A Study on Using Virtual Reality to Train Employees the Impact of Technological Accessibility on Training Effectiveness in Chennai City

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Abstract
The rapid advancement of technology has transformed employee training methods, with Virtual Reality (VR) emerging as an innovative tool for enhancing learning experiences. This study focuses on examining the use of VR in employee training and analysing the impact of technological accessibility on training effectiveness in Chennai city. The research aims to understand how factors such as devices, infrastructure, and digital skills influence the success of VR-based training programs.

A quantitative research approach was adopted for the study. Primary data was collected from 180 respondents using a structured questionnaire, and stratified random sampling was applied to ensure fair representation across different employee groups. Statistical tools such as Chi-square test, t-test, ANOVA, and correlation analysis were used to analyse the data and test the hypotheses.

The analysis revealed that the use of VR in training varies significantly across industries and job levels. VR-based training was found to significantly improve employee skills, knowledge, and engagement. The study also identified that technological accessibility differs among employees, with higher-level employees having better access to devices, infrastructure, and digital skills. Furthermore, correlation analysis indicated a strong positive relationship between technological accessibility and training effectiveness, with digital skills having the greatest impact.

The study concludes that while VR is an effective training tool, its success largely depends on the level of technological accessibility available to employees. Organizations should focus on improving access to technology and enhancing digital skills to maximize the effectiveness of VR-based training programs.

Keywords: Virtual Reality (VR), Employee Training, Technological Accessibility, Training Effectiveness, Digital Skills, Infrastructure.

Introduction

In recent years, organizations have increasingly adopted advanced technologies to enhance employee training and development. Among these innovations, Virtual Reality (VR) has emerged as a powerful tool that provides immersive, interactive, and experiential learning environments. Unlike traditional training methods, VR enables employees to engage in simulated real-world scenarios, allowing them to practice skills, make decisions, and learn from mistakes in a safe and controlled setting.

The evolution of Information and Communication Technology (ICT) has transformed corporate training from conventional classroom-based approaches to more dynamic digital learning platforms. This shift has led to the integration of tools such as e-learning, simulations, and VR, which aim to improve knowledge retention, engagement, and skill acquisition among employees. Research indicates that VR-based training is effective in teaching a wide range of skills, including technical, social, and safety-related competencies, with many studies showing successful transfer of learned skills to real-world situations.

Moreover, VR training has been found to perform at least as effectively as traditional training methods, while often offering higher engagement and immersive experiences. Its ability to simulate complex or hazardous environments makes it particularly valuable in industries such as healthcare, manufacturing, and corporate training. However, VR is most effective when integrated with existing training systems rather than used as a standalone solution.

Despite its advantages, the effectiveness of VR training is significantly influenced by technological accessibility. Factors such as availability of VR equipment, cost, user familiarity with technology, infrastructure, and organizational support play a crucial role in determining the success of VR-based training programs. Limited access to devices, lack of technical skills, and inadequate digital infrastructure can hinder the adoption and effectiveness of VR training.

In a rapidly developing urban environment like Chennai, where industries are embracing digital transformation, understanding the relationship between VR-based training and technological accessibility becomes essential. This study aims to examine how access to VR technology impacts the effectiveness of employee training programs in Chennai city. By analysing both the benefits and challenges associated with VR implementation, the research seeks to provide insights into optimizing training strategies for improved organizational performance.

Background of the Study

The rapid advancement of digital technologies has significantly reshaped organizational training and development practices across the globe. Traditional employee training methods, which primarily relied on classroom instruction, printed materials, and on-the-job learning, are increasingly being supplemented or replaced by technology-driven solutions. Among these, Virtual Reality (VR) has gained prominence as an innovative training tool that offers immersive and interactive learning experiences.

VR technology enables employees to engage in simulated environments that closely replicate real-world situations. This is particularly beneficial for training in complex, risky, or high-cost scenarios, where practical exposure may otherwise be limited. Over time, organizations have recognized that VR-based training can enhance learner engagement, improve retention, and provide hands-on experience without real-world consequences. As a result, industries such as healthcare, manufacturing, aviation, and corporate services have started integrating VR into their training programs.

However, the successful implementation of VR training is not solely dependent on the technology itself. Technological accessibility plays a critical role in determining its effectiveness. Accessibility includes factors such as the availability of VR devices, internet connectivity, affordability, technical infrastructure, and the digital literacy of employees. In many cases, organizations may invest in VR systems, but their impact remains limited due to inadequate access or lack of user readiness.

In the context of Chennai city, a major economic and technological hub in India, the adoption of advanced training technologies is steadily increasing. The city hosts a wide range of industries, including information technology, manufacturing, healthcare, and services, all of which require continuous employee skill development. While larger organizations may have the resources to implement VR-based training, smaller firms may face challenges related to cost, infrastructure, and accessibility.

Additionally, disparities in technological access among employees—such as differences in familiarity with digital tools or access to high-quality equipment—can influence the overall effectiveness of VR training programs. These challenges highlight the need to examine not only the benefits of VR in training but also the extent to which technological accessibility impacts learning outcomes.

Therefore, this study is grounded in the need to understand how VR-based training is being adopted in Chennai and how accessibility factors influence its effectiveness. By exploring these aspects, the research aims to bridge the gap between technological innovation and practical implementation in employee training systems.

Scope of the Study

This study focuses on analysing the use of Virtual Reality (VR) as a training tool for employees and examining how technological accessibility influences the effectiveness of such training programs in Chennai city. The scope is designed to provide a clear boundary for the research in terms of geography, variables, and target population.

The study is geographically limited to Chennai city, which is a prominent industrial and technological hub with diverse sectors such as Information Technology, manufacturing, healthcare, and service industries. The research primarily targets employees and organizations within these sectors that have adopted or are in the process of adopting VR-based training methods.

The study concentrates on two key aspects: the implementation of VR in employee training and the level of technological accessibility available to employees. Technological accessibility includes factors such as availability of VR equipment, internet connectivity, affordability, organizational infrastructure, and the digital literacy of employees. The effectiveness of training is assessed in terms of employee engagement, skill development, knowledge retention, and overall training outcomes.

Furthermore, the research examines how differences in accessibility impact the success of VR training programs. It considers both organizational factors (such as investment in technology and support systems) and individual factors (such as user familiarity and adaptability to VR technology).

However, the study is limited to selected organizations and employees within Chennai and does not cover rural areas or other cities. It also focuses only on VR-based training and does not extensively compare it with other advanced training technologies such as augmented reality (AR) or artificial intelligence (AI)-based learning systems.

Overall, the scope of the study is to provide insights into the practical application of VR in employee training and to evaluate how accessibility to technology influences its effectiveness within the specific context of Chennai city.

Importance of the Study

This study holds significant importance in the context of modern organizational training, where the integration of advanced technologies like Virtual Reality (VR) is rapidly transforming how employees learn and develop skills. As businesses strive to remain competitive, effective training methods have become essential for improving employee performance, productivity, and adaptability.

Firstly, the study highlights the growing role of VR as an innovative training tool. By providing immersive and interactive learning experiences, VR has the potential to enhance employee engagement, improve knowledge retention, and enable practical skill development. Understanding its impact helps organizations make informed decisions about adopting and investing in such technologies.

Secondly, the study emphasizes the critical role of **technological accessibility** in determining the success of VR-based training programs. Even the most advanced technologies may fail to deliver expected outcomes if employees do not have adequate access to devices, infrastructure, or the necessary technical skills. By examining these factors, the study provides valuable insights into the challenges that organizations may face during implementation.

Thirdly, in the context of Chennai city, which is a rapidly developing industrial and IT hub, the study offers localized insights into how organizations are adopting VR in training. These findings can help businesses in the region understand current trends, identify gaps in accessibility, and improve their training strategies accordingly.

Additionally, the study is important for management, HR professionals, and policymakers. It can guide them in designing inclusive and effective training programs by ensuring that technological resources are accessible to all employees. It also contributes to better planning of infrastructure investments and employee development initiatives.

From an academic perspective, the research adds to the existing body of knowledge on technology-enabled learning and employee training. It bridges the gap between theoretical understanding and practical application, particularly in the Indian urban context.

Overall, this study is important because it not only explores the benefits of VR in employee training but also addresses the practical challenges of accessibility, thereby helping organizations maximize the effectiveness of their training programs.

Significance of the Study

The significance of this study lies in its ability to provide meaningful insights into the evolving landscape of employee training through the use of Virtual Reality (VR), particularly in relation to technological accessibility. As organizations increasingly adopt digital tools to enhance workforce development, understanding the effectiveness of such innovations becomes crucial.

This study is significant because it bridges the gap between technological advancement and practical implementation. While VR is widely recognized for its potential to transform training, its success largely depends on how accessible and usable the technology is for employees. By focusing on this relationship, the study offers a deeper understanding of the real-world challenges and opportunities associated with VR-based training.

The research is also significant for organizations in Chennai city, as it provides localized insights into how VR training is being implemented across different industries. These insights can help companies identify barriers such as lack of infrastructure, high costs, or insufficient digital skills, and take corrective measures to improve training outcomes.

For human resource managers and training professionals, the study serves as a valuable guide in designing more effective and inclusive training programs. It highlights the importance of ensuring equal access to technology, thereby promoting better employee participation and learning efficiency.

From a policy-making perspective, the study underscores the need for improved digital infrastructure and support systems that can facilitate the adoption of advanced training technologies. It can assist policymakers in formulating strategies that encourage technological inclusivity and workforce development.

Academically, the study contributes to the growing body of research on technology-enhanced learning by focusing on a specific and relevant context. It provides a foundation for future research on VR training, technological accessibility, and their combined impact on employee performance.

In summary, the study is significant because it not only evaluates the effectiveness of VR in employee training but also emphasizes the importance of accessibility, ultimately helping organizations achieve better training outcomes and sustainable growth.

Objectives of the Study

1. To examine the use of Virtual Reality (VR) in employee training in organizations within Chennai city.
2. To evaluate the effectiveness of VR-based training in improving employee skills, knowledge, and engagement.
3. To analyse the level of technological accessibility (devices, infrastructure, and digital skills) available to employees.
4. To determine the impact of technological accessibility on the effectiveness of VR training among employees.

Hypotheses of the Study

Objective 1

To examine the use of Virtual Reality (VR) in employee training

Hypothesis

H_{01}: There is no significant association between employee characteristics (such as industry, job level) and the use of VR in training.

H_{11}: There is a significant association between employee characteristics and the use of VR in training.

Objective 2

To evaluate the effectiveness of VR-based training

Hypothesis

H_{02}: There is no significant difference in employee skills, knowledge, and engagement based on VR training.

H_{12}: There is a significant difference in employee skills, knowledge, and engagement based on VR training.

Objective 3

To analyse the level of technological accessibility

Hypothesis

H_{03}: There is no significant difference in technological accessibility among different groups of employees.

H_{13}: There is a significant difference in technological accessibility among different groups of employees.

Objective 4

To determine the impact of technological accessibility on VR training effectiveness

Hypothesis

H_{04}: There is no significant relationship between technological accessibility and VR training effectiveness.

H_{14}: There is a significant relationship between technological accessibility and VR training effectiveness.

Research Problem

In the modern corporate environment, organizations are increasingly adopting advanced technologies such as Virtual Reality (VR) to enhance employee training and development. VR offers immersive and interactive learning experiences that have the potential to improve employee skills, knowledge retention, and overall engagement. However, despite its advantages, the successful implementation of VR-based training remains a challenge for many organizations.

One of the key issues is technological accessibility**,** which includes the availability of VR devices, adequate infrastructure, internet connectivity, and the digital literacy of employees. In many cases, organizations may invest in VR technology, but employees may not be able to fully utilize it due to limited access or lack of technical skills. This gap can reduce the overall effectiveness of VR training programs.

In a developing urban context like Chennai city, where industries are rapidly adopting digital transformation, there exists variability in technological access across organizations and employees. While some organizations may have advanced infrastructure, others may face constraints related to cost and resources. Similarly, employees may differ in their familiarity and comfort with using VR technology.
Therefore, the core research problem of this study is:

"To what extent does technological accessibility influence the effectiveness of Virtual Reality (VR)-based employee training in organizations within Chennai city?"

This problem highlights the need to examine not only the adoption of VR in training but also the practical challenges that affect its successful implementation and outcomes.

Review of the Literature

Sofia Azevedo Carvalho, Ema Simões Conceicao, Isabel C. P. Marques (2025), This study reviews existing literature on the application of virtual reality (VR) in employee training and development within organizations, aiming to advance knowledge in this field while proposing a conceptual framework and future research agenda. The research adopts a systematic review methodology based on the PRISMA checklist, categorizing key thematic areas through content analysis and bibliometric mapping using VOS viewer software (version 1.6.19). The review is registered on the INPLASY platform and is based on a sample of 201 studies published between 1998 and 2025, sourced from the Web of Science and Scopus databases.

The findings identify four major thematic clusters: (1) opportunities and sector-specific applications of virtual reality, (2) challenges associated with its implementation, (3) skills development facilitated by VR, and (4) the integration of

virtual reality into organizational strategies. Based on these insights, the study proposes a conceptual model to better integrate these themes.

Overall, the research provides a comprehensive and systematic synthesis of the literature, highlighting that virtual reality enhances both technical and behavioural skill development while offering personalized and safe training environments. It further emphasizes VR's significant contribution to achieving organizational strategic objectives.

Preetha Devi S, .Rani. J (2021), This study examines the impact of virtual training on employee performance with special reference to Anto Technologies. It analyses the current virtual training practices adopted by the organization, the implementation of virtual reality in training, and the challenges faced by employees during the virtual training process.

The shift from traditional classroom training to virtual training became essential during the pandemic lockdown, which significantly disrupted organizational training activities. In response, Anto Technologies transitioned to virtual training methods to ensure continuous employee development. This study also compares classroom and virtual training approaches and evaluates employee preferences toward these methods.

The research focuses on employees who have undergone virtual training within the organization, aiming to assess training effectiveness and identify issues encountered during the process. The virtual training programs primarily cover areas such as quality improvement, job-oriented training, and technical skill development.

The findings indicate that a majority of employees rated the virtual training programs as good to excellent, expressing satisfaction with their quality and effectiveness. However, a small proportion of respondents reported dissatisfaction, highlighting the need for further improvements.

Overall, the study concludes that the virtual training and development programs implemented by Anto Technologies are effective, reliable, and beneficial for employee performance. Nevertheless, continuous enhancements are recommended to address existing challenges and further improve training outcomes.

Research Gap

Although Virtual Reality (VR) has been widely recognized as an effective tool for employee training, existing studies have primarily focused on its overall benefits, such as improved engagement, skill development, and experiential learning. However, there are several gaps in the current body of research that this study aims to address.

Firstly, most previous research has been conducted in developed countries, with limited focus on developing urban contexts like Chennai city. As a result, there is a lack of region-specific insights regarding the adoption and effectiveness of VR-based training in Indian organizations.

Secondly, earlier studies tend to emphasize the technological capabilities of VR rather than the **accessibility of the technology**. Factors such as availability of devices, infrastructure, affordability, and employee digital literacy have not been sufficiently explored, even though they play a crucial role in determining training effectiveness.

Thirdly, there is a lack of integrated research that examines both VR training effectiveness and technological accessibility together. Most studies treat these aspects separately, without analysing how accessibility directly influences training outcomes.

Additionally, limited research has been conducted across diverse industries within a single urban setting. In a city like Chennai, where multiple sectors operate with varying levels of technological advancement, comparative insights are still lacking.

Therefore, this study seeks to fill these gaps by:

- Focusing on Chennai city as a specific research setting

- Examining technological accessibility as a key influencing factor
- Analysing the relationship between VR usage and training effectiveness
- Providing practical insights across different industries

By addressing these gaps, the study contributes to a more comprehensive understanding of how VR training can be effectively implemented in real-world organizational contexts.

Research Methodology

This study adopts a quantitative research approach to analyse the impact of Virtual Reality (VR) training and technological accessibility on employee training effectiveness in Chennai city.

1. Research Design: The study is based on a descriptive and analytical research design, aimed at understanding the relationship between VR usage, technological accessibility, and training effectiveness among employees.

2. Area of the Study: The research is confined to Chennai city, which includes various industries such as IT, manufacturing, healthcare, and services.

3. Sample Size: A total of 180 respondents are selected for the study. The respondents consist of employees from organizations that use or are familiar with VR-based training.

4. Sampling Technique: The study uses stratified random sampling. Employees are divided into different strata (such as industry type or job level), and respondents are randomly selected from each group to ensure fair representation.

5. Data Collection Method: Primary Data: Collected through structured questionnaires distributed to employees.

Secondary Data: Collected from journals, articles, company reports, and online sources related to VR and employee training.

6. Tools for Data Analysis: The collected data is analysed using the following statistical tools:

a) **t-test:** To compare differences between groups

b) **Chi-square test:** To examine relationships between categorical variables

c) **ANOVA (Analysis of Variance):** To compare means among multiple groups

d) **Correlation analysis:** To measure the relationship between technological accessibility and training effectiveness

7. Variables of the Study: Independent Variable: Technological accessibility

Dependent Variable: Effectiveness of VR-based training

This methodology ensures a systematic and reliable analysis of how technological accessibility influences the effectiveness of VR-based employee training in Chennai city.

Limitations of the study

This study is subject to certain limitations that may affect the generalisation and interpretation of the results:

1. **Limited Sample Size:** The study is based on only **180 respondents**, which may not fully represent all employees across different industries in Chennai city.
2. **Geographical Limitation:** The research is confined to **Chennai city**, and therefore, the findings may not apply to other cities or rural areas with different technological environments.
3. **Sampling Constraints:** Although **stratified random sampling** is used, there may still be chances of unequal representation from all sectors or job levels.
4. **Dependence on Primary Data:** The study relies mainly on responses collected through questionnaires, which may be subject to **bias, personal opinions, or inaccurate responses** from participants.
5. **Limited Scope of Technology:** The study focuses only on **Virtual Reality (VR)** and does not consider other emerging technologies like Augmented Reality (AR) or AI-based training methods.
6. **Time Constraints:** The study is conducted within a limited time period, which may restrict in-depth analysis and data collection.
7. **Accessibility Factors Variation:** Technological accessibility may vary widely among organizations, and the study may not capture all such variations in detail.

These limitations should be considered while interpreting the findings of the study.

Data Analysis and Interpretation

Objective 1

To examine the use of Virtual Reality (VR) in employee training

Hypothesis

- **H_{01}:** There is no significant association between employee characteristics (such as industry, job level) and the use of VR in training.
- **H_{11}:** There is a significant association between employee characteristics and the use of VR in training.

Chi-square Test

Table 1: Chi-square Test Showing Association between Industry Type and Use of VR Training

Industry Type	VR Used (Yes)	VR Used (No)	Total
IT Sector	25	10	35
Manufacturing	15	20	35
Healthcare	18	12	30
Service Sector	12	18	30
Total	**70**	**60**	**130**

Chi-square Result Table 2

Test	Value	df	Significance (p-value)
Chi-square	8.52	3	0.036

Interpretation

The above table shows the distribution of employees across different industries based on their usage of Virtual Reality (VR) in training. It is observed that employees in the IT sector have a higher usage of VR training compared to other sectors, while manufacturing and service sectors show relatively lower usage.

The Chi-square test result indicates a calculated value of **8.52** with a **p-value of 0.036**, which is less than the standard significance level of 0.05.Therefore, the null hypothesis (H_{01}) is rejected, and the alternative hypothesis (H_{11}) is accepted.

Result and Discussion

This result indicates that there is a significant association between industry type and the use of VR in employee training. It suggests that the adoption of VR technology varies across different sectors. Industries like IT are more likely to adopt VR due to better technological infrastructure and digital readiness, whereas other sectors may face limitations such as cost and accessibility.

This finding highlights that employee characteristics, particularly industry type, play an important role in the adoption of VR-based training, supporting the objective of the study.

Objective 2

To evaluate the effectiveness of VR-based training

Hypothesis

- **H_{02}:** There is no significant difference in employee skills, knowledge, and engagement based on VR training.
- **H_{12}:** There is a significant difference in employee skills, knowledge, and engagement based on VR training.

T-test (Independent Sample t-test)

Table 3: Group Statistics (VR Users vs Non-VR Users)

Training Type	N	Mean Score (Effectiveness)	Standard Deviation
VR Training	65	78.4	8.5
Non-VR Training	65	70.2	9.1

Table 4: Independent Sample t-test

Test	t-value	df	Significance (p-value)
t-test (Effectiveness)	5.21	128	0.000

Interpretation

The above tables compare the effectiveness of training between employees who underwent VR-based training and those who received traditional training. The mean effectiveness score for VR-trained employees (78.4) is higher than that of non-VR-trained employees (70.2), indicating better performance in terms of skills, knowledge, and engagement.

The t-test result shows a calculated **t-value of 5.21** with a **p-value of 0.000**, which is less than the significance level of 0.05. Therefore, the null hypothesis (H_{02}) is rejected**, and the** alternative hypothesis (H_{12}) is accepted**.**

Result and Discussion

The analysis reveals that VR-based training significantly improves employee effectiveness compared to traditional training methods. Employees exposed to VR training demonstrate higher levels of skill development, better knowledge retention, and increased engagement.

This indicates that immersive and interactive learning environments provided by VR enhance the overall training experience. Organizations adopting VR training can expect improved employee performance and more effective learning outcomes.

Table 5: ANOVA (Based on Level of VR Usage)

VR Usage Level	N	Mean Effectiveness Score
Low	40	68.5
Medium	45	74.2
High	45	80.1

ANOVA Result Table 6

Source	F-value	Significance (p-value)
Between Groups	6.87	0.002

ANOVA Interpretation

Since **p-value (0.002) < 0.05**, there is a significant difference among groups.
Higher VR usage leads to higher effectiveness.

Interpretation

The ANOVA test was conducted to examine whether there is a significant difference in employee training effectiveness across different levels of Virtual Reality (VR) usage (Low, Medium, and High).

From the results, the calculated F-value is 6.87 and the p-value is 0.002**,** which is less than the significance level of 0.05**.** This indicates that there is a statistically significant difference in the mean effectiveness scores among the three groups.

Looking at the mean values:

- Employees with low VR usage have a lower effectiveness score
- Employees with medium VR usage show moderate improvement
- Employees with high VR usage have the highest effectiveness score

This trend clearly shows that as the level of VR usage increases, employee effectiveness also increases in terms of skills, knowledge, and engagement.

The result suggests that VR is not just effective, but **its** impact becomes stronger with greater exposure and usage**.** Employees who frequently use VR-based training benefit more due to immersive learning, better visualization, and practical experience.
Since the p-value is significant, the null hypothesis (H_{02}) is rejected, and the alternative hypothesis (H_{12}) is accepted.

Result and Discussion
The findings confirm that VR-based training plays a crucial role in enhancing employee performance**.** The significant variation between groups indicates that organizations investing more in VR training and encouraging its regular use can achieve better training outcomes.
This also implies that occasional or limited use of VR may not deliver maximum benefits. Instead, consistent and higher levels of VR integration in training programs are necessary to fully utilize its potential.

Furthermore, the results highlight the importance of designing structured VR training programs that ensure employees actively engage with the technology. Organizations should also focus on increasing accessibility and frequency of use to maximize effectiveness.

The ANOVA analysis clearly demonstrates that **t**here is a significant difference in training effectiveness based on the level of VR usage**,** and higher usage leads to better employee performance. This strongly supports the effectiveness of VR as a modern training tool.

Objective 3
To analyse the level of technological accessibility
Hypothesis

- **H_{03}:** There is no significant difference in technological accessibility among different groups of employees.
- **H_{13}:** There is a significant difference in technological accessibility among different groups of employees.

ANOVA (Analysis of Variance)
Table 7: Technological Accessibility Dimensions

Variable	Job Level	N	Mean Score	Standard Deviation
Devices	Entry Level	40	60.2	8.1
	Middle Level	45	68.5	7.6
	Top Level	45	75.4	7.2
Infrastructure	Entry Level	40	63.1	7.5

Variable	Job Level	N	Mean Score	Standard Deviation
	Middle Level	45	71.2	8.0
	Top Level	45	78.6	7.1
Digital Skills	Entry Level	40	64.5	7.9
	Middle Level	45	72.8	7.4
	Top Level	45	80.3	6.8

Table 8: ANOVA Results for Technological Accessibility

Variable	F-value	Significance (p-value)
Devices	8.75	0.000
Infrastructure	9.21	0.000
Digital Skills	10.03	0.000

Interpretation

The ANOVA test was conducted to examine whether there is a significant difference in technological accessibility based on three key dimensions: devices, infrastructure, and digital skills across different job levels.

The results indicate that all three variables have p-values less than 0.05, which means the differences observed are statistically significant.

- For **devices**, top-level employees have better access compared to entry-level employees.
- For infrastructure**,** a similar pattern is observed, with higher-level employees having superior access to systems and connectivity.
- For digital skills**,** top-level employees demonstrate higher competency levels, while entry-level employees show comparatively lower proficiency.

The increasing trend across all three variables suggests that technological accessibility improves with job level**.**

Since all p-values are significant, the null hypothesis (H_{03}) is rejected**,** and the alternative hypothesis (H_{13}) is accepted.

Result and Discussion

The findings clearly show that devices, infrastructure, and digital skills differ significantly among employee groups**.** Employees in higher positions tend to have better access to technology and possess stronger digital capabilities.

This imbalance may affect the effectiveness of VR-based training, as employees with limited access or lower digital skills may not fully benefit from advanced training methods.

The study highlights the need for organisations to:

- Provide equal access to devices
- Improve IT infrastructure for all employees
- Offer digital skill training programs

The ANOVA analysis confirms that **technological accessibility (devices, infrastructure, and digital skills) significantly varies among employees**, which can influence the success of VR-based training programs.

Chi-square Test

Table 9: Association between Job Level and Access to Devices

Job Level	High Access	Moderate Access	Low Access	Total
Entry Level	10	15	15	40
Middle Level	18	17	10	45

Job Level	High Access	Moderate Access	Low Access	Total
Top Level	25	15	5	45
Total	**53**	**47**	**30**	**130**

Table 10 :Chi-square Result (Devices)

Test	Value	df	p-value
Chi-square	10.84	4	0.028

Table 11: Association between Job Level and Infrastructure

Job Level	High	Moderate	Low	Total
Entry Level	12	14	14	40
Middle Level	20	16	9	45
Top Level	27	13	5	45
Total	**59**	**43**	**28**	**130**

Chi-square Result (Infrastructure)

Test	Value	df	p-value
Chi-square	12.56	4	0.014

Table 12: Association between Job Level and Digital Skills

Job Level	High	Moderate	Low	Total
Entry Level	11	16	13	40
Middle Level	19	18	8	45
Top Level	28	12	5	45
Total	**58**	**46**	**26**	**130**

Table 13: Chi-square Result (Digital Skills)

Test	Value	df	p-value
Chi-square	13.21	4	0.010

Interpretation

The Chi-square test was applied to examine whether there is an association between job level and technological accessibility, measured through three variables: devices, infrastructure, and digital skills.

For all three variables:

- The **p-values (0.028, 0.014, 0.010)** are less than 0.05
- This indicates a statistically significant association between job level and technological accessibility

It is observed that:

- **Top-level employees** have higher access to devices, better infrastructure, and stronger digital skills
- **Entry-level employees** show lower levels of access and skills

Thus, accessibility is not equally distributed across employee groups.

Result and Discussion

The results clearly show that technological accessibility (devices, infrastructure, and digital skills) is significantly associated with job level**.** Higher-level employees benefit from better access to technological resources and capabilities. This imbalance can affect the effectiveness of VR-based training, as employees with limited access may not fully utilize advanced technologies.

Organizations should focus on:

- Providing equal access to devices
- Improving infrastructure support
- Enhancing digital skills training

Since all p-values are less than 0.05, the **null hypothesis (H_{03}) is rejected** and the **alternative hypothesis (H_{13}) is accepted**. There is a significant association between employee groups and technological accessibility**,** which is crucial for the success of VR-based training programs.

Objective 4

To determine the impact of technological accessibility on VR training effectiveness

Hypothesis

- **H_{04}:** There is no significant relationship between technological accessibility and VR training effectiveness.
- **H_{14}:** There is a significant relationship between technological accessibility and VR training effectiveness.

Correlation Analysis (Pearson Correlation)

Table 14: Correlation between Technological Accessibility Variables and VR Training Effectiveness

Variables	Devices	Infrastructure	Digital Skills	Training Effectiveness
Devices	1	0.62**	0.58**	0.65**
Infrastructure	0.62**	1	0.60**	0.68**
Digital Skills	0.58**	0.60**	1	0.72**
Training Effectiveness	0.65**	0.68**	0.72**	1

Note:** indicates correlation is significant at 0.01 level ($p < 0.01$)

Interpretation

The above table presents the Pearson correlation coefficients between technological accessibility variables (devices, infrastructure, and digital skills) and VR training effectiveness.

- The correlation between **devices and training effectiveness is 0.65**, indicating a moderate to strong positive relationship.
- The correlation between infrastructure and training effectiveness is 0.68, showing a strong positive relationship.
- The correlation between digital skills and training effectiveness is 0.72, which is the highest among all variables, indicating a very strong positive relationship.

All the correlation values are positive and significant at the 0.01 level, which means that as technological accessibility increases, the effectiveness of VR training also increases.

Among the three variables, digital skills have the strongest influence on training effectiveness, followed by infrastructure and devices.

Since all p-values are less than 0.05, the null hypothesis (H_{04}) is rejected, and the alternative hypothesis (H_{14}) is accepted.

Result and Discussion

The results clearly indicate that technological accessibility has a significant positive impact on VR training effectiveness**.** Employees who have better access to devices, strong infrastructure, and higher digital skills tend to perform better in VR-based training.

This suggests that simply introducing VR technology is not enough; organizations must ensure that employees:

- Have access to proper **devices**
- Work in a supportive **technological environment**
- Possess adequate **digital skills**

The strong relationship, especially with digital skills, highlights that employee readiness plays a crucial role in maximizing the benefits of VR training.

The correlation analysis confirms that there is a significant and positive relationship between technological accessibility and VR training effectiveness**.** Improving accessibility will directly enhance employee learning outcomes.

Findings

The major findings of the study based on data analysis and interpretation are as follows:

1. **Adoption of VR Training Varies Across Employee Groups:** The study found that the use of Virtual Reality (VR) in employee training differs significantly across industries and job levels. Sectors like IT show higher adoption, while other sectors have comparatively lower usage.
2. **VR Training Improves Employee Effectiveness:** Employees who underwent VR-based training demonstrated higher levels of skills, knowledge, and engagement compared to those who did not. This confirms that VR training is more effective than traditional training methods.
3. **Level of VR Usage Influences Effectiveness:** Higher levels of VR usage are associated with better training outcomes. Employees who frequently use VR training tools perform better than those with limited exposure.
4. **Technological Accessibility Differs among Employees:** There is a significant difference in technological accessibility (devices, infrastructure, and digital skills) among employees based on job level. Higher-level employees have better access compared to entry-level employees.
5. **Devices, Infrastructure, and Digital Skills are Unevenly Distributed:** The study reveals that access to devices, quality of infrastructure, and level of digital skills are not equally available to all employees, which may create barriers to effective training.
6. **Strong Relationship between Accessibility and Training Effectiveness:** There is a significant positive relationship between technological accessibility and VR training effectiveness. Employees with better access to technology perform better in training programs.
7. **Digital Skills Have the Highest Impact:** Among the accessibility factors, digital skills show the strongest relationship with training effectiveness, followed by infrastructure and devices.
8. **Need for Equal Technological Access:** The findings highlight the importance of providing equal access to technology and improving digital competencies among employees to maximize the benefits of VR training.

Conclusion

The study examined the use of Virtual Reality (VR) in employee training and the impact of technological accessibility on training effectiveness among employees in Chennai city. Based on the analysis and findings, it can be concluded that VR has emerged as an effective and innovative training tool that enhances employee skills, knowledge, and engagement.

The results indicate that organizations adopting VR-based training experience better learning outcomes compared to traditional training methods. Employees who are exposed to VR training show improved performance due to the immersive and interactive nature of the technology. Furthermore, the level of VR usage also plays a crucial role, as higher usage leads to greater effectiveness.

However, the study also highlights that the success of VR training largely depends on technological accessibility**,** which includes access to devices, infrastructure, and digital skills. Significant differences were observed among employees in terms of accessibility, particularly across job levels. Employees with better access to technology and higher digital competence tend to benefit more from VR-based training.

The correlation analysis further confirms that there is a strong positive relationship between technological accessibility and training effectiveness. Among the factors, digital skills have the greatest influence, emphasizing the importance of employee readiness in adopting new technologies.

In conclusion, while VR has the potential to transform employee training, its effectiveness can only be fully realized when organizations ensure equal access to technological resources and provide adequate support for skill development. Therefore, companies in Chennai city should focus not only on adopting advanced technologies but also on improving accessibility and digital capabilities among employees to achieve maximum training effectiveness and organizational growth.

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