

Impact of Demographic Variables on Job Satisfaction and Attrition Rate among Middle-Level Managers in Metro Rail Corporation

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Abstract

This study examines the impact of demographic variables on job satisfaction and attrition rates among middle-level managers in the Metro Rail Corporation. Utilizing data from a sample of 200 managers across different metro rail corporations in India, the study explores how factors such as age, education level, years of experience, and gender influence job satisfaction and the likelihood of attrition. The findings highlight significant correlations between these demographic variables and both job satisfaction and attrition rates, with implications for human resource strategies in the transportation industry. Specifically, older and more experienced managers report higher job satisfaction and lower attrition rates. The findings underscore the importance of considering demographic factors in human resource strategies to enhance employee retention and satisfaction in the transportation industry.

Keywords: Demographic variables, Job satisfaction, Attrition rate, Middle-level managers, Metro Rail Corporation, Transportation industry

Introduction:

The Indian transportation sector has undergone rapid expansion, particularly with the development of metro rail systems in major cities over the past decade. Middle-level managers in Metro Rail Corporations play a crucial role in ensuring the efficiency and effectiveness of operations, making their job satisfaction and retention vital for the organization's success. High attrition rates among these managers can lead to disruptions in service delivery, increased recruitment costs, and loss of institutional knowledge. Understanding the factors that influence job satisfaction and the intent to leave is, therefore, of paramount importance.

Demographic variables viz. age, education level, years of experience and gender are known to significantly impact job satisfaction and attrition rates in various industries. However, there is a paucity of research specifically examining these relationships within the context of Metro Rail Corporations in India. This study aims to fill this gap by exploring how these demographic factors influence job satisfaction and attrition intent among middle-level managers, providing insights that can inform human resource practices in the transportation industry.

Literature Review:

Previous research has established that demographic factors such as gender, age, work experience, and education significantly influence job satisfaction and attrition rates (Spector, 1997; Griffeth, Hom, & Gaertner, 2000).

1. Job Satisfaction and Demographic Variables

Job satisfaction is a critical factor influencing organizational performance, employee well-being, and retention. According to Spector (1997), job satisfaction is determined by a range of factors, including the nature of the work, compensation, opportunities for advancement, and the work environment. Demographic variables such as age, gender, education level, and work experience have been found to correlate with job satisfaction across various sectors.

Age and Job Satisfaction: Job satisfaction increases with age, research indicates it (Clark, Oswald, & Warr, 1996). Older employees often have more realistic expectations, greater job security, and higher job status, which contribute to higher satisfaction levels. In the context of middle-level managers, who are typically more experienced, age may play a significant role in shaping their job satisfaction.

Gender and Job Satisfaction: Studies on the relationship between gender and job satisfaction have produced mixed results. Some research suggests that, due to gender discrimination, women may experience lower job satisfaction, glass ceiling effects, and work-life balance challenges (Clark, 1997). However, other studies have found no significant differences between female and male employees' job satisfaction levels.

Education Level and Job Satisfaction: The relationship between education level and job satisfaction is complex. While higher education is often associated with better job prospects and higher salaries, it can also lead to higher expectations, which may not always be met, potentially reducing job satisfaction (Ng & Feldman, 2010). In managerial roles, where advanced degrees are common, the influence of education on job satisfaction warrants further investigation.

Years of Experience and Job Satisfaction: Experience is generally positively correlated with job satisfaction, as longer-tenured employees tend to have more job security, higher pay, and greater job mastery (Greenberg & Baron, 2008). In Metro Rail Corporations, where experience is crucial for managing complex operations, this relationship is particularly relevant.

2. Attrition Rate and Demographic Variables

Employee attrition, or turnover, is a significant concern for organizations, as it can disrupt operations, incur high replacement costs, and negatively affect employee morale. The leave intention, often used as a proxy for actual turnover, is influenced by a variety of factors, including job satisfaction and demographic characteristics.

Age and Attrition: Younger employees are generally more inclined to leave an organization, driven by a desire for career advancement, higher salaries, and new experiences (Griffeth, Hom, & Gaertner, 2000). Conversely, older employees may have fewer external opportunities and greater organizational commitment, leading to lower attrition rates.

Gender and Attrition: Gender differences in attrition rates can be influenced by various factors, including work-life balance challenges, discrimination, and career development opportunities. However, research on this relationship has shown mixed results, with some studies finding higher attrition rates among women, while others report no significant gender differences (Cotton & Tuttle, 1986).

Education and Attrition: Employees with higher education levels may be more inclined to leave an organization if they perceive better opportunities elsewhere (March & Simon, 1958). However, in specialized fields like metro rail management, where specific skills and knowledge are required, the relationship between education and attrition may be more nuanced.

Experience and Attrition: Experienced employees are typically less likely to leave their jobs, as they have invested time and effort into their careers and may have fewer external opportunities. However, if they perceive a lack of advancement opportunities or job dissatisfaction, they may still consider leaving (Lee & Mitchell, 1994).

However, limited studies have focused on the transportation sector, particularly within the Indian context. This paper builds on existing literature by focusing specifically on middle-level managers in metro rail corporations.

Research Objectives:

The primary objectives of this research are as follows:

1. **To examine the relationship b/w demographic variables (gender, age, years of experience, and education level) and job satisfaction among middle-level managers in Metro Rail Corporations.**
 - **Sub-objective 1.1:** To analyze influence of age on job satisfaction.
 - **Sub-objective 1.2:** To determine the impact of gender on job satisfaction.
 - **Sub-objective 1.3:** To evaluate the relationship b/w education level and job satisfaction.
 - **Sub-objective 1.4:** To assess the effect of years of experience on job satisfaction.
2. **To investigate the relationship b/w demographic variables and attrition intent among middle-level managers in Metro Rail Corporations.**
 - **Sub-objective 2.1:** To explore the effect of age on attrition intent.
 - **Sub-objective 2.2:** To assess the impact of gender on attrition intent.
 - **Sub-objective 2.3:** To analyze the relationship b/w education level and attrition intent.

➤ **Sub-objective 2.4:** To determine influence of years of experience on attrition intent.

3. **To provide recommendations for human resource practices in Metro Rail Corporations based on the findings regarding the impact of demographic variables on job satisfaction and attrition intent.**

Research Methodology:

A quantitative research design was employed, utilizing a structured questionnaire to collect data from 200 middle-level managers across various metro rail corporations in India. The questionnaire included measures for demographic variables (age, gender, education, experience) and standardized scales for job satisfaction (Spector, 1985) and attrition intent (Mobley, 1977). Statistical analyses, including regression and correlation, were conducted to determine the relationships among these variables.

1. Research Design

This study employs a **quantitative research design** to explore the impact of demographic variables on job satisfaction and attrition rates among middle-level managers in Metro Rail Corporations across India. A cross-sectional survey method was used, allowing for the collection of data at a single point in time from a sample of the target population.

2. Population and Sample

The population for this study consists of middle-level managers working in various Metro Rail Corporations in India. A total of **200 middle-level managers** were selected as the sample using **stratified random sampling**. This method ensures that different strata within the population, such as age groups, gender, educational background, and years of experience, are adequately represented in the sample.

3. Data Collection Instrument

Data was collected using a **structured questionnaire**. The questionnaire was divided into three main sections:

- **Demographic Information:** This section collected data on gender, age, years of experience, and education level.
- **Job Satisfaction:** To measure the job satisfaction, JSS (Job Satisfaction Survey) by Spector (1985) was used. JSS includes 36 items, each rated on a Likert scale on 6-points ranging from "strongly disagree" to "strongly agree."
- **Attrition Intent:** To assess the likelihood of managers leaving their jobs, a scale based on Mobley's (1977) intermediate linkages model was utilized. This scale includes questions related to thoughts of quitting, intention to search for alternative employment, and likelihood of leaving within the next year.

4. Validity and Reliability

The validity of the questionnaire was established through **content validity** and **construct validity**. Content validity was ensured by having the questionnaire reviewed by a panel of experts in human resource management and organizational behavior. **Factor analysis** was used to assess the construct validity to confirm that the items on the JSS and attrition intent scale accurately measured the intended constructs.

Cronbach's alpha was used to assess the reliability, with a value of 0.82 for the job satisfaction scale and 0.79 for the attrition intent scale, indicating acceptable levels of internal consistency.

5. Data Collection Procedure

The questionnaires were distributed to the selected managers via email, and responses were collected over a period of four weeks. Participation was voluntary, and respondents were assured of the confidentiality of their responses.

6. Data Analysis

Data was analyzed using **SPSS (Statistical Package for the Social Sciences)**. To summarize the sample demographic characteristic descriptive statistics were used. **Pearson correlation analysis** was conducted to explore the relationships b/w demographic variables and job satisfaction, as well as between demographic variables and attrition intent.

Additionally, to determine the extent of prediction of job satisfaction and attrition rates by the demographic variables, **multiple regression analysis** was conducted. The significance level was fixed at $p < 0.05$ for all the statistical tests.

7. Ethical Considerations

To adhere to the ethical guidelines informed consent from all participants were obtained. Confidentiality and anonymity were observed in the whole research process, and participants were informed that they can withdraw from study, if they feel, at any point without any response.

Data Analysis and Findings:

This provides the data analysis and findings for a sample size of 200 middle-level managers in Metro Rail Corporations. This includes demographic profile analysis, descriptive statistics, Pearson correlation analysis, and multiple regression analysis to assess the impact of demographic variables on job satisfaction and attrition intent.

1. Demographic Profile (Respondents)

Respondents' demographic characteristics are shown in Table 1, including gender, age, years of, and experience education level.

Table 1: Demographic Characteristics of Respondents

Demographic Variable	Category	Frequency (n)	Percentage (%)
Age	25-34 Years	40	20.0%
	35-44 Years	90	45.0%
	45-54 Years	50	25.0%
	55 Years & Above	20	10.0%
Gender	Male	140	70.0%
	Female	60	30.0%
Education Level	Bachelor's Degree	80	40.0%
	Master's Degree	100	50.0%
	Doctorate	20	10.0%
Experience in Years	1-5 Years	30	15.0%
	6-10 Years	80	40.0%
	11-15 Years	60	30.0%
	16 Years & Above	30	15.0%

The demographic table shows that the majority of the respondents were male (70%) and aged between 35-44 years (45%). Most of the respondents had a Master's degree (50%) and 6-10 years of experience (40%).

2. Validity and Reliability**2.1. Content Validity**

Content validity is the extent or degree to which the items in a questionnaire or measurement instrument cover the entire range of the concept being measured. In this study, the content validity of the instrument used to assess the impact of demographic variables on job satisfaction and attrition rate among middle-level managers in Metro Rail Corporation was evaluated by experts in the field.

Table 2: Content Validity Assessment

Construct	Item	Expert 1	Expert 2	Expert 3	Av. CVI
Job Satisfaction	Satisfaction with Pay	1.0	1.0	1.0	1.0
	Satisfaction with Work-Life Balance	0.9	1.0	1.0	0.97
	Satisfaction with Management	1.0	0.9	1.0	0.97
	Overall Job Satisfaction	1.0	1.0	1.0	1.0
Attrition Intent	Intent to Leave	1.0	1.0	1.0	1.0
	Search for Other Jobs	0.9	1.0	0.9	0.93
	Desire for Career Change	0.8	0.9	1.0	0.90
Demographic Variables	Education Level, Age, Years of Experience, Gender	1.0	1.0	1.0	1.0

Note: CVI = Content Validity Index; Experts rated items on a scale of 0 to 1, where 1 indicates the item is essential, and 0 indicates the item is not essential.

The high CVI values across all constructs indicate strong content validity, suggesting that the instrument comprehensively covers the domain of interest. The inclusion of essential items ensures that the questionnaire adequately reflects the key aspects of job satisfaction, attrition intent, and demographic factors.

The consistency in expert ratings highlights the thoroughness of the item selection process and the robustness of the measurement instrument.

2.2. Construct Validity

It provides insights into how well the items measure the theoretical constructs of interest, such as job satisfaction and attrition intent, using factor loadings, Average Variance Extracted (AVE), and Composite Reliability (CR).

Table 3: Construct Validity Assessment

Construct	Indicator	Factor Loading	AVE	CR
Job Satisfaction	Satisfaction with Pay	0.78	0.60	0.86
	Satisfaction with Work-Life Balance	0.75		
	Satisfaction with Management	0.80		
	Overall Job Satisfaction	0.77		
Attrition Intent	Intent to Leave	0.82	0.63	0.85
	Search for Other Jobs	0.79		
	Desire for Career Change	0.76		

Note: AVE = Average Variance Extracted, CR = Composite Reliability

The combination of high factor loadings, AVE, and CR values confirms the construct validity of the Job Satisfaction and Attrition Intent scales. This ensures that the measures used in the study are valid representations of the theoretical constructs being investigated, providing a reliable foundation for further analysis.

2.3 Reliability

Table 4: Cronbach's Alpha Statistics

Scale	Number of Items	Cronbach's Alpha
Job Satisfaction Survey	36	0.82
Attrition Intent Scale	3	0.79

Cronbach's alpha values for both the Job Satisfaction Survey (0.82) and Attrition Intent Scale (0.79) suggest high internal consistency, confirming the reliability of the scales used.

3. Descriptive Statistics

Table 5 presents the descriptive statistics for the main variables: job satisfaction and attrition intent.

Table 5: Descriptive Statistics

Variable	Mean (M)	Standard Deviation (SD)
Job Satisfaction	3.80	0.70
Attrition Intent	2.50	0.90

The mean job satisfaction score of 3.80 indicates moderate to high satisfaction levels, while the mean attrition intent score of 2.50 suggests a low to moderate intention to leave the organization. The standard deviations indicate that there is some variability in responses for both job satisfaction and attrition intent.

4. Pearson Correlation

To examine the relationships between demographic variables and the dependent variables, job satisfaction and attrition intent, Pearson correlation analysis was conducted. The results are summarized in Table 6.

Table 6: Pearson Correlation

Variable	Age	Gender	Education Level	Experience in Years
Job Satisfaction	0.28**	0.10	0.22**	0.30**
Attrition Intent	-0.26**	0.06	0.20**	-0.32**

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

- **Age:** Age has positive correlation with job satisfaction ($r = 0.28$, $p < 0.01$) and negative correlation with attrition intent ($r = -0.26$, $p < 0.01$). This indicates that older managers are generally more satisfied with their jobs and less likely to have leave intent.
- **Gender:** Gender did not significantly correlate with job satisfaction or attrition intent, suggesting that gender may not be a strong predictor of these outcomes.
- **Education Level:** Education level was correlated positively with job satisfaction ($r = 0.22$, $p < 0.01$) and attrition intent ($r = 0.20$, $p < 0.01$), indicating that managers with higher education levels tend to be more satisfied but also more likely to consider leaving for better opportunities.
- **Years of Experience:** Years of experience showed a positive correlation with job satisfaction ($r = 0.30$, $p < 0.01$) and a negative correlation with attrition intent ($r = -0.32$, $p < 0.01$). This suggests that more experienced managers are more satisfied and less likely to leave.

5. Multiple Regression

To determine the extent of prediction of demographic variables for job satisfaction and attrition intent, multiple regression was conducted. Results are presented in Tables 7 and 8.

Table 7: Multiple Regression Analysis for Job Satisfaction

Variable	B	SE	β	t	p
Age	0.14	0.04	0.25**	3.50	<0.001
Gender	0.07	0.05	0.08	1.20	0.23
Education Level	0.11	0.05	0.16*	2.20	0.03
Years of Experience	0.17	0.04	0.28**	4.25	<0.001

Note: $R^2 = 0.23$, ** $p < 0.01$, * $p < 0.05$

Table 8: Multiple Regression Analysis for Attrition Intent

Variable	B	SE	β	t	p
Age	-0.12	0.04	-0.21**	-3.00	0.003
Gender	0.04	0.05	0.05	0.80	0.42
Education Level	0.09	0.05	0.14*	1.90	0.06
Years of Experience	-0.18	0.05	-0.31**	-3.60	<0.001

Note: $R^2 = 0.25$, ** $p < 0.01$, * $p < 0.05$

- **Job Satisfaction:** The regression model for job satisfaction was statistically significant, $F(4, 195) = 17.88$, $p < 0.01$, with $R^2 = 0.23$. This indicates that 23% of the variance can be explained by demographic variables in job satisfaction. Age ($\beta = 0.25$, $p < 0.001$), education level ($\beta = 0.16$, $p = 0.03$), and years of experience ($\beta = 0.28$, $p < 0.001$) were found to be significant predictors of job satisfaction, while gender was not.
- **Attrition Intent:** The regression model for attrition intent was also statistically significant, $F(4, 195) = 19.88$, $p < 0.01$, with $R^2 = 0.25$. This indicates that 25% of the variance in attrition intent can be explained by demographic variables. Age ($\beta = -0.21$, $p = 0.003$), and years of experience ($\beta = -0.31$, $p < 0.001$) were significant predictors of attrition intent, while education level was marginally significant ($\beta = 0.14$, $p = 0.06$) and gender was not.

6. Interpretation of Findings

1. **Age:** Older managers tend to be more satisfied with and less likely to consider leaving their jobs. This may be due to factors like job security, experience, and realistic job expectations.

2. **Gender:** Gender did not significantly impact job satisfaction or attrition intent, implying that other factors, such as job role or organizational culture, might have a more substantial influence on these outcomes.
3. **Education Level:** Higher education levels are associated with both greater job satisfaction and higher attrition intent, suggesting that more educated managers may be satisfied but still seek better opportunities if they feel underutilized.
4. **Years of Experience:** Managers with more years of experience are generally more satisfied with and less likely to leave their jobs, possibly due to greater job mastery, loyalty, and investment in the organization.

The analysis revealed significant correlations between demographic variables and both job satisfaction and attrition rates. Age, education level and years of experience were positively correlated with job satisfaction, while gender showed no significant impact. Attrition rates were found to be higher among younger managers with less experience and with marginal impact of higher education, indicating a potential area of concern for HR practices.

Discussion:

This study provides important insights into the demographic factors having influence on job satisfaction and attrition intent among middle-level managers in the Metro Rail Corporation. The significant positive correlation between age and job satisfaction suggests that as managers grow older, they tend to develop a higher level of contentment with their job roles, possibly due to increased job stability and alignment with career goals. This is consistent with prior research indicating that older employees often report higher job satisfaction due to accumulated job experience and reduced career-related stress (Ng & Feldman, 2010).

On the other hand, the negative correlation between age and attrition intent underscores that older managers are less likely to leave their organization, possibly due to the higher value placed on job security and the difficulty of finding new opportunities at a later stage in their careers. This aligns with findings from other studies that suggest older employees are generally less inclined to consider job changes (Griffeth, Hom, & Gaertner, 2000).

The positive correlation between education level and both job satisfaction and attrition intent highlights a paradox: while higher education leads to greater job satisfaction, it also increases the likelihood of managers considering leaving the organization. This could be attributed to the ambition and career aspirations of highly educated managers, who might seek better opportunities elsewhere (Ng & Feldman, 2009). Maynard, Joseph, and Maynard (2006) found that underemployment is significantly associated with turnover intentions.

Years of experience was found to be a strong predictor of both job satisfaction and attrition intent. Managers with more years of experience reported higher job satisfaction and lower attrition intent, which may be due to their deeper organizational commitment and the rewards associated with long-term tenure, such as promotions and increased responsibility.

Gender did not emerge as a significant predictor of either job satisfaction or attrition intent, suggesting that in the study's context that job satisfaction and the intention to leave are not strongly influenced by gender differences. This finding is consistent with the broader literature, which has shown mixed results regarding the impact of gender on these outcomes (Clark, 1997).

These insights highlight the importance of tailored HR strategies to enhance job satisfaction and reduce attrition among middle-level managers.

Conclusion:

This study sheds light on the demographic factors that influence job satisfaction and attrition intent among middle-level managers in Metro Rail Corporation. Age and years of experience emerged as significant predictors of job satisfaction and attrition intent, with older and more experienced managers being more satisfied and less likely to have leave intent. Education level was also a significant predictor, though it presented a complex relationship with both job satisfaction and attrition intent. Gender was not found to be a significant predictor in this context.

This study underscores the need for metro rail corporations to consider demographic factors when developing HR policies. By focusing on enhancing job satisfaction among younger managers and addressing the factors contributing to their higher attrition rates, organizations can improve retention and overall performance.

The findings suggest that Metro Rail Corporation should focus on retaining older and more experienced managers by enhancing job satisfaction factors such as career growth opportunities and job stability. Additionally, strategies to engage highly educated managers and address their career aspirations may help reduce attrition intent.

Future research:

Future research could explore additional demographic variables and consider longitudinal data to assess how these relationships evolve over time. Furthermore, qualitative research could provide deeper insights into the reasons behind the observed correlations, particularly the complex relationship b/w education level and attrition intent.

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