Influence of Financial Knowledge and Inclusion Level on Investment Pattern of Employees of Higher Education Institutions: A Study in Uttar Pradesh, India

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Abstract

This study investigates the influence of financial knowledge and financial inclusion on the investment patterns of employees in higher education institutions across Uttar Pradesh, India. Recognizing the pivotal role that financial literacy and access to financial services play in shaping investment decisions, the research focuses on both teaching and non-teaching staff in private higher education institutions—a demographic often overlooked in existing literature. Utilizing a structured questionnaire, primary data was collected from a stratified random sample of 400 respondents, capturing information on their financial knowledge, inclusion levels, and investment behaviors. The research employs a combination of descriptive and inferential statistical tools, including correlation analysis, t-tests, and multiple regression, to examine the relationships among the variables.The findings reveal that while the majority of respondents possess moderate financial knowledge and inclusion, significant disparities exist between teaching and non-teaching staff, as well as across income and age groups. Financial knowledge emerges as a stronger predictor of diversified and market-oriented investment patterns than financial inclusion alone, though both factors are positively correlated with investment sophistication. Traditional investment avenues such as bank deposits and insurance continue to dominate, but higher levels of financial knowledge and inclusion are associated with greater participation in mutual funds, equities, and alternative assets. The study underscores the need for targeted financial education programs and institutional financial wellness initiatives to bridge knowledge gaps and promote inclusive financial behaviors. The implications extend to policymakers, educational administrators, and financial service providers, highlighting the importance of tailored interventions to enhance the financial well-being and investment outcomes of higher education employees. The research also identifies avenues for future studies, including longitudinal and comparative analyses across different occupational groups and regions.

Keywords: Financial Knowledge, Financial Inclusion, Investment Patterns, Higher Education Employees

Introduction

Financial literacy and inclusion represent critical dimensions of economic empowerment and sustainability in emerging economies like India. With rapid expansion in financial markets and investment avenues, individuals with higher financial knowledge can make more informed decisions about savings and investments, ultimately contributing to economic development. India's journey toward financial inclusion has gained significant momentum in recent years, with initiatives outlined in the 2024 budget aiming to build an inclusive financial ecosystem where every individual can fully participate in the economy regardless of their socioeconomic background[1].

Despite these initiatives, India's financial literacy levels remain a concern, with the National Centre for Financial Education reporting that only 27% of Indian adults are financially literate[2]. This disparity is particularly evident across different states, with Uttar Pradesh specifically reporting financial inclusion rates of merely 9%, placing it among the lowest in the country[3]. This situation necessitates focused research on specific demographic groups to develop targeted interventions for enhancing financial knowledge and inclusion.

Higher education employees represent a unique demographic that has received limited attention in financial behavior research. These individuals, comprising both teaching and non-teaching staff, typically possess higher educational qualifications and relatively stable income sources, which should theoretically translate into more sophisticated financial decision-making. However, the relationship between their academic expertise and financial acumen remains largely unexplored, particularly in the context of their investment behaviors.

In the Indian context, investment behaviors are influenced by various factors including risk perception, return expectations, demographic variables, and financial awareness. Previous studies have indicated that government employees tend to exhibit distinct investment patterns, often preferring less risky avenues such as bank deposits and government schemes over market-linked alternatives[4]. However, these patterns may differ significantly among higher education employees due to their unique professional characteristics, income stability, and educational backgrounds.

The state of Uttar Pradesh presents a particularly interesting case study for examining these dynamics. As India's most populous state with a diverse higher education landscape, Uttar Pradesh demonstrates a complex interplay of traditional and modern financial behaviors. The state's financial inclusion metrics lag behind the national average, with the NCFE Financial Literacy and Inclusion Survey identifying it among the least financially included states in India[3]. This contrast between educational advancement and financial inclusion presents a compelling research opportunity.

This study aims to bridge this gap by specifically examining how financial knowledge and inclusion levels influence the investment patterns of employees in higher education institutions across Uttar Pradesh. By focusing on this specialized demographic, the research seeks to provide insights that can inform targeted financial education initiatives and policy interventions. Furthermore, understanding the financial behaviors of those who shape the educational landscape can have cascading effects on broader financial literacy efforts, as these individuals often serve as knowledge disseminators within their communities.

The research will explore various dimensions of financial knowledge, including awareness of financial products, understanding of risk and return relationships, and familiarity with market mechanisms. It will also examine financial inclusion parameters such as access to banking services, credit facilities, insurance products, and digital payment platforms. By correlating these factors with investment patterns across different asset classes, the study aims to develop a comprehensive understanding of financial decision-making within this specific occupational group.

The present study examines the complex relationship between financial knowledge, financial inclusion, and investment patterns among employees of higher education institutions in Uttar Pradesh. This research captures data from 400 respondents using stratified random sampling across private higher education institutions. The findings reveal moderate levels of financial literacy (58.7%) among respondents, with significant variations across demographic factors including gender, employment type, and income levels. The study confirms a strong positive correlation between financial knowledge and diversified investment portfolios ($r=0.687$, $p<0.01$), while financial inclusion demonstrates a moderate positive relationship with investment patterns ($r=0.532$, $p<0.01$). Notable findings include that teaching staff possess significantly higher financial knowledge compared to non-teaching staff, though no significant difference exists in financial inclusion between these groups. Bank deposits remain the most preferred investment avenue (78.2%), followed by insurance (65.3%) and mutual funds (47.1%), while investment in alternative assets remains limited. The study concludes that enhancing financial education programs tailored to higher education employees, especially non-teaching staff, and developing specialized financial products could significantly improve investment decision-making within this demographic. This research contributes to the growing body of literature on financial behavior in specialized occupational segments and provides actionable insights for policymakers and financial institutions.

Literature Review

Rahul and Sachitanand (2024) conducted a comprehensive study examining financial literacy levels across different demographic segments in Indian higher education institutions. Their research surveyed 850 faculty members from 35 universities across India, revealing significant disparities in financial knowledge based on academic disciplines, with commerce and management faculty demonstrating higher financial literacy scores (average 72.4%) compared to humanities (53.6%) and science faculty (61.2%). The study highlighted that despite higher education levels, many academicians lack basic understanding of inflation impacts, compound interest calculations, and risk diversification concepts. Particularly concerning was the finding that only 38% of respondents could correctly evaluate the long-term effects of inflation on retirement planning. The authors emphasized the need for institutional intervention through specialized financial education programs tailored to the specific needs of academic professionals, noting that theoretical knowledge did not necessarily translate to practical financial decision-making. This research established a positive correlation between financial literacy and participation in diverse investment avenues, with financially literate respondents showing greater inclination toward market-linked investment options.

Sharma and Agarwal (2024) explored digital financial inclusion patterns among 620 teaching and administrative staff across 12 universities in Uttar Pradesh and Delhi NCR. Their findings revealed that despite 96% of respondents having basic banking access, significant disparities existed in the utilization of advanced financial services, with only 42% actively using digital investment platforms and 37% participating in online mutual fund investments. The researchers identified key barriers to digital financial inclusion including security concerns (cited by 68% of respondents), lack of technological self-efficacy (54%), and limited awareness about digital financial products (61%). Interestingly, the study found generational differences in digital financial participation, with employees under 40 years showing 2.7 times higher adoption rates of financial technology applications compared to their older counterparts. The authors concluded that institutional digital literacy programs and collaborative initiatives between higher education institutions and fintech companies could significantly enhance financial inclusion levels. The study also emphasized the need for simplified user interfaces and vernacular language options in financial applications to overcome adoption barriers among less technologically proficient staff members.

Kumar and Verma (2023) examined investment preferences and risk tolerance levels among 480 academic professionals across six states in northern India, with particular focus on higher education employees in Uttar Pradesh. Their mixed-methods research combined questionnaire-based data with in-depth interviews, revealing that 73% of respondents prioritized security over returns when making investment decisions. The study identified a significant gender disparity in investment approaches, with female academic professionals showing stronger preference for traditional fixed-income instruments (76%) compared to their male counterparts (58%). Additionally, the research established that subject specialization significantly influenced investment behavior, with economics and commerce faculty demonstrating more diversified investment portfolios compared to other disciplines. The authors noted that despite their educated status, many respondents exhibited limited understanding of market-linked investment options, with only 32% expressing confidence in their ability to evaluate equity market investments. The study concluded that specialized financial education interventions tailored to the risk perception and knowledge gaps of academic professionals could substantially improve their investment diversification and long-term financial outcomes.

Patel and Mishra (2023) investigated the relationship between financial inclusion and retirement planning behaviors among 550 employees from 15 higher education institutions across India. Their research revealed concerning gaps in retirement preparedness, with only 37% of respondents having calculated their retirement needs and 42% relying primarily on employer-provided pension schemes without supplementary retirement investments. The study measured financial inclusion using a composite index incorporating banking access, credit availability, insurance coverage, and investment market participation. Results demonstrated that respondents with higher financial inclusion scores were 2.4 times more likely to engage in active retirement planning beyond mandatory pension contributions. Notably, the research identified significant disparities in financial inclusion between teaching and non-teaching staff, with administrative employees scoring 28% lower on the financial inclusion index despite similar income levels. The authors emphasized the critical role of workplace financial wellness programs in enhancing retirement security, noting that institutions that offered financial education workshops reported 41% higher voluntary retirement saving rates among employees. The study concluded that financial inclusion initiatives specifically targeting non-teaching staff could substantially improve overall financial health within higher education institutions.

Gupta and Singh (2022) conducted a comparative analysis of investment patterns among 320 employees across public and private higher education institutions in northern India. Their findings revealed distinct differences in investment preferences, with public institution employees showing stronger preference for government-backed schemes (72%) compared to private institution employees (48%). The study further identified that risk appetite was significantly influenced by employment stability, with permanently employed respondents demonstrating 1.8 times higher allocation to equity markets compared to those on contractual arrangements. The researchers developed a comprehensive financial knowledge assessment tool that evaluated understanding across basic financial concepts, investment products, tax planning, and digital financial services. Using this tool, they established that respondents with high financial knowledge scores (above 75%) allocated an average of 31% of their portfolio to market-linked investments, compared to just 12% for those with lower scores. The authors concluded that employment security functions as a critical mediating variable between financial knowledge and investment decisions, suggesting that financial education initiatives should be tailored to address the specific job security concerns of different employee categories within higher education institutions.

Trivedi and Khanna (2022) explored behavioral biases affecting investment decisions among 430 faculty members from universities across five North Indian states including Uttar Pradesh. The research identified prevalent cognitive biases including loss aversion (exhibited by 78% of respondents), recency bias (65%), and familiarity bias (71%) that significantly influenced investment choices. Through scenario-based testing, the study revealed that even financially knowledgeable academics frequently made suboptimal investment decisions when emotional factors were introduced. The researchers found a significant correlation between financial literacy and bias mitigation, with respondents scoring in the top quartile of financial knowledge demonstrating 43% less susceptibility to common behavioral biases. Interestingly, the study noted disciplinary differences in bias susceptibility, with faculty from psychology and behavioral sciences showing greater awareness of their own cognitive biases in financial decision-making. The authors concluded that financial education for higher education employees should incorporate behavioral finance elements alongside traditional financial knowledge, emphasizing the importance of debiasing techniques in financial literacy programs. The study also highlighted that institutional investment guidance services could significantly improve decision outcomes by helping employees recognize and counteract inherent psychological biases.

Ramanathan and Sinha (2021) investigated the impact of financial technology adoption on investment diversification among 380 university employees across India. Their research established a strong positive correlation between fintech adoption and portfolio diversification, with active digital platform users holding an average of 5.8 different asset classes compared to 3.2 for non-users. The study measured financial inclusion through various parameters including banking relationships, credit utilization, insurance penetration, and digital payment adoption. Findings revealed significant disparities in financial technology adoption across age groups, with respondents under 35 showing 74% higher utilization rates compared to those over 50. Notably, the research identified that even among digitally active respondents, significant knowledge gaps existed regarding algorithmic investment advisors and robo-advisory services, with only 28% expressing familiarity with these emerging tools. The authors emphasized that higher education institutions have a unique opportunity to bridge digital financial divides by leveraging their technological infrastructure and learning environments to promote financial technology literacy. The study concluded that targeted financial technology education could significantly enhance both financial inclusion and investment sophistication among university employees, potentially creating models for broader community financial education initiatives.

Joshi and Ahmed (2021) examined the relationship between financial literacy and retirement anxiety among 410 employees in higher education institutions across northern India. Their mixed-methods study combined quantitative surveys with qualitative focus groups, revealing that 68% of respondents expressed moderate to high anxiety about their financial readiness for retirement despite relatively stable employment. The researchers developed a comprehensive financial literacy assessment covering knowledge of retirement planning instruments, understanding of longevity risk, and familiarity with inflation impacts on retirement savings. Results showed a strong negative correlation between financial literacy scores and retirement anxiety levels, with each 10-point increase in financial literacy associated with a 16% reduction in anxiety scores. The study identified significant gaps in understanding of market-linked retirement savings options, with only 43% of respondents correctly evaluating the long-term growth potential of equity investments for retirement planning. The authors noted that financial literacy interventions specifically focused on retirement planning concepts could substantially improve both actual retirement preparedness and psychological well-being among higher education employees. The research concluded that institutions should consider retirement financial planning as an essential component of employee wellness programs, particularly as pension systems increasingly shift toward defined contribution models requiring greater individual decision-making.

Mehra and Chauhan (2020) conducted research on tax planning strategies and investment patterns among 350 college and university teachers in Uttar Pradesh and neighboring states. Their findings revealed that despite financial awareness, only 48% of respondents optimized their tax planning through appropriate investment choices, with many making last-minute tax-saving investments without strategic consideration. The study developed a taxonomy of investment motivations, identifying that tax savings (cited by 72% of respondents) significantly outweighed retirement planning (46%) and wealth creation (38%) as primary investment drivers. Through regression analysis, the researchers established that respondents with structured financial planning approaches achieved approximately 18% higher after-tax returns compared to those making ad-hoc investment decisions. The study identified a significant knowledge gap regarding tax-efficient investment sequencing and asset location strategies, with only 28% of respondents demonstrating sophisticated understanding of these concepts. The authors emphasized that tax planning should be integrated with broader financial planning objectives rather than treated as a standalone exercise. The research concluded that educational institutions could enhance employee financial outcomes by providing specialized tax planning workshops aligned with annual financial cycles, potentially delivering significant improvements in after-tax investment returns.

Acharya and Lal (2020) analyzed gender differences in financial decision-making among 440 teaching and non-teaching staff across 18 universities in India. Their research revealed significant gender disparities in investment confidence and risk tolerance, with female respondents reporting 32% lower confidence in their financial decision-making abilities despite demonstrating equivalent financial knowledge in objective assessments. The study introduced a novel financial inclusion measurement framework incorporating formal account ownership, credit access, insurance coverage, investment participation, and digital financial engagement. Findings showed that female employees scored 23% lower on financial inclusion metrics despite similar income and education levels to their male counterparts. Through multivariate analysis, the researchers identified social norms and household financial responsibility divisions as significant mediating factors in gendered financial behavior. Notably, the study found that female respondents with primary household financial decision-making responsibility demonstrated investment patterns closely resembling their male counterparts. The authors emphasized the need for gender-sensitive financial education and inclusion initiatives that address confidence gaps while building on women's demonstrated strengths in financial planning and budgeting. The research concluded that higher education institutions could serve as model environments for gender-equitable financial empowerment by implementing targeted programs addressing the specific barriers identified in the study.

Research Gap

Existing research predominantly examines investment behavior and financial knowledge in the general public or specific occupational groups, such as working or student populations. However, the financial dynamics of employees both teaching and non-teaching in higher education remain understudied, creating a significant research gap. Limited research has explored their levels of financial inclusion, understanding, and their connection to investment habits. This gap in the literature necessitates a focused exploration of the financial opportunities and challenges unique to higher education employees. This study aims to illuminate the variables influencing their investment choices by concentrating on their distinct traits and financial decision-making procedures, providing a nuanced perspective on the complex interplay between financial knowledge, inclusion, and investment behavior within this specific population.

Research Objectives

1. To analyze the relationship between financial knowledge and investment patterns among the Employees of Higher Education Institutions in Uttar Pradesh.
2. To explore the relationship between financial inclusion and investment patterns among the Employees of Higher Education Institutions in Uttar Pradesh.

Hypotheses

1. H_{01}: There is no significant relationship between financial inclusion and investment patterns among the Employees of Higher Education Institutions in Uttar Pradesh.
2. H_{02}: There is no significant difference in investment patterns among the Employees of Higher Education Institutions in Uttar Pradesh based on their financial knowledge and inclusion levels.

Research Methodology

Theoretical & Conceptual Framework

This research is grounded in behavioral finance theory, which recognizes that psychological factors influence financial decision-making processes. The theoretical framework also incorporates elements of the capability approach proposed by Sen, which emphasizes that financial capabilities depend on both access to resources and the ability to make effective choices about those resources. The study conceptualizes financial knowledge as encompassing awareness, understanding, and application of financial concepts, while financial inclusion is defined through dimensions of access, quality, usage, and welfare. Investment patterns are examined through asset allocation choices, diversification strategies, and investment objectives.

Type of Research

This study employs a descriptive and analytical research design using a quantitative approach. The descriptive component aims to characterize the financial knowledge, inclusion levels, and investment patterns among higher education employees, while the analytical component examines relationships between these variables.

Source of Data Collection

The research utilizes primary data collected through structured questionnaires administered to employees of private higher education institutions in Uttar Pradesh. Secondary data from financial literacy reports, government publications, and academic journals provides contextual information and comparative benchmarks.

Research Instrument

A structured questionnaire was developed comprising four sections:

1. Demographic profile (8 questions)
2. Financial knowledge assessment (15 questions covering basic financial concepts, investment knowledge, and financial management)
3. Financial inclusion measurement (12 questions addressing banking access, credit facility usage, insurance coverage, and digital financial services adoption)
4. Investment pattern evaluation (18 questions examining investment preferences, portfolio diversification, risk tolerance, and investment objectives)

The questionnaire was validated through expert review and pilot testing with 30 respondents from the target population.

Population

The population for this study consists of all teaching and non-teaching employees working in private higher education institutions in Uttar Pradesh. According to the All India Survey on Higher Education (AISHE) 2022-23 data, Uttar Pradesh has approximately 8,500 teaching and 12,600 non-teaching staff employed in private higher education institutions.

Sampling Unit

Individual teaching and non-teaching employees of private higher education institutions in Uttar Pradesh constitute the sampling units for this research.

Sample Size with Calculation

The sample size was determined using the following formula:

$n = Z^2pq/e^2$

Where:

- n = Sample size
- Z = Z-value for the desired confidence level (1.96 for 95% confidence)
- p = Estimated proportion (0.5, which maximizes the sample size)
- q = 1-p (0.5)
- e = Margin of error (0.05 or 5%)

$n = (1.96)^2(0.5)(0.5)/(0.05)^2 = 384.16$

The calculated sample size was rounded up to 400 respondents to account for potential non-responses and ensure adequate representation.

Area of the Study

The research was conducted across private higher education institutions in Uttar Pradesh, focusing on five regions: Western UP, Central UP, Eastern UP, Bundelkhand, and Rohilkhand. Institutions were selected to represent various types including universities, degree colleges, and professional institutes.

Sampling Technique Used

A multi-stage stratified random sampling technique was employed:

1. First stage: Selection of 25 private higher education institutions across the five regions of Uttar Pradesh
2. Second stage: Stratification of employees into teaching and non-teaching categories
3. Third stage: Random selection of respondents from each stratum in proportion to their representation in the overall population (approximately 40% teaching and 60% non-teaching)

Statistical Tools Used

Data analysis was performed using:

1. Descriptive statistics (frequency distributions, percentages, means, and standard deviations)
2. Inferential statistics:
   - Pearson's correlation coefficient for examining relationships between variables
   - Independent samples t-test for comparing means between groups
   - Chi-square test for association between categorical variables
   - Multiple regression analysis to determine predictive relationships
   - Factor analysis to identify underlying dimensions of financial knowledge and inclusion
3. Statistical significance was established at $p < 0.05$, and data analysis was conducted using SPSS version 26.0.

Data Analysis & Interpretation

Table 1: Demographic Profile of Respondents

Demographic Variable	Category	Frequency	Percentage
Gender	Male	236	59.0

	Female	164	41.0
Age	Below 30 years	76	19.0
	30-40 years	148	37.0
	41-50 years	112	28.0
	Above 50 years	64	16.0
Employment Type	Teaching	168	42.0
	Non-teaching	232	58.0
Employment Status	Permanent	204	51.0
	Contractual	152	38.0
	Part-time	44	11.0
Monthly Income	Below ₹30,000	120	30.0
	₹30,000-₹50,000	168	42.0
	₹50,001-₹70,000	72	18.0
	Above ₹70,000	40	10.0

Interpretation: Table 1 presents the demographic composition of the sample. The respondents predominantly include males (59%), with the largest age group being 30-40 years (37%). Non-teaching staff constitute a majority (58%) of the sample, and permanent employees represent 51% of respondents. In terms of income distribution, the largest group (42%) earns between ₹30,000-₹50,000 monthly. This demographic distribution reflects the general composition of higher education institutions in Uttar Pradesh, with appropriate representation across gender, age, employment type, status, and income levels.

Table 2: Financial Knowledge Assessment of Respondents

Financial Knowledge Component	Low (%)	Moderate (%)	High (%)	Mean Score (Out of 5)	SD
Basic Financial Concepts	18.2	53.5	28.3	3.47	0.92
Investment Knowledge	32.7	48.2	19.1	2.86	1.08
Risk and Return Understanding	29.8	51.3	18.9	2.93	0.97
Tax Planning Awareness	34.2	47.8	18.0	2.81	1.12
Retirement Planning Knowledge	41.5	43.8	14.7	2.64	1.05
Overall Financial Knowledge	20.5	58.7	20.8	14.71 (out of 25)	3.76

Interpretation: Table 2 presents the assessment of financial knowledge among respondents across five key components. The data reveals that respondents demonstrate the highest proficiency in basic financial concepts (mean = 3.47), while retirement planning knowledge (mean = 2.64) shows the lowest scores. Overall, the majority of respondents (58.7%) possess moderate financial knowledge, with roughly equal proportions having low (20.5%) and high (20.8%) knowledge levels. The relatively higher standard deviation for tax planning awareness (SD = 1.12) indicates greater variability in knowledge of tax-related concepts compared to other components. These findings suggest that while respondents have grasped fundamental financial concepts, there are significant gaps in specialized knowledge areas, particularly retirement planning.

Table 3: Financial Inclusion Levels of Respondents

Financial Inclusion Dimension	Low (%)	Moderate (%)	High (%)	Mean Score (Out of 5)	SD

Banking Access	4.3	38.5	57.2	4.25	0.78
Credit Facility Usage	32.8	45.2	22.0	2.91	1.15
Insurance Coverage	18.6	51.3	30.1	3.42	0.96
Investment Market Participation	35.3	48.7	16.0	2.75	1.04
Digital Financial Services Adoption	21.2	42.5	36.3	3.38	1.18
Overall Financial Inclusion	15.8	60.2	24.0	16.71 (out of 25)	3.94

Interpretation: Table 3 illustrates the financial inclusion levels across five dimensions. Banking access emerges as the most developed aspect (mean = 4.25), with 57.2% of respondents demonstrating high inclusion in this dimension. Conversely, investment market participation shows the lowest inclusion (mean = 2.75), with only 16.0% of respondents at high inclusion levels. Overall, the majority (60.2%) of respondents exhibit moderate financial inclusion, while 24.0% show high inclusion and 15.8% demonstrate low inclusion. The relatively high standard deviation in digital financial services adoption (SD = 1.18) indicates considerable variability in the adoption of digital financial technologies among respondents. These findings align with the broader financial inclusion trends in India, where basic banking access has improved significantly through various initiatives, but sophisticated financial market participation remains limited.

Table 4: Investment Pattern of Respondents

Investment Avenue	Currently Invested (%)	Average Portfolio Allocation (%)	Risk Perception (Mean Score out of 5)	Return Satisfaction (Mean Score out of 5)
Bank Deposits	78.2	35.7	1.82	2.56

Insurance	65.3	18.4	2.14	2.78
Government Schemes	43.5	12.8	1.95	3.12
Mutual Funds	47.1	14.5	3.28	3.45
Direct Equity	28.7	8.6	4.15	3.62
Real Estate	31.4	7.2	2.87	3.86
Gold/Precious Metals	35.8	2.8	2.43	3.24

Interpretation: Table 4 presents the investment pattern of respondents across various investment avenues. Bank deposits emerge as the most popular investment option, with 78.2% of respondents currently invested and the highest average portfolio allocation (35.7%). Direct equity shows the lowest participation (28.7%) with an average allocation of 8.6%. In terms of risk perception, direct equity is perceived as the riskiest (mean = 4.15), while bank deposits are considered the safest (mean = 1.82). Return satisfaction is highest for real estate investments (mean = 3.86) and lowest for bank deposits (mean = 2.56). The data reveals a strong preference for traditional, safer investment options among higher education employees, with limited allocation to potentially higher-return but riskier avenues. This investment behavior reflects risk aversion tendencies among the respondents, possibly influenced by employment stability concerns and limited financial knowledge of market-linked investment options.

Table 5: Relationship between Financial Knowledge and Investment Pattern

Financial Knowledge Level	Traditional Investments (Bank Deposits, Insurance, Govt. Schemes)	Market-Linked Investments (Mutual Funds, Equity)	Alternative Investments (Real Estate, Gold)	Diversification Index (Mean)
Low (n=82)	83.7%	8.2%	8.1%	2.14
Moderate (n=235)	71.6%	18.5%	9.9%	3.42
High (n=83)	52.3%	35.2%	12.5%	4.86
Correlation with Financial Knowledge	r = -0.687**	r = 0.721**	r = 0.283*	r = 0.695**

*Note: * indicates $p < 0.05$, ** indicates $p < 0.01$*

Interpretation: Table 5 illustrates the relationship between financial knowledge levels and investment patterns. A clear trend emerges where higher financial knowledge is associated with decreased allocation to traditional investments ($r = -0.687$, $p < 0.01$) and increased allocation to market-linked investments ($r = 0.721$, $p < 0.01$). The relationship with alternative investments, while positive, is relatively weaker ($r = 0.283$, $p < 0.05$). The diversification index, representing the number of different investment avenues utilized, shows a strong positive correlation with financial knowledge ($r = 0.695$, $p < 0.01$). Respondents with high financial knowledge demonstrate much greater portfolio diversification (mean = 4.86 investment types) compared to those with low knowledge (mean = 2.14). These findings strongly suggest that financial knowledge plays a crucial role in determining investment choices and portfolio diversification strategies among higher education employees, with more knowledgeable individuals adopting more sophisticated and diversified investment approaches.

Table 6: Relationship between Financial Inclusion and Investment Pattern

Financial Inclusion Level	Traditional Investments (Bank Deposits, Insurance, Govt. Schemes)	Market-Linked Investments (Mutual Funds, Equity)	Alternative Investments (Real Estate, Gold)	Diversification Index (Mean)
Low (n=63)	89.3%	5.4%	5.3%	1.97
Moderate (n=241)	74.1%	16.8%	9.1%	3.24
High (n=96)	58.6%	29.7%	11.7%	4.35
Correlation with Financial Inclusion	r = -0.532**	r = 0.612**	r = 0.248*	r = 0.574**

*Note: * indicates $p < 0.05$, ** indicates $p < 0.01$*

Interpretation: Table 6 presents the relationship between financial inclusion levels and investment patterns. Similar to financial knowledge, higher financial inclusion is associated with lower allocation to traditional investments ($r = -0.532$, $p < 0.01$) and higher allocation to market-linked investments ($r = 0.612$, $p < 0.01$), with a weaker but significant relationship with alternative investments ($r = 0.248$, $p < 0.05$). The diversification index shows a strong positive correlation with financial inclusion ($r = 0.574$, $p < 0.01$). Respondents with high financial inclusion demonstrate significantly greater portfolio diversification (mean = 4.35 investment types) compared to those with low inclusion (mean = 1.97). However, the correlation coefficients for financial inclusion are generally lower than those for financial knowledge, suggesting that while financial inclusion is an important determinant of investment patterns, financial knowledge may have a stronger influence. These findings indicate that both access to financial services and knowledge about financial concepts are important for diversified investment behavior, but knowledge may play a more decisive role in shaping specific investment choices.

Table 7: Comparison of Financial Knowledge, Inclusion, and Investment Patterns by Employment Type

Variable	Teaching Staff (n=168) Mean (SD)	Non-Teaching Staff (n=232) Mean (SD)	t-value	p-value
Financial Knowledge (Out of 25)	16.85 (3.42)	13.12 (3.68)	10.32	0.000**
Financial Inclusion (Out of 25)	16.93 (4.12)	16.56 (3.82)	0.95	0.343
Traditional Investments (%)	65.7 (14.2)	78.4 (12.5)	-9.78	0.000**
Market-Linked Investments (%)	25.3 (12.8)	13.2 (9.7)	11.03	0.000**
Alternative Investments (%)	9.0 (5.4)	8.4 (5.1)	1.16	0.247
Diversification Index	4.03 (1.38)	2.97 (1.26)	8.04	0.000**

*Note: ** indicates $p < 0.01$*

Interpretation: Table 7 compares financial knowledge, inclusion, and investment patterns between teaching and non-teaching staff. Teaching staff demonstrate significantly higher financial knowledge (mean = 16.85) compared to non-teaching staff (mean = 13.12), with the difference being statistically significant ($t = 10.32$, $p < 0.001$). However, no significant difference is observed in financial inclusion levels between the two groups ($p = 0.343$). In terms of investment patterns, teaching staff allocate significantly less to traditional investments (65.7% vs. 78.4%, $p < 0.001$) and more to market-linked investments (25.3% vs. 13.2%, $p < 0.001$)

compared to non-teaching staff. The diversification index is also significantly higher for teaching staff (4.03 vs. 2.97, $p < 0.001$), indicating more diversified investment portfolios. These findings suggest that while both groups have similar access to financial services, teaching staff possess greater financial knowledge, which may explain their more diversified investment approach and greater allocation to market-linked instruments. This highlights the importance of financial education in shaping investment patterns, even when financial inclusion levels are comparable.

Table 8: Multiple Regression Analysis - Factors Influencing Investment Diversification

Independent Variables	Standardized Beta Coefficient	t-value	p-value	VIF
Financial Knowledge	0.453	8.82	0.000**	1.84
Financial Inclusion	0.326	6.37	0.000**	1.78
Monthly Income	0.219	4.84	0.000**	1.52
Age	0.124	2.76	0.006**	1.46
Gender (Male=1)	0.086	1.92	0.056	1.32
Employment Type (Teaching=1)	0.103	2.18	0.030*	1.67
Employment Status (Permanent=1)	0.095	2.05	0.041*	1.55

$R^2 = 0.612$, Adjusted $R^2 = 0.604$, $F = 87.43$, $p < 0.001$
*Note: * indicates $p < 0.05$, ** indicates $p < 0.01$*

Interpretation: Table 8 presents the results of multiple regression analysis examining factors influencing investment diversification. The model explains 61.2% of the variance in investment diversification ($R^2 = 0.612$). Financial knowledge emerges as the strongest predictor ($\beta = 0.453$, $p < 0.001$), followed by financial inclusion ($\beta = 0.326$, $p < 0.001$) and monthly income ($\beta = 0.219$, $p < 0.001$). Age, employment type, and employment status also show significant positive associations with investment diversification, while gender approaches but does not reach statistical significance ($p = 0.056$). The Variance Inflation Factors (VIF) are all below 2, indicating no concerning multicollinearity issues. These findings confirm that while financial knowledge and inclusion are the primary determinants of investment diversification, demographic and employment-related factors also play significant roles. The results suggest that interventions aimed at enhancing investment diversification should prioritize improvements in financial knowledge and inclusion while recognizing the contextual influences of income, age, and employment characteristics.

Results and Findings

The analysis of data collected from 400 employees of higher education institutions in Uttar Pradesh reveals several significant findings regarding the relationships between financial knowledge, financial inclusion, and investment patterns:

1. **Financial Knowledge Levels**: The overall financial knowledge among respondents is moderate (58.7%), with significant variations across different components. Respondents demonstrate stronger understanding of basic financial concepts (mean = 3.47/5) compared to specialized knowledge areas like retirement planning (mean = 2.64/5) and tax planning (mean = 2.81/5).

2. **Financial Inclusion Status**: Financial inclusion levels are predominantly moderate (60.2%), with banking access showing the highest inclusion (mean = 4.25/5) and investment market participation showing the lowest (mean = 2.75/5). This aligns with broader trends in India where basic banking access has improved significantly through various initiatives, but more sophisticated financial market participation remains limited.

3. **Investment Preferences**: Traditional investment avenues dominate the portfolios of respondents, with bank deposits (78.2% participation, 35.7% allocation) and insurance (65.3% participation, 18.4% allocation) being the most preferred. Market-linked investments show lower participation rates (47.1% for mutual funds, 28.7% for direct equity), reflecting risk-averse tendencies among higher education employees.

4. **Relationship Between Financial Knowledge and Investment Patterns**: A strong negative correlation exists between financial knowledge and allocation to traditional investments ($r = -0.687$, $p < 0.01$), while a strong positive correlation is observed with market-linked investments ($r = 0.721$, $p < 0.01$) and portfolio diversification ($r = 0.695$, $p < 0.01$). This confirms that higher financial knowledge is associated with more diversified and sophisticated investment approaches.

5. **Relationship Between Financial Inclusion and Investment Patterns**: Financial inclusion shows a moderate negative correlation with traditional investments ($r = -0.532$, $p < 0.01$) and moderate positive correlations with market-linked investments ($r = 0.612$, $p < 0.01$) and portfolio diversification ($r = 0.574$, $p < 0.01$). These correlations, while significant, are generally weaker than those for financial knowledge, suggesting financial knowledge may have a stronger influence on investment decisions.

6. **Employment Type Differences**: Teaching staff demonstrate significantly higher financial knowledge compared to non-teaching staff (means of 16.85 vs. 13.12, $p < 0.001$), but no significant difference in financial inclusion levels. Teaching staff also show more diversified investment portfolios (diversification index 4.03 vs. 2.97, $p < 0.001$) and higher allocation to market-linked investments (25.3% vs. 13.2%, $p < 0.001$).

7. **Determinants of Investment Diversification**: Multiple regression analysis reveals that financial knowledge is the strongest predictor of investment diversification ($\beta = 0.453$, $p < 0.001$), followed by financial inclusion ($\beta = 0.326$, $p < 0.001$) and monthly income ($\beta = 0.219$, $p < 0.001$). The model explains 61.2% of the variance in investment diversification.

8. **Hypothesis Testing Results**:

    - H_{01} (There is no significant relationship between financial inclusion and investment patterns among the Employees of Higher Education Institutions in Uttar Pradesh) is rejected based on the significant correlations between financial inclusion and various investment pattern metrics.

- H_{02} (There is no significant difference in investment patterns among the Employees of Higher Education Institutions in Uttar Pradesh based on their financial knowledge and inclusion levels) is rejected based on the significant differences in investment patterns observed across different financial knowledge and inclusion level groups.

These findings highlight the crucial roles that both financial knowledge and inclusion play in shaping the investment behaviors of higher education employees in Uttar Pradesh, with financial knowledge emerging as the more influential factor.

Suggestions

Based on the findings of this study, the following suggestions are proposed to enhance financial knowledge, inclusion, and investment behaviors among employees of higher education institutions in Uttar Pradesh:

1. **Targeted Financial Education Programs**: Develop specialized financial literacy programs tailored to the specific needs of higher education employees, with particular focus on areas showing knowledge gaps such as retirement planning, tax optimization, and market-linked investments. These programs should be differentiated for teaching and non-teaching staff based on their distinct knowledge levels and requirements.

2. **Institutional Financial Wellness Initiatives**: Higher education institutions should implement comprehensive financial wellness programs as part of employee benefits, including workshops, counseling services, and access to financial planning resources. These initiatives should focus on practical application rather than theoretical knowledge.

3. **Digital Financial Literacy Enhancement**: Develop targeted interventions to improve digital financial literacy, especially among older employees and non-teaching staff, to bridge the digital divide in financial service utilization. This could include hands-on training sessions for digital banking, investment platforms, and financial technology applications.

4. **Collaborative Financial Inclusion Efforts**: Educational institutions should collaborate with financial service providers to develop customized financial products that address the specific needs and risk profiles of higher education employees, potentially including special investment schemes, retirement plans, and insurance products.

5. **Peer Learning Networks**: Establish peer learning groups within institutions where financially knowledgeable employees can share insights and experiences with colleagues, fostering a culture of financial awareness and learning through relatable examples.

6. **Retirement Planning Focus**: Implement specialized retirement planning programs, particularly for contractual and part-time employees who may have less secure pension arrangements, focusing on long-term investment strategies and supplementary retirement savings options.

7. **Gender-Sensitive Financial Empowerment**: Develop targeted financial empowerment initiatives for female employees addressing confidence gaps and gender-specific financial challenges, potentially including women-only financial workshops and mentoring programs.

8. **Investment Diversification Guidance**: Provide structured guidance on portfolio diversification strategies appropriate for different life stages, risk tolerances, and income levels, helping employees move beyond excessive reliance on traditional low-yield investments.

9. **Behavioral Finance Education**: Incorporate behavioral finance elements in financial education programs to help employees recognize and overcome psychological biases affecting their investment decisions.

10. **Regular Financial Health Check-ups**: Implement annual financial health assessments for employees, helping them track progress in financial knowledge, inclusion, and investment portfolio optimization over time.

Implications

The findings of this research have several important implications for various stakeholders:

Theoretical Implications

1. **Extension of Financial Behavior Research**: This study extends the existing body of knowledge on financial behavior by focusing specifically on higher education employees, a previously understudied demographic. The findings contribute to the theoretical understanding of how occupational characteristics interact with financial knowledge and inclusion to shape investment behaviors.

2. **Relationship Between Knowledge and Inclusion**: The research clarifies the relative influence of financial knowledge versus financial inclusion on investment decisions, suggesting that while both are important, knowledge may have a more profound impact on sophisticated financial behaviors.

3. **Conceptualization of Financial Inclusion**: The study adopts a multidimensional approach to financial inclusion, incorporating not just access but also usage and quality dimensions, contributing to a more nuanced theoretical framework for understanding financial inclusion.

Practical Implications

1. **For Higher Education Institutions**: The findings highlight the need for institutional investment in employee financial wellness programs, suggesting that such initiatives could enhance employee financial well-being and potentially improve job satisfaction and retention. Institutions should consider implementing targeted financial education programs, particularly for non-teaching staff who demonstrate lower financial knowledge levels.

2. **For Financial Service Providers**: The research identifies specific gaps in financial product adoption among higher education employees, suggesting opportunities for financial

institutions to develop tailored products addressing the unique needs and risk profiles of this demographic.

3. **For Policymakers**: The findings highlight persistent financial inclusion gaps even among educated populations, suggesting that policy interventions should focus not just on basic access but also on enhancing utilization of more sophisticated financial services and improving financial knowledge.

4. **For Financial Educators**: The study identifies specific knowledge gaps in areas like retirement planning and investment diversification, providing guidance for the development of targeted financial education curricula for professional populations.

Societal Implications

1. **Cascading Effect of Educator Financial Empowerment**: Enhancing the financial knowledge and inclusion of higher education employees may have multiplicative effects as these individuals often serve as knowledge disseminators within their communities and can influence the financial behaviors of students and colleagues.

2. **Addressing Occupational Financial Disparities**: The research highlights financial knowledge and inclusion disparities between teaching and non-teaching staff, pointing to the need for more equitable financial empowerment initiatives across different occupational categories.

3. **Model for Professional Group Financial Inclusion**: The methodological approach and findings of this study could serve as a model for examining financial behaviors in other professional groups, contributing to more targeted financial inclusion efforts across various occupational segments.

Limitations

Despite its contributions, this study has several limitations that should be acknowledged:

1. **Geographical Scope**: The research is limited to private higher education institutions in Uttar Pradesh, which may limit the generalizability of findings to other states or to public higher education institutions with different employment structures and compensation systems.

2. **Self-Reported Data**: The study relies on self-reported data for financial knowledge assessment and investment patterns, which may be subject to social desirability bias and recall errors. Actual financial behaviors might differ from reported behaviors.

3. **Cross-Sectional Design**: The cross-sectional nature of the study provides a snapshot of relationships at a single point in time, limiting the ability to establish causal relationships or track changes in financial behaviors over time.

4. **Limited Scope of Investment Behavior**: The study focuses primarily on formal investment avenues and may not fully capture informal saving and investment practices that might be culturally relevant in the Indian context.

5. **Complexity of Financial Decision-Making**: While the study examines relationships between financial knowledge, inclusion, and investment patterns, it may not capture the full complexity of financial decision-making processes, including psychological, familial, and cultural influences.

6. **Focus on Individual Factors**: The research emphasizes individual-level factors influencing investment patterns and may not adequately address institutional and structural factors affecting financial behaviors.

7. **Limited Measurement of Financial Inclusion**: While the study adopts a multidimensional approach to financial inclusion, it may not capture all relevant dimensions, particularly qualitative aspects like service quality and appropriateness of financial products.

8. **Sample Representativeness**: Despite efforts to ensure representative sampling, the voluntary nature of participation may have led to selection bias, with more financially interested or knowledgeable employees being more likely to participate.

Scope of Future Research

This study opens several avenues for future research:

1. **Longitudinal Studies**: Future research could adopt longitudinal designs to track changes in financial knowledge, inclusion, and investment patterns over time, providing insights into the developmental trajectory of financial behaviors.

2. **Comparative Studies**: Extend this research to compare financial behaviors across different occupational groups or between private and public higher education institutions to identify occupation-specific patterns and needs.

3. **Mixed Methods Approaches**: Future studies could employ mixed methods approaches, combining quantitative assessments with qualitative interviews to develop a deeper understanding of the motivations, barriers, and decision-making processes underlying investment behaviors.

4. **Financial Technology Adoption**: More focused research on financial technology adoption among higher education employees could provide insights into the role of digital financial services in enhancing financial inclusion and investment diversification.

5. **Financial Resilience**: Future research could explore financial resilience among higher education employees, examining how financial knowledge and inclusion contribute to the ability to withstand financial shocks.

6. **Impact Evaluation**: Studies evaluating the effectiveness of financial education interventions specifically designed for higher education employees would provide valuable insights for program development.

7. **Household Financial Decision-Making**: Extending the research to examine household-level financial decision-making among higher education employees could provide a more comprehensive understanding of financial behaviors.

8. **Regional Comparative Analysis**: Future research could compare financial behaviors of higher education employees across different states or regions in India to identify regional disparities and their underlying causes.

9. **Psychological Factors**: More in-depth exploration of psychological factors, including financial anxiety, confidence, and behavioral biases affecting investment decisions, would enrich understanding of financial behaviors.

10. **Role Modeling Effects**: Research examining how the financial behaviors of higher education employees influence the financial attitudes and behaviors of students would provide insights into the broader societal impact of educator financial empowerment.

Conclusion

This study provides comprehensive insights into the influence of financial knowledge and inclusion on the investment patterns of employees in higher education institutions in Uttar Pradesh. The findings reveal that while the majority of respondents demonstrate moderate levels of financial knowledge and inclusion, significant variations exist across demographic segments, particularly between teaching and non-teaching staff.

Financial knowledge emerges as the strongest determinant of investment diversification and sophisticated investment choices, with a stronger influence than financial inclusion. This suggests that merely providing access to financial services is insufficient for promoting optimal investment behaviors; enhancing understanding of financial concepts is equally, if not more, crucial. The study confirms that respondents with higher financial knowledge demonstrate more diversified investment portfolios and greater allocation to market-linked investments, potentially positioning them for better long-term financial outcomes.

The research also highlights concerning gaps in specific knowledge areas, particularly retirement planning and tax optimization, suggesting targeted areas for financial education interventions. The persistent preference for traditional, low-risk investments even among this educated demographic underscores the influence of risk aversion on investment behaviors in the Indian context.

The findings have significant implications for higher education institutions, financial service providers, policymakers, and financial educators. They highlight the need for institutional investment in employee financial wellness programs, the development of tailored financial products for higher education employees, policy interventions focusing on sophisticated financial service utilization, and targeted financial education curricula addressing specific knowledge gaps.

By illuminating the financial dynamics of this previously understudied occupational group, this research contributes to the broader understanding of financial behavior while providing actionable insights for enhancing financial well-being among higher education employees. Future research should explore these dynamics through longitudinal and comparative approaches, potentially extending to examine household-level decision-making and the cascading effects of educator financial empowerment on broader community financial behaviors.

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