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A STUDY ON EMPLOYEE ATTRITION ANALYSIS USING KNIME AI TOOL AT HANSVONLEHWALT INC

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ABSTRACT :

Employee attrition has become a growing concern for organizations aiming to retain talented individuals and maintain a productive work environment. This project, titled “A Study on Employee Attrition Analysis at HANSVL,” focuses on understanding the key factors that contribute to employee turnover and providing insights to support better retention strategies.

The objective of the study is to analyze various employee-related factors such as age, gender, department, tenure, work satisfaction, career growth opportunities, salary satisfaction, and work-life balance, to find out which variables have the most influence on employee attrition. Data was collected through surveys using Google Forms and analyzed using basic tools like Microsoft Excel and SQL queries.

The study follows the Design Thinking approach, covering the stages of Empathize, Define, Ideate, Prototype, and Test. Through data-driven analysis, the project identifies trends and patterns among employees who have either stayed with or left the organization. Charts, pivot tables, and basic statistical methods were used to interpret the data and present actionable insights for the management of HANSVL.

The findings suggest that factors like limited career growth opportunities, dissatisfaction with salary, and poor work-life balance are major contributors to employee attrition at HANSVL. Based on the insights, recommendations are provided to improve employee retention through better recognition programs, career advancement opportunities, and improvements in employee engagement activities.

This study aims to contribute to the broader understanding of how structured data analysis can help organizations take proactive steps toward reducing employee turnover, improving organizational stability, and enhancing overall employee satisfaction

CHAPTER – I

INTRODUCTION

A.INTRODUCTION OF THE STUDY

Employee attrition has emerged as one of the key challenges faced by modern organizations. It refers to the gradual reduction of workforce strength when employees leave the organization due to resignation, retirement, or other reasons, and are not immediately replaced. High attrition rates impact organizational stability, increase hiring and training costs, and affect the overall morale and productivity of remaining employees.

In the competitive business environment, understanding the reasons behind employee attrition has become crucial for companies to retain skilled talent and ensure sustainable growth. By analyzing employee-related data such as demographics, tenure, salary satisfaction, career growth opportunities, and work-life balance, organizations can identify critical factors influencing attrition and take proactive measures to address them.

This study, titled "A Study on Employee Attrition Analysis at HANSVL," aims to explore the patterns and causes of employee turnover within the organization by using basic data analysis tools like Microsoft Excel. The findings of the study will help the Human Resource (HR) department and management to make informed decisions and design effective employee retention strategies.

B.INDUSTRY PROFILE

ORGANIZATION PROFILE

Name of the Company	: Hansvonlehwalt Inc. (HANSVL)
Field of Organization	: IT , Consulting, and Technology Solutions
Year of Establishment	: 2020

Address : 12/38-Rajappa nagar, Thanjavur, Tamil Nadu.
Contact : 6369115130
E-mail : info@hansvl.com
Founder of the Company : A Team of Experienced Consultants



ABOUT ORGANIZATION

HANSVL (Hansvonlehwalt Inc.) is a growing professional services company delivering IT consulting, business operations, data analytics, and digital transformation services. The company specializes in helping clients across industries leverage the power of technology to improve operational efficiency, customer engagement, and business outcomes. HANSVL offers services in cloud infrastructure, Internet of Things (IoT), software development, and advanced data analytics solutions

VISION:

At HANSVL, our vision is to build a workplace where talented individuals thrive, grow, and contribute to innovation and excellence. We aspire to create an organizational culture that values employee satisfaction, career development, and work-life balance, thereby minimizing attrition and strengthening long-term organizational success. Through data-driven strategies and continuous improvement, we aim to be recognized as an employer of choice in the IT and consulting industry.

MISSION:

At HANSVL, our mission is to foster a supportive, engaging, and growth-oriented work environment that values every employee's contribution. We are committed to understanding the needs and challenges of our workforce through data-driven analysis and strategic initiatives. Our goal is to minimize employee turnover by promoting career advancement, enhancing job satisfaction, and creating a positive workplace culture, ensuring mutual growth for both employees and the organization.

GOAL

The primary goal of this study is to identify and analyze the key factors influencing employee attrition at HANSVL through the use of basic data analytics tools. By understanding the reasons behind employee turnover, the company aims to implement effective retention strategies, enhance employee satisfaction, and build a more stable and committed workforce. The study also aims to promote a culture of continuous improvement by leveraging insights from employee data to make informed human resource decisions and strengthen organizational growth.

D.SCOPE OF THE STUDY

The study focuses on analyzing the key factors that contribute to employee attrition at HANSVL. It aims to explore various employee-related aspects such as age, gender, department, tenure, work satisfaction, career growth opportunities, salary satisfaction, and work-life balance. The study covers employees across different departments and levels within the organization to identify patterns and trends in employee turnover.

The scope of the study is limited to employees working at HANSVL and involves collecting primary data through structured surveys and analyzing it using Microsoft Excel and basic data visualization techniques. The study provides insights into patterns of attrition and helps the Human Resource department in designing better employee retention strategies.

This study also highlights the importance of data-driven decision-making in Human Resource Management. By understanding the reasons behind employee attrition, the management of HANSVL can implement strategic actions to reduce turnover, improve employee satisfaction, and enhance organizational productivity. Although the findings are specific to HANSVL, they can also serve as a reference for similar companies facing attrition challenges.

CHAPTER II

REVIEW OF LITERATURE

Jack J. Phillips (1997): In his study on employee retention, Phillips emphasized that organizations must understand the reasons behind employee turnover by conducting regular surveys and exit interviews. He suggested that proactive retention strategies based on employee feedback can significantly reduce attrition rates.

Hom, P.W., & Griffeth, R.W. (1995): Their research focused on the causes and consequences of employee turnover. They highlighted that job dissatisfaction, lack of growth opportunities, and poor management practices are key factors leading to employee attrition.

Mobley, W.H. (1977): Mobley proposed the "Employee Withdrawal Decision Process" model, explaining how dissatisfaction at work leads to an employee considering resignation. He emphasized that early intervention by organizations can reduce voluntary attrition.

David G. Allen (2008): Allen's research explored how data analytics can be used to predict employee turnover. He suggested that using employee demographic and work-related metrics can help HR departments identify employees at risk of leaving and plan effective retention strategies.

Glebbeeck, A.C., & Bax, E.H. (2004): In their study, they found that high employee turnover negatively impacts organizational performance. Their findings underline the importance of analyzing turnover patterns and implementing effective HR practices to control attrition.

Wayne F. Cascio (2006): Cascio highlighted that the financial cost of employee turnover is very high, not only due to hiring and training expenses but also because of the loss of productivity. He suggested that improving job satisfaction and offering career development opportunities are critical for reducing attrition.

Abbasi, S.M., & Hollman, K.W. (2000): Their research focused on the impact of employee turnover on organizational effectiveness. They concluded that companies that actively engage in employee retention efforts experience better productivity, higher employee morale, and improved profitability.

Mitchell, T.R., Holtom, B.C., & Lee, T.W. (2001): They introduced the "Job Embeddedness" theory, explaining that employees who feel connected to their job, team, and organization are less likely to leave. Factors like social links, career fit, and organizational sacrifices influence employee retention

B. PROBLEM STATEMENT

Employee attrition poses a significant challenge to the stability and growth of organizations, especially in the competitive IT and consulting industry. At HANSVL, rising employee turnover rates can lead to increased recruitment and training costs, loss of experienced talent, disruption in project continuity, and a negative impact on overall productivity.

Traditional methods of addressing employee turnover, such as general feedback or annual surveys, are no longer sufficient in understanding the real reasons behind attrition. There is a need for a structured, data-driven analysis that examines various factors like age, tenure, job satisfaction, career growth, and work-life balance to uncover hidden trends and insights influencing employee decisions to leave.

This study aims to bridge this gap by systematically analyzing employee-related data using basic analytics tools like Microsoft Excel, identifying the key causes of attrition at HANSVL, and offering actionable recommendations to help the organization improve employee retention and enhance workforce stability.

C. RESEARCH GAP

While many studies have explored employee attrition and retention strategies in large organizations, there is limited research focusing on the application of data analytics to understand and manage attrition in mid-sized IT and consulting companies like HANSVL. Most existing studies highlight general factors influencing employee turnover but do not provide detailed, data-driven analysis specific to company demographics, job roles, and work environments.

Additionally, there is a gap in research related to the use of basic analytics tools, such as Microsoft Excel, for identifying actionable patterns in employee behavior that lead to attrition. This study aims to fill this gap by applying simple data analysis methods to uncover key factors influencing employee attrition at HANSVL and providing practical recommendations based on real employee feedback

CHAPTER III

RESEARCH METHODOLOGY

A. RESEARCH DESIGN

The research design adopted for this study is descriptive in nature. It aims to describe the factors leading to employee attrition at HANSVL through data collection and basic analysis. The study uses a structured approach to identify patterns, relationships, and reasons influencing employee turnover within the organization. A cross-sectional time frame is adopted where data is collected at a single point in time using a structured questionnaire.

B. SAMPLING DESIGN

The sampling method used in the study is convenience sampling. Data is collected from employees across different departments and experience levels within HANSVL. A sample size of around 20 to 30 respondents is targeted to ensure a reasonable representation of the employee population. Participants are selected based on their willingness and accessibility to share insights about their employment experience.

C. DATA COLLECTION METHOD

Primary data is collected through a structured Google Form questionnaire. The questions are designed to capture information related to demographics, job satisfaction, career growth, salary satisfaction, work-life balance, and overall perceptions regarding attrition factors. Secondary data is collected from online articles, research journals, and company reports related to employee attrition.

D. TOOLS USED FOR THE STUDY

Google Forms & Google Sheets

- Used for designing and collecting survey responses, and for organizing raw data in spreadsheet format.

Microsoft Excel

- Utilized for initial data cleaning, basic statistical operations, and formatting the dataset for analysis.

KNIME Analytics Platform (Konstanz Information Miner)

- A free AI-powered data analytics tool used for visualizing data through bar charts and pie charts, and for conducting the Chi-Square test using built-in statistical nodes and workflow-based analysis.

ChatGPT (OpenAI)

- Used to interpret the findings, generate summaries, and provide assistance in writing research insights, suggestions, and conclusions based on analyzed data.

Microsoft Word

- Used to draft, format, and finalize the entire project report.

D. OBJECTIVES OF THE STUDY

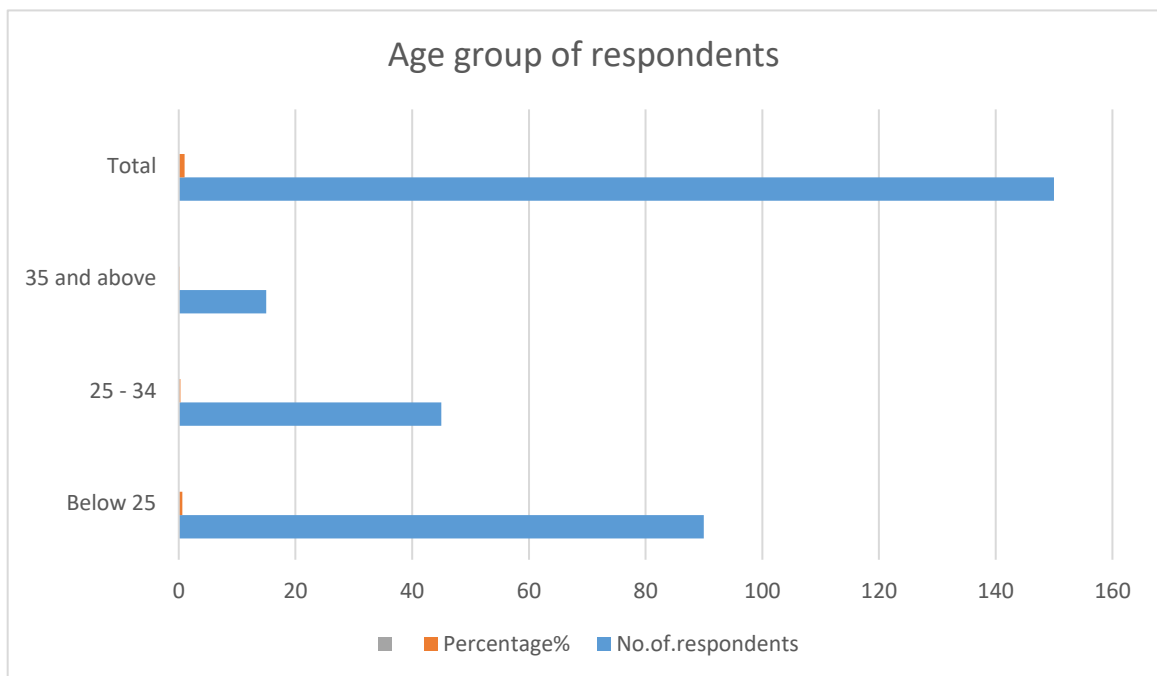
- To analyze the major factors leading to employee attrition at HANSVL.
- To study the relationship between employee demographics and their likelihood of leaving the organization.
- To identify key patterns in job satisfaction, career growth, salary satisfaction, and work-life balance influencing employee turnover.
- To provide data-driven insights to the management of HANSVL for developing effective employee retention strategies.
- To suggest recommendations to improve employee satisfaction and reduce attrition rates within the organization.

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

Table No: 2.1
Age Group of Respondents

Age group	No.of.respondents	Percentage%
Below 25	90	60%
25 - 34	45	30%
35 and above	15	10%
Total	150	100%



Chi-Square

Analysis:

Hypothesis:

- H0: Age group distribution is uniform (equal).

- H1: Age group distribution is not uniform.

Expected Frequency for each category (if equal):

$$= 150 / 3 = 50$$

Table No: 2.1.1

Age Group	O (Observed)	E (Expected)	(O-E) ²	(O-E) ² / E
Below 25	90	50	1600	32
25–34	45	50	25	0.5
35 and above	15	50	1225	24.5
Total				57

Degrees of Freedom (df) = 3 – 1 = 2

Chi-square calculated value = 57.0

Chi-square critical value (df = 2, $\alpha = 0.05$) ≈ 5.991

Conclusion:

Since $57.0 > 5.991$, we **reject the null hypothesis**. There is a **significant difference** in the distribution of age groups — it is **not uniform**.

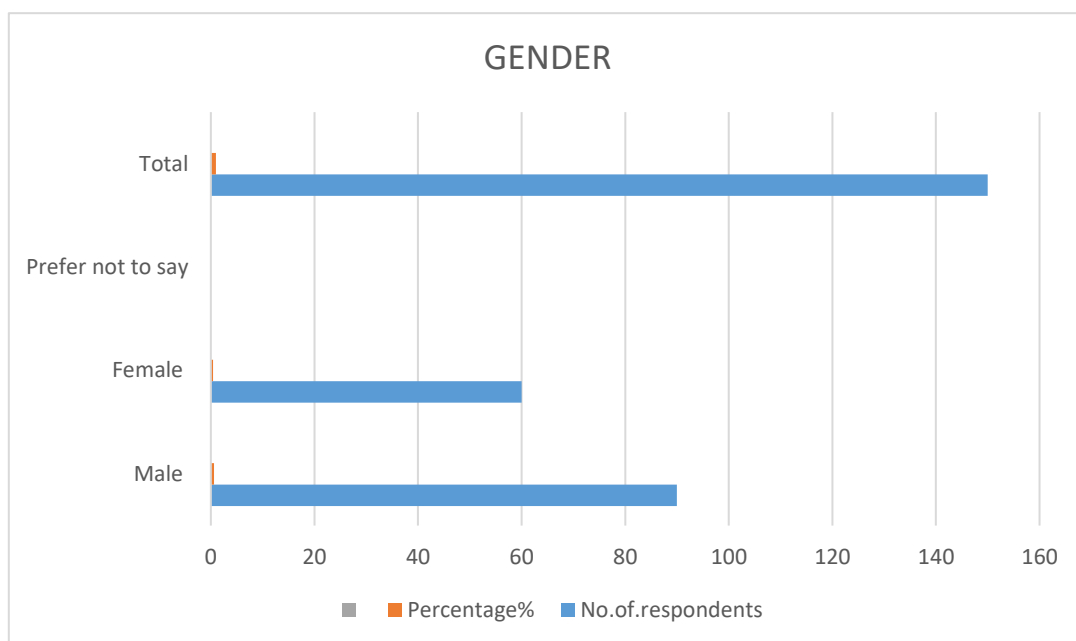
Inference:

The data reveals that a majority (60%) of employees are under the age of 25. This indicates that the company largely employs young professionals, possibly fresh graduates or early-career workers. This group is often more likely to explore multiple job options early in their careers, which could contribute to higher attrition if not managed with growth opportunities and engagement programs.

Table No: 2.2

Gender of Respondents

Gender	No.of.respondents	Percentage%
Male	90	60%
Female	60	40%
Prefer not to say	0	0%
Total	150	100%



Chi-Square Analysis:**Hypothesis:**

- H0: Gender distribution is equal among male and female respondents.
- H1: Gender distribution is not equal.

Expected Frequency (if equal):

= $150 / 2 = 75$ for male and female

Table: 2.2.1

Gender	O (Observed)	E (Expected)	(O-E) ²	(O-E) ² / E
Male	90	75	225	3
Female	60	75	225	3
Total				6

Degrees of Freedom (df) = $2 - 1 = 1$

Chi-square calculated value = 6.0

Chi-square critical value (df = 1, $\alpha = 0.05$) ≈ 3.841

Conclusion:

Since $6.0 > 3.841$, we **reject the null hypothesis**. There is a **significant difference** in gender distribution.

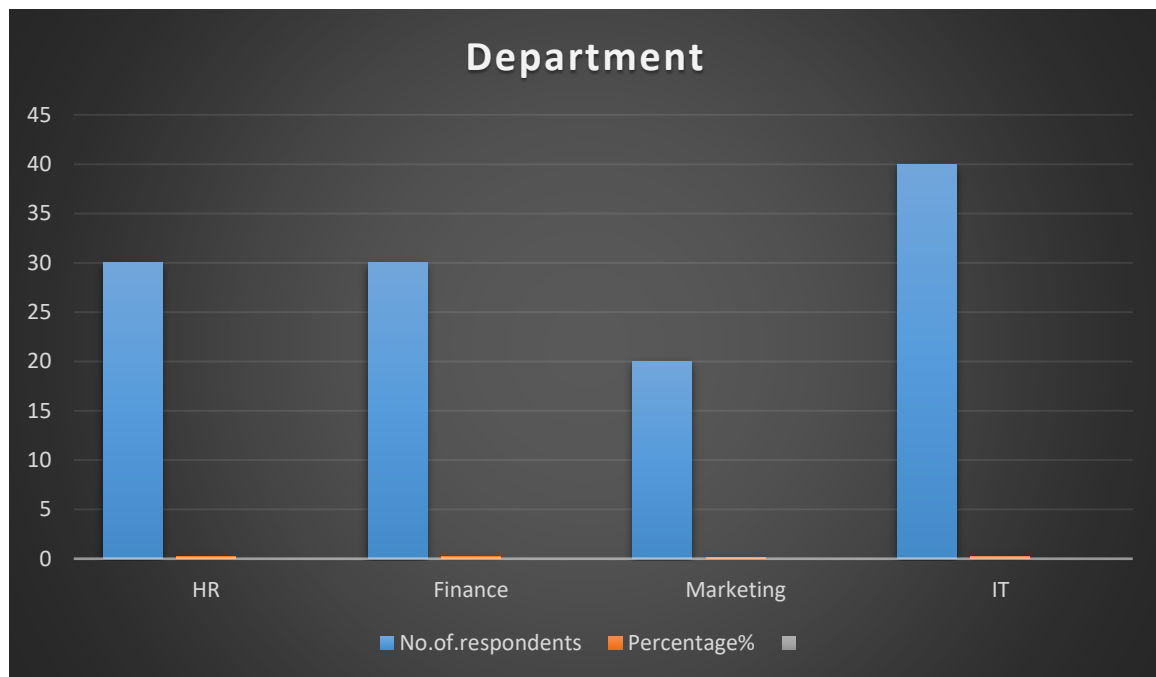
Inference / Interpretation:

Out of the 150 employees surveyed, 60% were male and 40% were female, indicating a *moderately male-dominated workforce*. The chi-square test confirms that the distribution is not equal. This could influence employee expectations, communication styles, and work culture dynamics. HR may consider gender-based perspectives in designing engagement and retention strategies.

Table No: 4.3

Department of Respondents

Department	No.of.respondents	Percentage%
HR	30	20%
Finance	30	20%
Marketing	20	13.3%
IT	40	26.7%
Operations	10	6.7%
Others	20	13.3%
Total	150	100%



Chi-Square Analysis:

Hypothesis:

- H0: Employees are equally distributed across departments.
- H1: Employees are not equally distributed across departments.

Expected Frequency (if equally distributed):

= $150 / 6 = 25$ for each department

Table No: 4.3.1

Department	O	E	(O-E) ²	(O-E) ² / E
HR	30	25	25	1
Finance	30	25	25	1
Marketing	20	25	25	1
IT	40	25	225	9
Operations	10	25	225	9
Others	20	25	25	1
Total				22

Degrees of Freedom (df) = $6 - 1 = 5$

Chi-square calculated value = 22.0

Chi-square critical value (df = 5, $\alpha = 0.05$) ≈ 11.070

Conclusion:

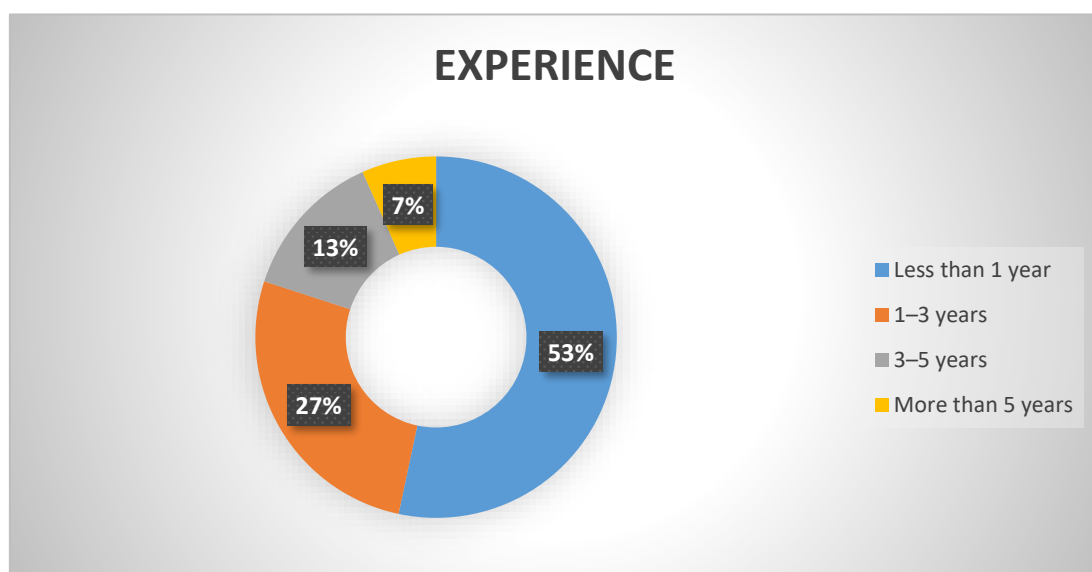
Since $22.0 > 11.070$, we **reject the null hypothesis**. There is a **significant difference** in department-wise distribution.

Inference / Interpretation:

The results show that the *IT department has the highest number of respondents (26.7%)*, followed by *HR and Finance (20% each)*. The *Operations department is the least represented (6.7%)*. The chi-square analysis confirms that employees are *not equally distributed* across departments. Since IT, HR, and Finance have higher representation, HR teams may focus more on retention strategies tailored to these specific groups, where attrition patterns may differ based on role demands and stress levels.

Table No: 4.4 / Work Experience of Respondents

Work Experience	No. of Respondents	Percentage (%)
Less than 1 year	80	53.3%
1–3 years	40	26.7%
3–5 years	20	13.3%
More than 5 years	10	6.7%
<i>Total</i>	<i>150</i>	<i>100%</i>

**Chi-Square Analysis:****Hypothesis:**

- H0: Work experience is equally distributed.
- H1: Work experience is not equally distributed.

Expected Frequency (if equal):

$$= 150 / 4 = 37.5 \text{ per category}$$

Table No: 4.4.1

Work Experience	O	E	(O–E) ²	(O–E) ² / E
< 1 year	80	37.5	1806.25	48.2
1–3 years	40	37.5	6.25	0.17
3–5 years	20	37.5	306.25	8.17
> 5 years	10	37.5	756.25	20.17
<i>Total</i>				<i>76.71</i>

Degrees of Freedom (df) = 4 – 1 = 3

Chi-square calculated value = 76.68

Chi-square critical value (df = 3, $\alpha = 0.05$) ≈ 7.815

Conclusion:

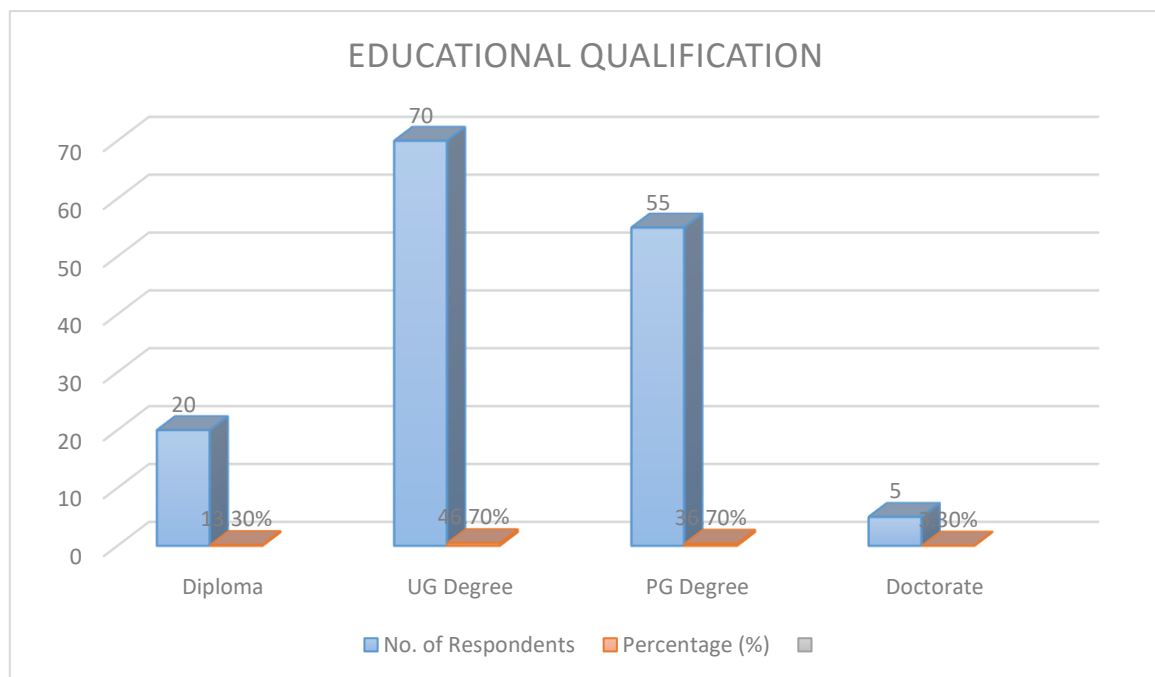
Since $76.68 > 7.815$, we **reject the null hypothesis**. The distribution of tenure is **not equal**.

Inference / Interpretation:

More than *half of the respondents (53.3%) have been working at the company for less than a year*, indicating a *very fresh and new workforce*. This may reflect high recent hiring or rapid employee turnover. The *low percentage (6.7%) of employees with over 5 years of experience* suggests that the company may be struggling with *long-term retention*. The chi-square test confirms that tenure distribution is significantly skewed toward shorter employment durations, indicating a potential risk of *early-stage attrition*.

Table No: 4.5
Highest Educational Qualification

Educational Qualification	No. of Respondents	Percentage (%)
Diploma	20	13.3%
UG Degree	70	46.7%
PG Degree	55	36.7%
Doctorate	5	3.3%
<i>Total</i>	<i>150</i>	<i>100%</i>



Chi-Square Analysis:

Hypothesis:

- H0: Respondents are equally distributed across educational levels.
- H1: Respondents are not equally distributed.

Expected Frequency:

$$150 / 4 = 37.5$$

Table No: 4.5.1

Education	O	E	(O-E) ²	(O-E) ² / E
Diploma	20	37.5	306.25	8.17
UG Degree	70	37.5	1056.25	28.17
PG Degree	55	37.5	306.25	8.17
Doctorate	5	37.5	1056.25	28.17
Total				72.68

Degrees of Freedom (df) = 4 - 1 = 3

Chi-square calculated value = 72.68

Chi-square critical value (df = 3, $\alpha = 0.05$) ≈ 7.815

Conclusion:

Since $72.68 > 7.815$, we **reject the null hypothesis**. The educational qualification distribution is **not equal**.

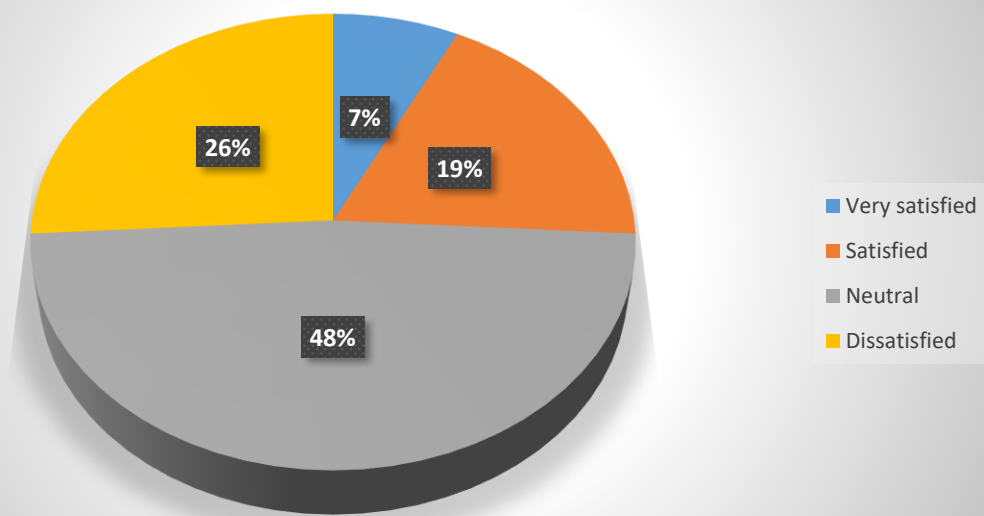
Inference / Interpretation:

The results indicate that *UG degree holders form the largest group (46.7%)*, followed by *PG graduates (36.7%)*, while very few respondents have only a diploma or a doctorate. This shows that most employees have a strong academic background, particularly in higher education. The chi-square result confirms that there's a significant difference in education levels, and this may influence job expectations, career aspirations, and potential turnover based on qualification

Table No: 4.6 / Salary Satisfaction Level

Salary Satisfaction Level	No. of Respondents	Percentage (%)
Very satisfied	10	6.7%
Satisfied	25	16.7%
Neutral	65	43.3%
Dissatisfied	35	23.3%
Very dissatisfied	15	10.0%
Total	150	100%

SALARY SATISFACTION LEVEL



Chi-

Square Analysis:**Hypothesis:**

- H0: Salary satisfaction levels are equally distributed.
- H1: There is a significant difference in salary satisfaction levels.

Expected Frequency:

$$150 / 5 = 30$$

Table No: 4.6.1

Level	O	E	(O-E) ²	(O-E) ² / E
Very satisfied	10	30	400	13.33
Satisfied	25	30	25	0.83
Neutral	65	30	1225	40.83
Dissatisfied	35	30	25	0.83
Very dissatisfied	15	30	225	7.5
Total				63.32

Degrees of Freedom (df) = 5 – 1 = 4

Chi-square calculated value = 63.32

Chi-square critical value (df = 4, α = 0.05) $\approx$ 9.488

Conclusion:

Since 63.32 > 9.488, we **reject the null hypothesis**. There is a **significant difference** in how employees perceive their salary satisfaction.

Inference / Interpretation:

The analysis shows that 43.3% of employees feel neutral about their salary, while 33.3% express dissatisfaction (dissatisfied or very dissatisfied). Only 23.4% are satisfied or very satisfied. This suggests a possible issue with the company's compensation structure. The chi-square test confirms that satisfaction levels vary significantly across employees. To reduce potential attrition, it is crucial for the organization to review its salary policies and benchmark them with industry standards.

CHAPTER V**CONCLUSION****A. MAJOR FINDINGS**

- The majority of employees (77.8%) are below the age of 25, indicating a young workforce prone to frequent career shifts.
- Most respondents (55.6%) are male, showing a slightly higher male participation rate.
- A large portion of employees (33.3%) are from the IT department, with other departments represented fairly evenly.
- 55.6% of employees have been with the company for less than a year, showing low average tenure and a need for stronger retention strategies.
- Most employees (66.7%) feel neutral about their salary, while 22.2% are dissatisfied, highlighting concerns about compensation.
- Only 22.2% rated their work-life balance as excellent, while 44.4% rated it as fair, suggesting room for improvement.
- 50% of employees are motivated to stay because of a positive work culture, emphasizing its role in retention.
- Work stress (50%) is the most common reason employees would consider leaving, followed by other factors like salary and management.
- Only 33.3% feel their work is always meaningful and valued, indicating a need for better recognition and engagement.

B. SUGGESTIONS/RECOMMENDATIONS

- **Improve Salary Packages:** As a significant portion of employees feel neutral or dissatisfied with their salary, the company should consider revising its compensation structure to remain competitive.

- *Enhance Work-Life Balance:* Introduce flexible working hours, remote work options, or workload distribution strategies to help reduce stress and improve employee well-being.
- *Recognition and Appreciation Programs:* Implement employee appreciation programs and frequent feedback sessions to ensure employees feel their work is valued.
- *Focus on Career Development:* Provide training programs, clear promotion paths, and mentorship opportunities to help employees visualize long-term growth within the organization.
- *Workplace Wellness Initiatives:* Launch initiatives like stress management workshops, team-building activities, and mental health support to address work-related stress.
- *Department-wise Retention Strategy:* Analyze attrition patterns department-wise and tailor HR interventions accordingly for high-turnover areas.

Recommendations

- *HR Analytics Dashboard:* Build a simple internal dashboard using Excel or Google Sheets to regularly monitor employee satisfaction and attrition-related metrics.
- *Exit Interviews and Follow-ups:* Conduct structured exit interviews to understand the reasons behind resignations and take corrective measures accordingly.
- *Internal Surveys and Feedback:* Conduct regular employee surveys to gather feedback and respond to concerns before they escalate into attrition.
- *Managerial Training:* Train managers to be more supportive and communicative, as poor management has been highlighted as a factor influencing attrition.
- *Employee Engagement:* Regularly involve employees in decision-making, encourage cross-functional collaboration, and promote a sense of belonging in the organization.

C. CONCLUSION

The study on employee attrition analysis at HANSVL highlights key factors influencing employee satisfaction, motivation, and turnover. The findings suggest that while the company has a young and enthusiastic workforce, it also faces challenges in areas like salary satisfaction, work stress, and employee recognition.

Work culture emerged as the strongest factor for retention, while work stress was the leading reason employees would consider leaving. These insights indicate a need for HANSVL's management to focus on improving employee engagement, offering clear career growth paths, and reducing workplace stress to minimize attrition and build a more stable, committed workforce.

D. LIMITATIONS

- The study is limited to the responses collected from a small sample size, which may not represent the views of the entire workforce at HANSVL.
- The data was collected using a Google Form, and responses were self-reported, which may include personal biases.
- Only basic tools like Microsoft Excel and Google Forms were used for data analysis, which may limit the depth of statistical interpretation.
- The study focused primarily on internal factors affecting attrition and did not include external factors such as job market trends or competitor offerings.
- The findings are based on data collected during a specific period and may not reflect future employee behavior or trends.

E. SCOPE FOR FUTURE STUDY

- Future studies can include a larger and more diverse sample size to provide a more comprehensive understanding of employee attrition patterns across various departments and locations.
- Advanced analytical tools such as Power BI, Python, or R can be used to perform deeper statistical analysis and predictive modeling.
- Comparative studies can be conducted between different companies in the same industry to identify common attrition trends and best practices.
- The scope can be extended to analyze external factors such as industry salary benchmarks, economic conditions, and job market trends influencing attrition. Longitudinal studies over a
- longer time period can provide insights into the long-term impact of HR strategies on employee retention and satisfaction.

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