



## Effectiveness of virtual reality training method to enhance employee skills in automotive industries in India

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### Abstract

The automobile industry is one of the most competitive and dynamic industries, and companies need to constantly adapt to changing market trends and customer demands in order to stay ahead of the competition. To face these challenges, they require a skilled and knowledgeable workforce to produce high-quality products. This makes it imperative for companies to invest in suitable training and development programs to increase employee productivity, improve product quality, and ultimately contribute to the overall success of the organization.

Innovative training programs can provide employees with a variety of benefits, such as improving their technical skills, enhancing their knowledge of industry trends and best practices, and fostering a culture of continuous learning and improvement. Virtual reality (VR) training can be a powerful tool for organizations in the automobile industry to impart knowledge and skills to their employees. By creating realistic simulations of various scenarios and tasks, VR can provide employees with a safe, controlled environment to gain hands-on experience with new technologies and processes.

The objective of this study is to find effectiveness of VR training method for enhancing employee skills and knowledge and improving organizational effectiveness in automotive industries.

**Keywords:** innovative training method, virtual reality, automotive industry

### Introduction

Innovation has become most crucial and critical for the growth and success of organizations, especially in the age of Industry 4.0. Human resource management is no exception, and companies must prioritize the development of their employees' skill sets and knowledge through proper training. The use of innovative training methods can help organizations reach more employees at a lower cost while providing flexible and convenient training options. The benefits of investing in employee training and development are numerous, including improved productivity, customer satisfaction, and overall organizational performance. Therefore, organizations should continue to prioritize innovative training methods to ensure the continuous development of their human capital and achieve sustainable growth in the competitive global marketplace.

### Automotive industry in India

The automotive industry in India is one of the largest in the world, with an annual production of over 4.3 million vehicles. India has become a major automotive manufacturing hub in recent years due to its low labour costs, large domestic market and supportive government policies, with many global automakers setting up or expanding their production facilities in the country. The industry contributes significantly to India's economy, providing employment opportunities to over 37 million people and contributing to around 7.5% of India's Gross Domestic Product (GDP). The Indian automotive industry is expected to reach a turnover of US\$300 billion by 2026, making it one of the world's largest automotive markets. The Indian automotive sector is highly competitive and fragmented, with a large number of domestic and international players. The industry has witnessed the adoption of new technologies such as electric vehicles,

connected cars, and autonomous vehicles. The Indian government has also taken several initiatives to promote the growth of the industry, including the National Electric Mobility Mission Plan, which aims to make India a 100% electric vehicle nation by 2030. Major domestic players include Maruti Suzuki, Tata Motors, Mahindra & Mahindra and Ashok Leyland. Major international players include Hyundai, Honda, Toyota, Nissan, Volkswagen, General Motors and Ford.

### Definitions of training

*Jack Halloran* defines Training as the process of transmitting and receiving information related to problem solving.

*Mathis and Jackson* explain Training as a learning process whereby people learn skills, concept, attitudes and knowledge to aid in the achievement of goals.

In the words of *Gary Dessler* Training is the process of teaching new employees the basic skills they need to perform their jobs.

According to *Decenzo & Robbins* programs that are more present day oriented, focuses on individual's current jobs, enhancing specific skills and abilities to immediately perform their job called training.

*Ricky W. Griffin* describes Training usually refers to the teaching operational or technical employees how to do the job for which they were hired.

Thus, Training is a process of activities aimed at improving the performance of employees to attain improved productivity.

### Innovative training method

Innovative training methods refer to non-traditional methods of teaching and training that are designed to stimulate creative thinking, challenge traditional approaches, and

encourage the use of new technologies. There are several innovative training methods that can be effective for the automotive industry in India.

### 1. Gamification

Gamification is a method of training that uses gaming elements like leader boards, awards, and achievements to motivate employees to learn and develop their skills.

### 2. Blended Learning

Blended learning combines traditional classroom instruction with online learning. This method allows employees to learn at their own pace and provides a more interactive learning experience.

### 3. Virtual Reality

Virtual reality (VR) is an immersive training method that can simulate real-world scenarios. This allows employees to practice skills in a safe and controlled environment.

### 4. Augmented Reality

Augmented reality (AR) overlays virtual objects on the real world. This allows trainers to provide employees with visual cues to help them better understand concepts.

### 5. Mobile Learning

Mobile learning is a form of training delivered through handheld devices such as smartphones and tablets. This allows employees to take their learning with them wherever they go.

These innovative training methods can enhance the effectiveness and efficiency of training programs, improve employee engagement and retention, and ultimately lead to improved organizational performance.

However, one of the best methods is virtual reality (VR) training. Virtual reality training is a cutting-edge method that allows employees to experience real-life scenarios in a virtual environment, without any risks or consequences. This method is particularly useful in the automotive industry, where employees are required to operate complex machinery and work with hazardous materials. VR training can be used to simulate various scenarios such as equipment malfunction, safety protocols, emergency procedures, and customer interactions. It allows employees to practice their skills, develop problem-solving abilities, and gain confidence in handling challenging situations.

Moreover, virtual reality training can be customized to meet the specific needs of the organization and the employees. It can be used to train employees on different types of machinery and equipment, safety procedures, and quality standards. Another advantage of VR training is that it can be conducted remotely, making it an ideal solution for training a dispersed workforce or employees in remote locations.

### Review of literature

"Virtual Reality in Training: The Future of Learning and Development" by James Paul. This article explores the use of virtual reality (VR) in employee training and development. It discusses the benefits of VR training, such as increased engagement and retention, and provides examples of companies that have successfully implemented VR in their training programs.

"The Impact of Virtual Reality on Learning" by Lee, Hsu, and Xiong. This article discusses the effectiveness of virtual

reality in training and education, specifically in the context of medical education. It examines how virtual reality can improve learning outcomes and provides evidence-based research to support its claims.

"Virtual Reality: A New Tool for Military Training" by Sharples and Cobb. This article explores how virtual reality can be used in military training to simulate real-life combat scenarios and improve soldiers' skills and abilities. It examines the benefits of virtual reality in military training and provides case studies of its successful implementation.

"The Use of Virtual Reality for Training and Assessment of Healthcare Professionals" by Drumm and McBride. This article examines the use of virtual reality in healthcare training, specifically in the context of surgical training and patient safety. It provides evidence-based research on the effectiveness of virtual reality in improving learning outcomes and reducing medical errors.

"Virtual Reality in Employee Training: An Empirical Study" by Tung, Chang, and Chen. This article examines the use of virtual reality in employee training and its impact on learning outcomes and job performance. It provides empirical evidence to support the effectiveness of virtual reality in improving job-related skills and knowledge.

"Virtual Reality as a Tool for Education and Training: A Review" by Singh and Tyagi. This article provides a comprehensive review of the use of virtual reality in education and training, covering various applications such as medical education, military training, and employee training. It examines the benefits and limitations of virtual reality and provides insights into future research directions.

These articles provide a good overview of the use of virtual reality in training and education, covering various applications and providing evidence-based research to support its effectiveness.

### Statement of the problem

The automobile industry heavily relies on the skills and knowledge of its employees to produce high-quality products. Investing in training and development activities can help employees stay up-to-date with the latest technologies and industry trends, learn new skills, and improve their performance. In addition to traditional training methods, the use of innovative training methods, such as virtual reality, can also provide significant benefits in the automotive industry. Therefore, the purpose of this study is to identify the virtual reality method is most innovative training method for enhancing employee skills and knowledge and improving organizational effectiveness in automotive industries.

### Objectives of the study

The objective of the present study is

1. To check the effectiveness of Virtual Reality innovative training method in enhancing employee skills.

### Hypothesis of the study

**H<sub>0</sub>:** There is no positive impact of Virtual Reality training method on training effectiveness.

**H<sub>1</sub>:** There is positive impact of Virtual Reality training method on training effectiveness.

### Analysis and interpretation of the data

**Type of study:** Descriptive Research

**Sample Size:** 190 employees

**Instrument for Data Collection:** Questionnaire

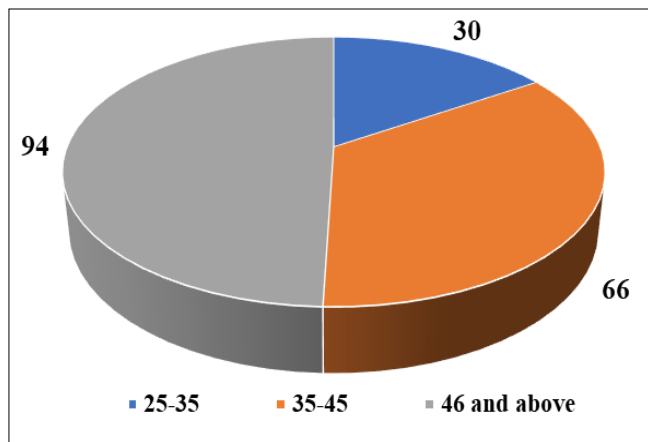
**Statistical Tools Used:** IBM SPSS 20

**Statistical Test:** Mean score, Correlation Test.

The demographic information of the participants included age, gender, qualification and years of service. From the table 1 it is clear that the least percentage is in the age group is between 25-35 years (15.8%) and the maximum percentage is in the age group of 46 years and above 94 (49.5%).

**Table 1: Age Group**

Age	Number of employees
25-35	30
35-45	66
46 and above	94
Total	190

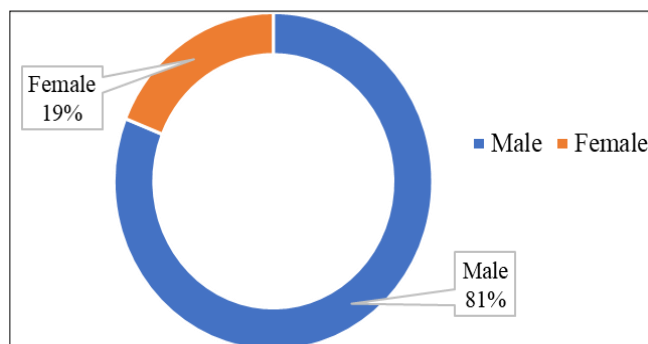


**Fig 1**

Therefore, it can be interpreted that the workforce of the organization consists of very experienced people whose experience is very valuable for the organization.

**Table 2: Gender Distribution**

Gender	Number of employees
Male	154
Female	36
Total	190

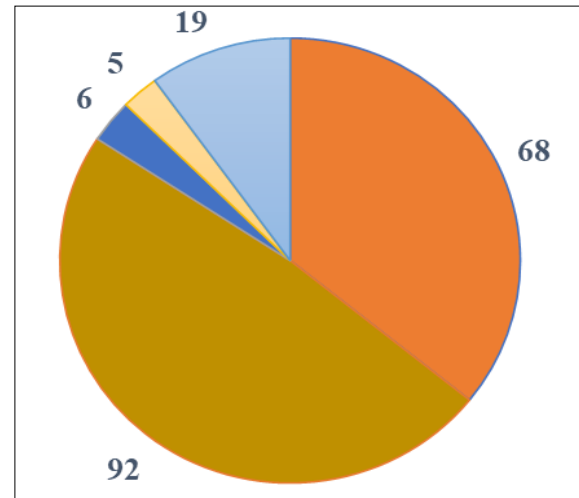


**Fig 2**

From table 2, the percentage of male workforce in the organization is 81.1% whereas female workforce is 18.9%. The percentage of male workers tends to be higher than that of female workers.

**Table 3: Qualification of the employees**

Education	Number of employees
Engineering	68
Diploma Engineering	92
Management	6
Post Graduate	5
Graduate	19
Total	190



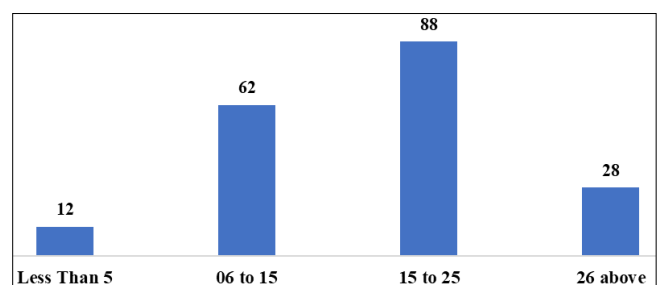
**Fig 3**

Table 3 gives details about the educational qualifications of the employees. 92 out of 190 (48.4%) employees have diploma in engineering whereas Post Graduate consists of only 5 employees 2.6%.

Table 4 gives details about years of service. Almost 14.7% of employees have more than 26 years whereas 46.3% are with more than 16 years these both combined to 61.1% of work force.

**Table 4: Years of Service**

Years	Number of employees
Less Than 5	12
06 – 15	62
15 – 25	88
26 above	28
Total	190



**Fig 4**

**Impact of virtual reality on training effectiveness**

One of the key benefits of virtual reality (VR) training is that it is not limited by time or location. Trainees can access training modules from anywhere with an internet connection, which makes it convenient and flexible for both employees and employers.

Moreover, virtual reality training allows organizations to customize learning experiences based on the specific needs

of their employees. With VR, organizations can create simulations that closely mimic real-world situations and provide employees with opportunities to practice and improve their skills in a safe, controlled environment. Virtual reality training can provide a more immersive and engaging learning experience than traditional classroom instruction. It can provide a more hands-on and interactive approach to learning. In addition, virtual reality training can be customized to meet the specific needs and learning styles of individual employees. This can help to improve learning outcomes and ensure that employees are able to apply their new skills and knowledge in practical, real-world situations. Technological advancements have had a significant impact on the automobile industry, leading to new challenges that need to be addressed in order to remain competitive and innovative. virtual reality can provide organizations with the ability to track and measure employee performance, allowing them to identify areas where additional training or support may be needed. This can help organizations to continuously improve and innovate, and stay ahead of the competition in a rapidly changing industry.

**Table 5:** Correlations between virtual reality and training effectiveness

Correlations between VR and TE		VR Mean Score	TE Mean Score
VR Mean Score	Pearson Correlation	1	.841*
	Sig. (2-tailed)		0.036
	N	190	190
TE Mean Score	Pearson Correlation	.841*	1
	Sig. (2-tailed)	0.036	
	N	190	190

\* Correlation is significant at the 0.05 level (2-tailed).

As shown in table 5 there is correlation between virtual reality used in training and training effectiveness and correlation coefficient i.e.  $r = 0.841$ . It means there is a positive correlation between virtual reality training method and training effectiveness. Hence null hypothesis is rejected and alternative hypothesis accepted i.e. There is positive impact of virtual reality training on training effectiveness.

**Findings**

One of the biggest challenges faced by the automobile industry is the ever-changing needs and expectations of customers. In order to meet these needs, organizations in this industry need to stay up-to-date with the latest technologies and trends, and continuously innovate their products and services. Given these challenges, gaining knowledge in the automobile industry can be a daunting task. However, virtual reality can play a major role in imparting knowledge to employees through workplace training. It allows organizations to provide customized, on-demand training modules that can be accessed from anywhere with an internet connection, making it easier for employees to stay up-to-date with the latest technologies and industry trends.

**Conclusion**

The production of high-quality products in the automobile industry heavily depends on the expertise and know-how of

its workforce. Thus, it is imperative for companies operating in this sector to allocate resources towards suitable training and development programs aimed at bolstering the skills and knowledge of their employees.

Investing in training is critical for the success of organizations in the automotive industry, and the use of innovative training methods can further enhance the effectiveness of these practices.

Effective training initiatives can generate benefits such as enhanced productivity, increased efficiency, and superior customer service, which can ultimately translate into higher revenues and greater customer contentment.

Virtual reality training is an innovative and effective method. It provides a safe and immersive environment for employees to practice their skills and improve their performance, ultimately leading to increased productivity and organizational success.

**References**

1. Bhandwalkar Vidya, Dr. Prasanna Deshmukh. "A Study of Implementation of Training Technology Adopted by Automobile Industries." *International Journal of Innovative Science and Research Technology*, 2018, 3(6). ISSN No: -2456-2165.
2. "Digital Transformation of Automobile Sector with Enterprise Learning Management System." GC-Solutions, 2020. <https://www.gc-solutions.net/blog/digital-transformation-of-automobile-sector-with-enterprise-learning-management-system/>.
3. Paul James. "Virtual Reality in Training: The Future of Learning and Development." *eLearning Industry*, 2019. <https://elearningindustry.com/virtual-reality-training-future-learning-development>.
4. Lee Ji-Eun, Chia-Wen Hsu, Jun Xiong. "The Impact of Virtual Reality on Learning." *International Journal of Information and Education Technology*, 2016;6(9):687-690.
5. Sharples Sarah, Sue Cobb. "Virtual Reality: A New Tool for Military Training." *Defence Science and Technology Laboratory*, 2010. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/412147/Virtual\\_Reality\\_A\\_new\\_tool\\_for\\_military\\_training.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/412147/Virtual_Reality_A_new_tool_for_military_training.pdf).
6. Drumm Kate M, Anne M. McBride. "The Use of Virtual Reality for Training and Assessment of Healthcare Professionals." *Journal of Medical Systems*, 2019, 43(10). doi:10.1007/s10916-019-1465-5.
7. Tung Chia-Te, Wei-Chung Chang, Chia-Yen Chen. "Virtual Reality in Employee Training: An Empirical Study." *International Journal of Human-Computer Interaction*, 2017;33(11):936-944. doi:10.1080/10447318.2017.1295799.
8. Singh, Ashok Kumar, Deepak Tyagi. "Virtual Reality as a Tool for Education and Training: A Review." *International Journal of Computer Applications*, 2018;174(31):1-7. doi:10.5120/ijca2018916713.