Unveiling the Interplay of Financial Literacy and Financial Risk Tolerance: Impact on Retirement Planning Activity among Employees Under Defined Contribution System

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Abstract

The significance of Retirement Planning Activity cannot be overstated, as it directly affects individuals' ability to lead fulfilling lives during their golden years, particularly in the defined contribution system. This study investigates how financial literacy and financial risk tolerance influence Retirement Planning Activity among individuals enrolled in pension schemes under the defined contribution framework. By using multiple regression analysis on data from 386 individuals in the north Indian region, we found that financial literacy and financial risk tolerance play a vital role in shaping Retirement Planning Activity Level. These findings have profound implications for policy makers, financial institutions, pension agencies, employers, and personal financial consultants, as they reveal the mechanisms that boost retirement savings for employees under this system. Armed with a keen understanding of these factors, stakeholders can devise strategies to enhance retirement planning and ensure a secure financial future for individuals as they enter the post-work phase of their lives.

Keywords: Financial Literacy, Financial Risk Tolerance, Retirement Planning

Introduction

RRetirement represents a significant life transition for working individuals, signifying end of their career and the beginning of a new chapter. To ensure a well-prepared retirement, individuals must understand their retirement needs while still employed, gaining clarity on the financial resources required to support themselves during this phase of life. Early savings become crucial in laying the foundation for accumulating sufficient funds to sustain their lifestyle post-retirement. Considering the potential impact of life events on one's financial standing during retirement is essential, as unforeseen expenses can pose challenges for those with limited savings. Proactive preparedness is vital to tackle unexpected financial hurdles. For those seeking a retirement free from excessive debt, prudent financial planning is of utmost importance, especially for those with modest incomes.

In the contemporary Indian landscape, retirement planning assumes heightened significance, with a shift from the traditional defined benefit pension system to reliance on defined contribution system. Growing living standards and extended life expectancies underscore the urgency to address concerns regarding financial retirement planning. The increasing dependence emphasizes the need for comprehensive retirement preparations. In the context of India, this study aims to analyze the factors that influence financial retirement planning among individuals who are empowered by the defined contribution system. The study seeks to identify these variables to help individuals achieve a secure and contented retirement by thoroughly exploring the intricacies associated with retirement.

Retirement, being a distant aspiration, requires individuals to display unwavering discipline in saving sufficiently for a future that may be far off. However, conventional wisdom posits that only a select few possess such resolute determination. According to the comprehensive reports by CRISIL and PFRDA (2017), a substantial number of Indian states are anticipated to witness a noteworthy surge in their elderly population (aged 60 and above). LIMRA and Society of Actuaries 2018 projections indicate that India's overall population is set to experience significant growth from

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2015 to 2050, resulting in an astonishing 171 Percent rise in the elderly population, effectively tripling the proportion of elderly individuals during this time span. Astonishingly, despite a robust active labour force comprising around 450 million individuals, a mere 12 Percent are covered by formal retirement systems, as reported by the Asian Development Bank (2010). Peering into the future, by 2050, the ratio of working individuals to elderly persons in India is expected to decrease to 5:1 from 13.8:1 in 2000, as indicated by (CRISIL & PFRDA, 2017; LIMRA & Society of Actuaries, 2018. Alarmingly, over 71 Percent of elderly people will find themselves compelled to work for their livelihood, either due to necessity or obligation, as stated by UNFPA (2012).

Within the realm of retirement planning, the defined contribution system places a weighty responsibility on employees to make crucial decisions regarding the allocation of their retirement savings (Yuh & Devaney, 1996). In this endeavour, possessing a strong foundation of financial knowledge becomes paramount, as individuals must navigate the intricacies of diverse investment options and strategize how to nurture their retirement nest egg.

In contrast, those embraced by the defined benefit system experience a sense of tranquility, shielded from the anxiety of uncertain future income. Upon retirement, they are assured of a predetermined amount, providing a sense of financial security. However, within the defined contribution system, individuals bear the onus of contemplating their post-retirement income, fostering a heightened focus on diligently accumulating funds until the time comes to bid farewell to the workforce.

Given this significant responsibility, employees in the defined contribution system find themselves entwined with the investment risk inherent in their retirement savings (Yuh & Devaney, 1996). Each choice they make carries potential consequences, underscoring the need for prudence and well-informed decisions as they endeavour to safeguard their financial future amidst the ever-changing tides of the market.

The current body of academic research on retirement financial planning seems to predominantly focus on developed nations, revealing a noticeable gap in studies specifically dedicated to the Indian context (Kumar et al., 2019). This gap prompts a thorough investigation into whether the factors relevant to retirement planning in developed economies exhibit similar patterns in developing nations like India. The unique cultural nuances that shape savings behaviours in India provide a distinct backdrop for research. Moreover, the recent transition within India's pension system, moving from a defined benefit to a defined contribution system as outlined by Holzmann and Hinz (2005), introduces another layer of complexity. Economic policies and structural elements of pension systems worldwide are anticipated to exert diverse pressures on savings, influencing variations in the underlying behavioural foundations of retirement planning (Kemp et al., 2005). In the specific context of India, its unique economic policies and pension system structure are likely to contribute distinctively to these influences, shaping retirement planning behaviours in a way that differs from other countries. Given these apparent gaps in the existing scholarly literature, there is a compelling need for academic inquiry aimed at a nuanced clarification and comprehensive understanding of the intricacies involved in retirement financial planning within the Indian context.

The lack of saving for retirement can lead to financial insecurity, dependence on others, and increased poverty among the elderly. It may also strain social welfare systems, limit opportunities for younger generations, and create economic challenges for the country. Overall, the consequences of inadequate retirement savings can be far-reaching, affecting both individual retirees and the broader society, leading to financial hardships, social challenges, and economic implications. Studying the factors influencing retirement planning activity is vital for developing effective strategies and addressing barriers, thereby promoting better financial preparation among retirees. Research in this area contributes to creating a more resilient and financially secure retirement landscape for individuals and society as a whole.

Review of Literature

The life-cycle saving and investing theory is a fundamental economic concept that provides insights into how individuals make financial decisions over their entire lifetime, taking into account factors like life expectancy, income levels, retirement goals, and motivations related to intergenerational transfers of wealth (Chaffin, 2015). At its core, the theory suggests that individuals aim to maximize their overall lifetime utility, which refers to the satisfaction or well-being they derive from consuming goods and services throughout their lives. This means that people strive to achieve a balance between their current consumption and saving for the future, including retirement.

One of the key premises of the life-cycle theory is the idea that individuals face different income levels at different stages of their lives. Typically, people experience higher income levels during their working years when they are actively employed and earning a salary. During this period, individuals are expected to save a portion of their income to ensure a financially secure retirement in the future (Baranzini, 2005).

As individuals take on more responsibility for their financial affairs, understanding how to effectively manage and allocate their resources becomes crucial. This includes making informed decisions about investment options, understanding different financial products, and creating a personalized financial plan that aligns with their long-term goals, including retirement. The framework for effective retirement planning also recognizes the critical role financial risk tolerance. By considering their risk tolerance, individuals can make responsible and wise financial choices, ensuring they save and invest sufficiently to support their retirement needs.

Financial Literacy

In the vast landscape of financial decision-making and resource management, financial literacy stands as a formidable cornerstone, empowering individuals with the wisdom and acumen to navigate the intricate paths of fiscal. Researchers, including Hershey and Mowen (2000), Hershey and Walsh (2000), and Jacobs-Lawson and Hershey (2005), have consistently demonstrated the pivotal role of financial literacy in shaping people's attitudes towards planning for retirement. As the foundation of informed decision-making, financial knowledge stands as a powerful tool that empowers individuals to navigate the complexities of retirement savings with confidence and prudence.

Over the years, numerous esteemed studies have unveiled a compelling positive correlation between investment knowledge and savings behaviour (Agnew et al., 2003; Agnew & Szykman, 2005; Grable & Lytton, 1997) A well-informed individual possesses the essential acumen to make astute investment choices, skillfully aligning their financial aspirations with prudent savings strategies. The enlightening work of Clark-Murphy and Gerrans (2001) brings to light the challenges faced by Australian superannuation fund members who lack financial knowledge, leading to difficulties in discerning between defined benefit (DB) and defined contribution (DC) plans. This revelation serves as a poignant reminder of the irreplaceable value of financial literacy in guiding individuals towards optimal retirement options.

Further bolstering this notion, Lusardi and Mitchell (2011) and Lusardi and Mitchell (2006) suggest that individuals equipped with greater financial knowledge are more likely to embark on thoughtful retirement planning journeys. Educational interventions, such as enlightening seminars, have been shown to wield transformative effects on retirement savings behaviour, as gracefully illuminated by the pioneering study of Clark et al. (2006) on US women. Based on the insights gained from the previous study, this research proposes the following hypothesis:

H1: There exists a positive association between one's financial literacy and the level of retirement planning activity.

Financial Risk Tolerance

The studies highlighted in the passage provide compelling evidence for the crucial role of financial risk tolerance in predicting individuals' retirement investment strategies. Researchers such as Bajtelsmit (1999), Grable and Lytton (1999), Jacobs-Lawson and Hershey (2005) and Sundén and Surette (1998) have conducted extensive investigations that demonstrate the profound influence of financial risk tolerance on shaping individuals' financial decisions concerning their retirement savings.

Financial risk tolerance, as eloquently articulated by Grable (1999) and Grable and Lytton (1999), refers to an individual's willingness to embrace a certain level of volatility when making financial choices. This intrinsic factor significantly influences one's investment preferences, particularly in the context of prudent retirement planning. Understanding an individual's risk tolerance becomes essential for crafting suitable investment strategies that align with their willingness to bear financial uncertainties.

Moreover, the literature has diligently explored the intricate relationship between financial risk tolerance and various demographic factors. Comprehensive studies by Eker and Anbar (2010) and Grable and Lytton (1999) have illuminated the influence of demographic, socioeconomic, and attitudinal factors on financial risk tolerance. Notably, factors such as educational level and personal finance knowledge have been observed to yield significant variations in risk tolerance among respondents.

Pertaining to retirement savings, van Rooij et al. (2007) have compellingly reported that self-assessed risk tolerance stands as a critical explanatory variable for individuals' attitudes toward pension systems. Those inclined to embrace risk were found to favour a defined contribution (DC) plan and seek investor autonomy, while individuals with lower risk tolerance tended to opt for options that are more conservative. Similarly, Yuh and Devaney (1996) have eloquently demonstrated that individuals with higher risk tolerance tend to embrace larger DC plans in contrast to their risk-averse counterparts. These insights highlight the interplay between risk tolerance and retirement savings preferences, which can significantly impact one's financial security in the later stages of life.

The study by Croy et al. (2010) offers nuanced insights by suggesting that the influence of financial risk tolerance on intentions to save for retirement may be

less pronounced, emphasizing the intricacy of human decision-making and calling for comprehensive investigations into the myriad of factors shaping retirement planning.

The evidence presented in the literature predominantly originates from studies conducted in well-established developed economies. However, it is crucial to acknowledge that emerging economies possess distinct economic contexts, cultural norms, and institutional frameworks, which could introduce unique dynamics affecting the correlation between risk tolerance and retirement savings. This intriguing observation calls for dedicated efforts to investigate whether financial risk tolerance similarly influences investment decisions in retirement savings among individual employees in the specific context of India. Based on the aforementioned discussion, the study puts forth the following hypothesis:

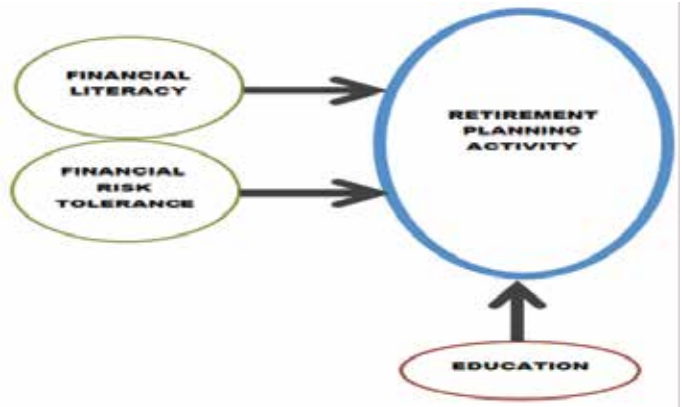
H2: There exists a positive association between one's financial risk tolerance and the level of retirement planning activity.

Control Variable

Education serves as a critical factor that may impact both financial literacy and risk tolerance, and controlling for it allows us to gain a clearer understanding of the unique contributions of financial literacy and risk tolerance to retirement planning decisions. Furthermore, education can act as a proxy for individuals' cognitive abilities, problem-solving skills, and access to financial knowledge. Yuh and Olson (1977) demonstrate a strong association between education and financial planning disposition, indicating that individuals with higher levels of education tend to engage in more proactive and informed financial planning behaviours. By incorporating education as a control variable in our multiple regression analysis, we can disentangle and examine the specific influence of financial literacy and financial risk tolerance on retirement planning activity, without the potential confounding effect of educational attainment. By accounting for education in the model, we can address these cognitive and knowledge-related factors, ensuring that any observed relationship between financial literacy, risk tolerance, and retirement planning is not merely a reflection of differences in education levels.

The discussion brings to light a research gap pertaining to the investigation of how financial literacy and financial risk tolerance influence retirement planning activity, specifically within a defined contribution pension system. To bridge this gap, the current study introduces a comprehensive research framework designed to explore the interplay and effects of these factors on individuals' retirement planning decisions as illustrated in the figure 1.

Figure 1: Framework for retirement planning activity



Research Methodology

The study employs a descriptive research design, utilizing an empirical and quantitative methodology for data collection. This chosen approach is specifically implemented to rigorously test and evaluate hypotheses, ensuring a systematic examination of the proposed relationships within the research study(Malhotra & Dash, 2019).

The study, in adherence to the convenience sampling technique (Cooper & Schindler, 2017; Malhotra & Dash, 2019; Sekaran & Bougie, 2016), entailed the physical distribution of questionnaires to individuals within the employee cohorts of numerous organizations operating in both government and private sectors across the North Indian region.

The study included 400 participants who were enrolled in various defined contribution pension plans. Among them, 391 actively participated by completing and returning the questionnaires. The sample was diligently collected across a diverse array of demographic profiles, as shown in the Table 1. However, during the data analysis phase, only 386 responses were considered valid and included in the final results. The exclusion of the remaining responses occurred due to incomplete or missing information. As a result, the study achieved an impressive effective response rate of approximately 96.5%. In its pursuit of comprehensively evaluating financial literacy (Jacobs-Lawson & Hershey, 2005), financial risk tolerance (Jacobs-Lawson & Hershey, 2005), and retirement planning activity (Hershey et al., 2007), the study judiciously employed a five-point Likert scale as measurement instrument. This scale underwent careful refinement and thoughtful adaptation, specifically tailored to harmonize with the unique local context.

Data Analysis and Interpretation

Table 1: Profile of respondents

Gender	Frequency	Percentage
Male	242	62.7
female	144	37.3
Education		
Primary	19	4.9
Secondary	91	23.6
Undergraduate	189	49.0
Postgraduate	87	22.5
Age		
21-30 years old	29	8
31-40 years old	267	69
41-50 years old	86	22
Above 50 years old	4	1

Reliability

In order to assess the internal reliability of the items, Cronbach's alpha (Nunnally & Bernstein, 1994) was computed. Nunnally and Bernstein (1994) proposed a minimum alpha of 0.6 as an acceptable threshold. The calculated Cronbach's alpha values for financial literacy, financial risk tolerance, and retirement planning activity were 0.863, 0.895, and 0.936, respectively. All three constructs exhibited Cronbach's alpha values well above the recommended threshold of 0.6, indicating a satisfactory level of reliability.

Normality

Data normality was assessed by examining the skewness and kurtosis scores. To retain a variable or item based on normality considerations, the acceptable range for skewness is between -2 and +2, while for kurtosis, it falls within -3 to +3 (Bollen, 1989). As depicted in the Table 2, all the variables lie within the acceptable range.

Table 2: Data Normality

Variable	Skewness	Kurtosis
Financial literacy	-1.513	1.623
Financial risk tolerance	-1.134	0.028

Retirement Planning Activity	-1.375	0.558
Education	-0.371	-0.308

Multicollinearity

The study assessed multicollinearity among independent variables using the tolerance test and variance inflation factor (VIF) (Hair et al., 2018). Upon examining the results in Table 3, it is evident that all tolerance levels exceed 0.25, while all VIF values comfortably remain below 3.

Table 3: Multicollinearity

Variable	Tolerance	VIF
Financial literacy	0.614	1.629
Financial risk tolerance	0.635	1.574
Education	0.703	1.423
Dependent Variable: Retirement Planning Activity		

Hypotheses testing

Table 4 presents the outcomes of multiple regression analysis conducted to assess the robustness of the proposed relationship. Two hypotheses were thoughtfully formulated, and all variables successfully withstood reliability testing. The individual hypotheses underwent rigorous examination through a multiple regression prediction model, adhering to the guidelines set forth by Hair et al. (2018) with financial planning activity serving as the dependent variable. The results shown in Table 4 reveal the significance of both H1 and H2 within the prediction model. Moreover, the control variable, level of education, emerges with noteworthy significance. These compelling findings powerfully bolster hypotheses H1 and H2, confirming the profound impact of Financial literacy ($\beta = 0.319$, $p < 0.000$) and Financial risk tolerance on retirement planning activity ($\beta = 0.191$, $p < 0.000$).

Table 4: Results of a multiple regression

Variable	β	t-value	p-value
Financial literacy	0.319	7.045	0.000
Financial risk tolerance	0.191	4.295	0.000
Education (Control)	0.362	8.548	0.000
$R^2 = 0.518$, Adjusted $R^2 = 0.514$, Dependent Variable: Retirement Planning Activity			

Conclusion

The main objective of this study is to explore how financial literacy and financial risk tolerance could facilitate in predicting the level of retirement planning activity in employees enrolled in defined contribution system of pension. The study results show that the model could explain 51.4 % of the variance in retirement planning activity of an individual. The model was statistically significant and this study results demonstrates the role of financial literacy and financial risk tolerance in explaining the level of retirement planning activity.

Numerous comprehensive studies have consistently illuminated a compelling and affirmative correlation between an individual's financial knowledge and their propensity for adopting prudent saving behaviours

(Agnew & Szykman, 2005; Grable & Lytton, 1997). Moreover, these studies have provided compelling evidence that financial literacy is directly associated with the practice of prudent financial saving habits (Hershey & Mowen, 2000; Hershey & Walsh, 2000; Jacobs-Lawson & Hershey, 2005; Yuh & Devaney, 1996). Aligning with this wealth of knowledge, our own study contributes to this body of evidence by uncovering a significant and positive relationship between financial knowledge and the level of engagement in retirement planning activities.

Furthermore, building on previous research, our study ventured to explore the conjecture of a favourable association between an individual's financial risk tolerance and their propensity to engage in effective retirement planning. The results of our rigorous multiple regression analysis admirably supported this hypothesis, echoing the findings of earlier investigations (Grable & Joo, 1997; Jacobs-Lawson & Hershey, 2005; Yuh & Devaney, 1996). Conclusively, individuals exhibiting greater willingness to assume higher financial risks were found to be more inclined towards meticulous retirement planning. Nonetheless, as the study by Croy et al. (2010) suggests, financial risk tolerance may not significantly influence intentions to save for retirement.

Equally noteworthy in this realm of study are the compelling revelations from other investigations that highlight the role of education and income in shaping one's financial planning disposition (Yao & Cheng, 2017; Yuh & Devaney, 1996; Yuh & Olson, 1977). These studies collectively underscore the positive association between higher levels of education and financial planning. Through our multiple regression analysis, wherein we carefully accounted for educational levels, we further support the idea that educational attainment is closely linked to retirement planning activity. The results revealed a significant and meaningful relationship between the two variables, affirming this notion.

Our research contributes significantly to the existing literature on retirement planning for employees participating in a defined contribution pension system. The study highlights the beneficial impact of financial knowledge and risk tolerance on their retirement outcomes. Furthermore, our research establishes the crucial role of educational attainment as a contributing catalyst towards attaining financial preparedness for retirement.

Implication of the findings

The implications arising from the discussed findings bear profound significance for employees engaged in defined contribution retirement plans. To ensure a secure retirement for these individuals, organizations can adopt various policy measures.

Firstly, comprehensive financial education programs are essential to improve employees' financial literacy and decision-making skills regarding retirement savings. These programs, conducted through workshops, seminars, or online resources, empower individuals to make informed choices on their retirement journey.

Secondly, organizations can instill confidence in employees' retirement savings decisions by offering a diverse range of investment options within defined contribution plans that cater to their individual risk tolerance levels.

Thirdly, incorporating auto-enrolment and auto-escalation features promotes higher savings and better retirement preparedness among employees, ensuring they take proactive steps towards securing their financial future.

By implementing the aforementioned policy measures, organizations can cultivate a retirement-friendly workplace culture that fosters a more secure and prosperous retirement for individuals. These policies not only benefit employees individually but also contribute to building a financially resilient and thriving society as a whole. The study's emphasis on the importance of financial knowledge and risk tolerance in retirement planning highlights the necessity of adopting these policy measures to encourage informed decisions and enhance financial preparedness. Policymakers, financial practitioners, and educators can draw upon the insights from this study to collaborate towards securing better financial futures for individuals as they approach retirement. Ultimately, these efforts can lead to a more financially secure and fulfilling retirement experience for employees enrolled in defined contribution retirement plans.

Directions of future research

Researchers have a wide range of avenues to explore in this field. Longitudinal studies that track individuals' financial behaviours and retirement planning over extended periods can offer valuable insights into how financial literacy and risk tolerance evolve and impact retirement decisions throughout different life stages.

Cross-cultural studies focusing on retirement planning behaviours and the roles of financial literacy and risk tolerance in diverse cultural contexts outside of North India could provide valuable information on whether these factors are universally applicable or context-specific.

Moreover, evaluating the effectiveness of educational programs on financial literacy and risk tolerance aimed at enhancing retirement planning, while also considering the influence of socioeconomic factors,

would be beneficial for creating targeted interventions and support systems. From a behavioural economics perspective, researchers could delve into retirement planning decisions, examining how financial literacy and risk tolerance interact with behavioural biases.

Additionally, understanding the role of technology in retirement planning could offer new insights. Furthermore, investigating the impact of employer-sponsored retirement programs and government policies on retirement preparedness, as well as exploring the relationship between retirement planning, financial well-being, and overall well-being, are crucial in shaping effective policies and ensuring a secure financial future for individuals during their retirement years. By pursuing these research directions, researchers can deepen their understanding and make valuable contributions to the development of well-informed policies and strategies for retirement planning.

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