest tech cities in India due to digital infrastructure and innovation. Bangalore is the country's highest IT platform. The Bangalore is ranked from 49th to 19th due to an influx of IT companies and an enormous population of programmers of which the majority are under 25 years of age (ET, 2017). Bengaluru has about 1.5 million employees in the IT and IT-enabled service sectors out of nearly 4 million employees across the country. More than 3 lakhs people in Pune are in 800 IT companies of all sizes. According to the NASSCOM the top five IT companies 2018 were TCS, Infosys, Wipro, HCL, and Tech Mahindra. Considering that the IT population of Bangalore and Pune is approximately one lakh each in these top five companies we arrive at the total number of five lakhs applying Slovin's formula $n = N / (1 + Ne^2)$ where n = number of samples, N = total population, and e = error tolerance (level). Therefore $5 \text{ lakhs} / (1 + 5 \text{ lakhs} * 0.05^2) = 400 =$ the sample size. The stratified random sampling method has been used for the sample study. A questionnaire as a survey tool was designed using parameters extracted from the literature and distributed to 400 respondents employed by TCS, Infosys, Wipro, HCL, and Tech Mahindra & Mahindra IT systems located in Bangalore and Pune out of which approximately 60% - 239 responses -were fetched, and the rest were outliers. The respondents encompassed employees of all levels - junior, middle, and senior workforce in the IT companies, IT GCC (Global Capability Centre), and IT Enabled Services (ITES) such as BPO & KPO. The average age of employees in these top tech companies is between 28 and 31 years.

The questionnaire was divided into two sections. Section one covered all the demographic factors - age, gender, marital status, number of financial dependents, years of experience, primary occupation, organization's industry, yearly after-tax income band, planned retirement age, percentage of yearly income saved for retirement, whom they consulted for retirement goals, approximate amount of retirement corpus gathered to date, amount of expected retirement fund at the time of retirement and risk tolerance of an individual etc. These factors enable us to understand how financially savvy the Millennial are and the extent of preparedness for retirement today.

Section two of the questionnaire includes bias factors; cognitive errors, and emotional biases. A five-point likert scale was used for all the bias responses and other character variables. The Retirement Wellness Score has been used to find out whether the Millennials are ready for retirement. An individual can be considered to fall short of retirement resources if aggregate retirement assets are inadequate for meeting the aggregate minimal living and health related expenses after retirement.

VanDerhei, (2010) explained a Retirement Security Projection Model to track retirement preparation called Retirement Readiness Rating¹. Similar calculators based on the principle explained below have been postulated by many financial houses to name a few commercial tools². Similar calculators are available on various information providing websites too.

The principle behind the Retirement Wellness Score calculation is that on the date of retirement the current value of estimated future liabilities based on actuarial assumptions of longevity, discount rate, and monthly expense (usually 85% of the last salary at retirement) should be lower than or equal to the value of assets saved for retirement on that date. Unlike the EBRI model which is based on extensive historical data across the USA. The model used in this study is a simplification of the concept with assumptions as below. This is primarily because retirement related studies with historical data are unavailable in India and this study is a small step in that direction. The retirement

¹ www.ebri.org, VanDerhei and Copeland, (2010) "The EBRI Retirement Readiness Rating:™ Retirement Income Preparation and Future Prospects" EBRI Issue Brief, no. 344 (July 2010)

² <https://www.hdfclife.com/retirement-planning-calculator>,
<https://www.bankrate.com/calculators/retirement/retirement-plan-calculator.aspx>

wellness score to be derived is based on actuarial assumptions. Following are the actuarial assumptions used for the retirement wellness score:

- The expected retirement age is based on what the respondent provides
- The longevity for computational purposes is assumed at 90 years for all genders. This is primarily so due to lack of availability of longevity projections for India considering the impact of advances in medical technology and improvements in the standard of living due to economic growth
- The compensation growth is conservatively estimated at 4% per year for $(n-1)$ years where $n =$ number of working years till retirement
- Post-retirement living expense liabilities are considered at 85% of the last salary at retirement. For more accuracy of computation this may be considered to vary between 40% and 160% of the last salary depending on the spending pattern and desired standard of living. Since this research does not examine spending patterns, a flat 85% of the last projected salary at retirement is considered for all ages and genders.
- The current level of accumulated retirement assets is considered based on what the respondents declare
- The annual contribution to a retirement corpus is also based on what the respondents declare between 0% and 20% of yearly after-tax income
- The preretirement period assets are assumed to earn the nominal value of 8% per year on an average. This rate is used for arriving at the estimated value of assets on the date of retirement
- For the period after retirement the nominal discounting rate used is 6% considering that an individual's risk tolerance falls with age. This rate is used for arriving at the estimated value of future liabilities as on the retirement date. For more accurate computations one can consider the real rate after adjusting for long-term inflation assuming that the standard of living is maintained irrespective of the inflation
- Since the accumulated retirement assets should ideally equal or exceed the current value of future liabilities, the retirement wellness score computed as a ratio given below:

$$\text{Retirement Wellness Score} = \text{asset value on retirement date} / \text{current value of all future liabilities on retirement date}$$

- (1) If this ratio is 1 or higher, the individual is likely to be retirement ready
- (2) If this ratio is less than 1, the individual is at risk depending on how far s/he is from the value of 1.

With the dependent variable Y being dichotomous (whether retirement ready? Yes/No), and independent variables from demographic factors and dominant biases, a logistic regression is performed to determine whether the Millennials are ready for retirement. The scaled data were analyzed using descriptive and inferential statistics using MS Excel and its Real Stat add-in.

4. DATA ANALYSIS AND FINDINGS

4.1. Demographic findings

159 of 239 respondents were men (66.5%) and 80 women (33.5%). Almost 55% of the respondents were married and 43% were single. The average age of the sample was 30.84 years with mean experience of 8.08 years. The average annual after-tax salary of the sample was about Rs. 8 lakhs.

29.2% of the respondents did not have any dependents to support. 28% had two dependents. 8% of them were single, hence could be assumed to consider their parents or siblings as dependents. 17% of the respondents, the majority of them married, had three dependents. 14% of the respondents had one dependent. 11.3% had four or more dependents - most in the age group of mid to late thirties.

51.5% of the respondents were considering early retirement between the ages of 45 and 55. 35% of these early retirement aspirants had one to four or more dependents to support. On the contrary, only 16.7% of respondents with no dependents aspired to retire early. It is therefore apparent that respondents in the phase of growing their wealth and having dependent responsibilities are showing signs of fatigue, hence aspire to retire early. This corroborates the findings from (Mottola, 2014) emphasizing that lower income households and households with dependents are under a fair amount of financial strain. 48.5% considered working until 60 years of age.

52.7% of the respondents planned for retirement by themselves or with the help of spouses. 19% consulted their parents. Professional financial advisors were respondents' third preference with only 15.48% opting for their consultation, and 9.6% consulted relative (elder brother, sister, uncle, aunt) for financial advice. This is in consistent with the outcome of a Dutch adult study conducted by (Hilgert, 2003) that financial literacy is positively related to self-beneficial financial behaviour. Interestingly, though the respondents were technologically savvy, only 2.9% of them used the help of digital robot advisors. It is therefore apparent that when it comes to technology adoption for retirement planning, the Millennials are yet to warm up.

4.2. Investment preferences

The top investment instruments preferred by Millennials are savings account and fixed deposits, real estate, provident funds, mutual funds, equity and gold. 29.7% respondents gave priority to Savings account and fixed deposits. Almost 18% gave priority to provident funds and national pension scheme (epf/ppf/nps). The 23% preferred mutual funds as their first choice. Real estate was preferred as first choice of investment by 17% respondents. About 4% preferred gold as their top priority. Equities come slightly ahead of gold with 7.5% respondents making them as their first choice.

This is largely reflective of the underlying risk tolerance of the Millennials which has been entailed in the study by Rooij (2011) where the concept of risk diversification and knowledge of financial markets has been considered as a challenge amongst the individuals. Also during the course of survey, it was evident that their awareness about various investment instruments and their role in wealth building for retirement is low. Primary motive for investment seems to be tax deductions and not longer-term retirement planning. This could be because of low awareness of impending liabilities in the post retirement period.

4.3. Risk tolerance

10% of the respondents are highly risk averse and possess 0% risk tolerance for the short-term fall in their portfolio. 41% are able to bear low risk of 5% short term fall in their value of investments. 28% of respondents are able to bear 10% fall in value. 14% respondents have high risk tolerance and can bear 15% short-term fall in investment value. The results are in consistent with the study established by Mandell (2008) and Rahmawati (2015) emphasizing on strong relation between age and the level of individual risk tolerance although the risk tolerance of each age group is significantly different, where educated investors are more likely to take risk, and only 7.5% of the respondents have very high-risk tolerance and can bear more than 15% drop-in near-term value of their investments. The distribution of risk tolerance is consistent with the choice of investment instruments wherein defensive savings and fixed deposit are number one priority.

Risk capacity is largely determined by the earnings of the individual whereas the willingness is determined by the individual's economic situation. From the demographic analysis above, the average after tax earnings of the respondent sample is Rs. 8 lakhs. This when compared to other industries is reasonably above average compensation. Hence, it can be safely considered that the IT Millennials have above average risk capacity. On the other hand, the burden of dependents and the prevailing adverse industry circumstances maybe the extraneous factors affecting the willingness to take risk. With these factors being adverse, the overall willingness to take risk is low.

4.4. Behavioral biases

When analysing the various biases, the most dominant biases are derived by aggregating the total affirmative responses which indicate Strongly Agree, Agree and Neutral responses for the bias. Accordingly, for the 239 respondents, Table 1 shows the sums of the responses.

Table 1: Behavioural biases

Rank	Bias	Total Affirmative responses (Strongly agree, Agree, Neutral)	Affirmative Responses as % of sample size
1	Overconfidence	225	94.14%
2	Regret Aversion	214	89.53%
3	Framing	201	84.10%
4	Hindsight	187	78.24%
5	Conservatism	172	71.97%
6	Mental Accounting	158	66.11%
7	Loss Aversion	151	63.18%
8	Status Quo	150	62.76%
9	Representativeness	126	52.72%
10	Endowment	107	44.77%
11	Self-Control	77	32.21%
12	Confirmation	71	29.71%

It is evident from above table that, Millennials as a group are likely to have following biases as dominant: Overconfidence, Regret Aversion, Framing and Hindsight. Overconfidence stems for the group primarily due to their technology savvy and information gorging generation. It is likely to give Millennials the feeling of being connected and knowing about facets of life. It also stems from this generation's self-belief and do-it-yourself attitude. The bias to some extent is good as it may lend independent thinking. The degree of overconfidence nevertheless matters for sound investment decisions. Regret aversion likely stems from the Millennials group behaviour, over reliance on judgement of friends and the feeling of being left out of the group. Framing bias has most likely its roots in the lack of financial knowledge and superfluous involvement in financial decision process. Hindsight bias is most likely the result of overconfidence as well as some extent of cognitive dissonance Millennials experience in financial matters. The Table 2 provides the insights of retirement wellness score.

Table 2: Retirement wellness score

Retirement Wellness score range	% of survey respondents	Average working years remaining	Gender		Marital Status			Dependents			Expected retirement age			Average contribution				Average after tax salary (Rs. Lacs)	
			Male	Female	Single	Married	Other	None	1-2 dependents	3 dependents	4 or more	60 years	55 years	Early (50 or before)	20% and above	15%	10%		5% or less
1 or above (retirement ready)	10.87%	29.92	81%	19%	65%	31%	4%	46%	42%	8%	4%	73%	16%	11%	46%	23%	15%	16%	4.73
0.85 to 0.999 (at risk group)	5.85%	25.33	58%	42%	64%	36%	0%	36%	57%	0%	7%	75%	17%	8%	58%	33%	9%	0%	13.00
less than 0.85 (not ready)	83.28%	23.56	65%	35%	41%	57%	2%	27%	41%	19%	13%	44%	21%	35%	11%	14%	33%	42%	8.15

****Note:** Numbers are rounded up to percentages

Observations: Despite higher average after tax income, the retirement readiness is at-risk for the respondents due to following factors:

- Less number of average working years as compared to those who are retirement ready
- Married status and higher number of dependents

The data reinforces the impact of marriage and number of dependents onto the retirement readiness of the individual.

It can be therefore observed that following aspects are primarily contributing to the reasons why a large segment is not retirement ready:

1. Less working years as compared to other two groups i.e. ready and at-risk
2. A larger portion of this segment aspire to retire early as compared to those in the other two groups
3. More number of married respondents with high number of dependents
4. Less average after tax yearly salary as compared to at-risk respondents
5. None to low yearly contribution towards building retirement corpus

4.5. Logistic regression

Logistic regression analysis was performed to determine the likelihood of whether the Millennials are retirement ready or not with the main aim of showing the relationship between study variables.

Following table summarize the output of the logistic regression;

Table 3: Results of logistic regression

Study variables (X)		Coefficients	P-value
Intercept		-13.647	0.028
Regret Aversion		0.946	0.395
Overconfidence		-0.232	0.836
Hindsight		0.118	0.862
Framing		0.155	0.826
Age		0.103	0.352
Gender		-0.881	0.178
Marital status		0.262	0.665
Financial dependents		-0.011	0.951
Mean Yearly After-tax salary in lakhs		-0.396	0.001
Working years before retiring		0.242	0.001
Percentage of saving in yearly income for retirement?		35.276	0.000
LL0	-82.21	LL1	-43.60
Chi ²	77.22	Df	11.00
R ² (L)	0.47	R ² (CS)	0.28
R ² (N)	0.56	Hosmer	682.30

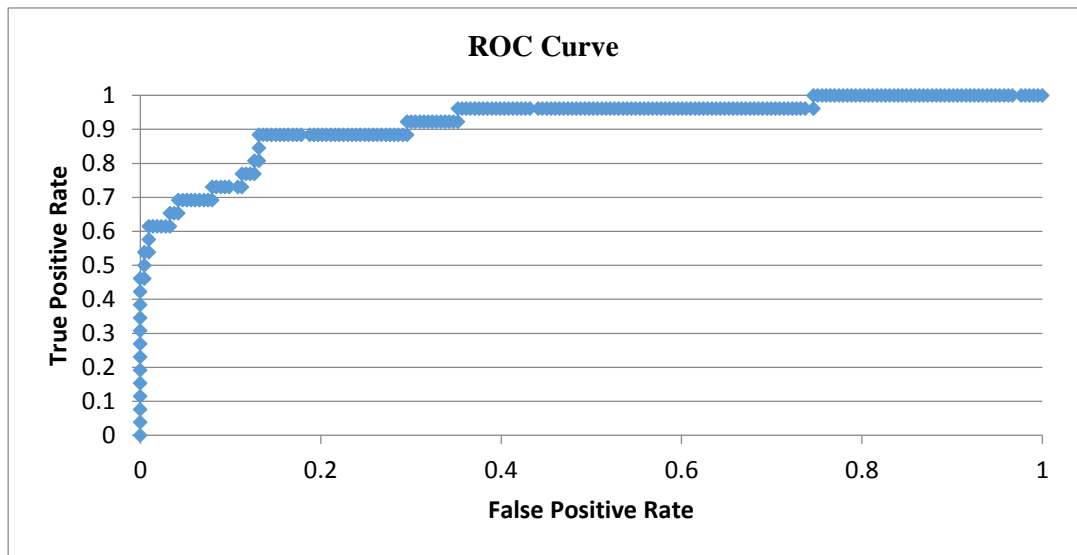


Figure 1: Receivers operating characteristics (ROC) for logistic regression model

Table 4: Accuracy of retirement readiness

	Classification Table		
	Suc-Obs	Fail-Obs	
Suc-Pred	15	2	17
Fail-Pred	11	211	222
Total	26	213	239
Accuracy	0.576	0.990	0.945
Cutoff	0.5		

The above table provides the observations which are predicted to be successful and failure, explaining the number of Millennials who are predicted to be retirement ready and are not. From the above table, model can predict with 57% accuracy and out of the sample of 239, only 26 are retirement ready.

AUC (Area Under Curve): 0.920. Accordingly, the logistic regression equation becomes:

$$\text{Log-odds of retirement wellness} = (0.103 * \text{current age}) + (-0.881 * \text{gender}) + (0.262 * \text{marital status}) + (-0.114 * \text{financial dependents}) + (-0.395 * \text{after-tax yearly salary in Rs. lakhs}) + (0.241 * \text{work years before retirement}) + (35.276 * \text{percentage of yearly contribution to retirement corpus}) + (0.945 * \text{presence of regret aversion}) + (-0.232 * \text{presence of overconfidence}) + (0.118 * \text{presence of hindsight}) + (0.154 * \text{presence of framing bias}) - 13.646$$

Where; Current age in years; male = 1, female = 2, transgender = 3, Marital status; married = 1, single = 2, divorced = 3, widow = 4 Financial dependents; one = 1, two = 2, three = 3, four or more = 4, none = 5 After-tax yearly salary in Rs. Lakhs; 1 for Rs. 1lakh, 2 for Rs. 2lakhs and so forth Work years before retirement = difference of expected retirement age and current age in Years Percentage of yearly contribution to retirement corpus e.g. 5% = 0.05, Presence of dominant bias (regret, overconfidence, hindsight, framing) – Yes = 1, No = 0.

The ROC curve is a probability curve and created by the True Positive Rate (TPR) against the False Positive Rate (FPR). True Positive Rate is also known as sensitivity and it defines how many correct positive results occur among all positive samples. FPR is also known as Fall Out and it defines how many incorrect positive results occur among all negative samples. Both TPR and FPR range from 0 to 1.

True Positive Rate = True Positives/All Positives, False Positive Rate = False Positives/All negatives. The best logistic regression model has AUC (Area Under the Curve) near to 1. The logistic regression output in this research is 0.92, which is almost near to one, hence the model is considered as a good model to be applied in estimating the Millennials retirement readiness.

5. CONCLUSION

It is evident that a significant proportion of the Millennials in the IT industry are not retirement ready. The aspects that affect the readiness of Millennials are: Marital status, number of financial dependents, presence of dominant biases of regret aversion, overconfidence etc., implies lower probability of retirement readiness, whereas more the number of working years till retirement, a high income, high percentage of yearly contribution to retirement corpus, would bring higher probability of retirement readiness among Millennials. These findings are consistent with Yao (2017) who stated that demographic and retirement saving motive were significantly and positively related to Millennial retirement.

Understanding the behavioural aspects of millennial would help to predict whether the individual is likely to be retirement ready or not. Prediction of the actual retirement readiness score based on identified inputs would need further research. Observing the statistics of low retirement readiness for a large section of Millennials in IT industry, it is essential to spread awareness about the importance of financial literacy. This is consistent with David (2001) and Hershey, (2000) who described that financial knowledge is positively related to retirement planning activities and financial saving practices.

Besides education, it is important that incentives and support structure for higher savings be provided to the Millennials. The support structure could be in form of buddy system within organizations to leverage the millennial networks for discussing retirement saving methods and

encouraging high contributions. Mechanism within compensation structure should also be explored to encourage high contribution rate at an early stage of career.

The study indicate that future time perspective, financial literacy, financial and retirement saving practices are all significant constructs both individually and collectively with one another when it comes to assessing the Millennial retirement readiness which is in consonant with the study as postulated by (Jacobs, 2005).

Considering the Millennial to be retirement ready in the current scenario, single status with few or no dependents, with high number of working years and high percentage of yearly contribution (at least 15% and above) is required. This is intuitively consistent with the conventional wisdom that if one starts with a high savings rate and sustains over a very long period, one will be able to accumulate sufficient wealth to meet future needs.

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