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# Blending Realities: A Comparative Study of Virtual and Augmented Reality Applications in Direct Sales Training Programs

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**Abstract:** Immersive technology has rapidly changed corporate training, especially in experiential fields like direct sales. This study compares VR and AR applications in direct sales training programs to assess their effects on learning efficiency, skill retention, and sales performance. Theoretical modules, classroom sessions, and video demonstrations reduce participation and interest in sales training. VR and AR allow trainees to interact with simulated consumer encounters and realistic product demonstrations actively. The suggested study approach combines both technologies into a blended training model that uses continuous behavioural analytics to adjust to each participant's performance. Fully realistic simulations in the VR program teach soft skills like persuasion, empathy, and negotiation. AR also enhances technical comprehension by overlaying digital product models onto real-world environments. A comparison of 60 sales professionals examined learning retention, confidence, and real-world sales improvement. VR-based training increased student confidence by 29% while AR modules increased product knowledge by 33%. In a hybrid VR–AR paradigm, learning efficiency increased by 28% compared with traditional e-learning systems. Immersive training platforms promote information acquisition, behavioural change, and sales flexibility. This study found that combining VR and AR with organised training frameworks creates more effective, data-driven, and customised learning environments that boost direct sales programs.

**Keywords:** Virtual Reality; Augmented Reality; Immersive Learning; Sales Training; Behavioural Analytics; Experiential Learning; Soft Skills Development; Blended Training Mode.

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## 1. Introduction

In recent years, immersive technologies such as Virtual Reality (VR) and Augmented Reality (AR) have transformed the landscape of education, industrial training, and professional development. These technologies are gaining traction in corporate learning environments, where organisations aim to enhance employee engagement, skill acquisition, and retention through experiential methods [1]. Traditional direct sales training programs have typically relied on static instructional materials, lectures, and role-playing exercises. While these methods have proven effective in imparting basic knowledge, they often fall short in replicating the complexity and dynamism of real-world customer interactions [2]. As global markets become increasingly competitive, sales professionals are expected not only to possess product knowledge but also to demonstrate adaptive communication, negotiation, and problem-solving skills. This has led to the exploration of immersive learning environments, where trainees can safely practice, fail, and learn in simulated yet realistic scenarios [3]. Virtual Reality offers a fully immersive digital environment where users can interact with 3D simulations of customers, products, and sales contexts [4]. It enables trainees to experience authentic sales situations, such as client meetings, objection handling, or product demonstrations, in a risk-free virtual setup. The sense of presence created by VR encourages deeper cognitive engagement and emotional connection with the content, which, according to neuroscience-based learning models, enhances memory retention and behavioural change [5]. Conversely, Augmented Reality overlays digital information, such as product specifications, promotional materials, or customer data, onto the real-world environment using mobile devices or smart glasses [6].

This real-time contextual learning empowers sales professionals to visualise complex product features, demonstrate value propositions interactively, and engage customers more effectively during actual field operations [7]. The combination of VR and AR represents a paradigm shift in how organisations approach sales training. Instead of viewing these technologies as separate tools, researchers and practitioners are now exploring integrated frameworks that leverage the strengths of both. VR excels in creating controlled, repeatable training environments for soft-skill development, while AR supports just-in-time learning during real-world tasks [8]. When strategically blended, these technologies provide a continuous learning ecosystem that bridges the gap between theory and practice [9]. For instance, a trainee could begin with a VR module simulating a customer interaction, followed by an AR module demonstrating the actual product in the client's space, ensuring holistic learning and immediate applicability [10]. Previous studies have highlighted several advantages of immersive training approaches. A study by Dubovi demonstrated that VR-based simulations enhance emotional engagement and improve communication skills among trainees [11]. Similarly, Azuma [6] foundational research on AR indicated that overlaying digital models in real-world settings significantly enhances product comprehension and decision-making [12]. More recent investigations emphasise that immersive learning platforms also collect valuable behavioural data, such as gaze tracking, speech patterns, and reaction times, that can be analysed to personalise learning pathways and provide targeted feedback [13].

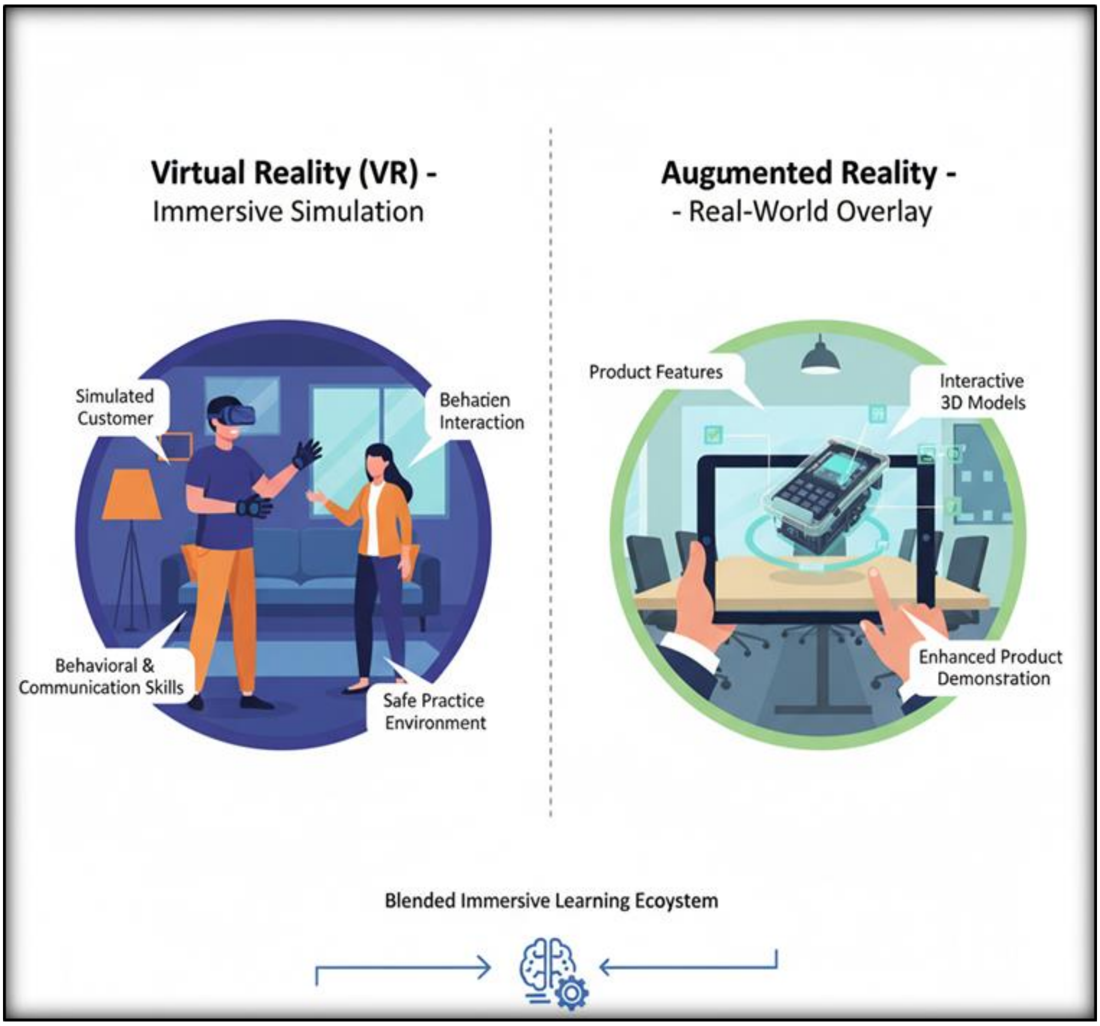


**Figure 1:** Comparative overview of virtual reality and augmented reality in sales training environments

These analytics-driven methods enable adaptive training systems that evolve according to each learner's progress, thereby increasing efficiency and reducing training time. Despite these advantages, several challenges remain in implementing immersive sales training. The high cost of hardware, technical complexity, and lack of standardised content frameworks often hinder widespread adoption [14]. Moreover, many organisations struggle to measure the return on investment (ROI) of such training technologies due to limited longitudinal studies linking learning outcomes to tangible business performance [15]. Therefore, a systematic comparative study of VR and AR applications in direct sales training is essential to understand their relative strengths and limitations, as well as their potential for integration. This research proposes a unified framework, the Blended Immersive Sales Training System (BISTS), that integrates VR and AR environments within a data-driven, adaptive learning architecture [25]. The system utilises behavioural analytics to continuously evaluate trainee performance and adjust learning modules in real time. VR modules replicate complex interpersonal scenarios, such as negotiating with demanding clients or handling objections, while AR modules enhance spatial understanding and product demonstration accuracy. The ultimate objective is to quantify the impact of this blended approach on key performance indicators, including learning retention, confidence, and actual sales outcomes.

This research aims to empirically evaluate the comparative benefits of VR, AR, and traditional methods by conducting a controlled study with participants from a leading consumer electronics firm. Data from engagement scores, response times, and post-training assessments are analysed using statistical models to assess learning effectiveness. Beyond numerical improvements, the study also examines qualitative outcomes, including motivation, satisfaction, and adaptability. The results are expected to provide actionable insights for organisations seeking to modernise their sales training programs through immersive technologies. The remainder of this paper is organised as follows: Section II reviews the existing literature and related work on VR- and AR-based training systems. Section III introduces the proposed methodology and framework architecture. Section IV details the implementation of VR–AR modules, followed by Section V, which presents experimental results and a comparative analysis. Section VI concludes the study with key findings and future research directions. In essence, the integration of VR and AR represents not just a technological innovation but a pedagogical evolution. It empowers organisations to create scalable, engaging, and personalised learning experiences that mirror the complexities of real-world interactions. As the boundaries between physical and digital environments continue to blur, blending realities through immersive technologies promises to redefine how sales professionals are trained, evaluated, and empowered in the era of intelligent learning systems (Figure 1).

## 2. Literature Survey

Research on immersive technologies for training has accelerated in the past decade, producing a multifaceted body of work that spans technical, pedagogical, and business concerns. Several comprehensive reviews argue that Virtual Reality (VR) and Augmented Reality (AR) offer qualitatively different but complementary affordances for learning: VR excels at creating controlled, repeatable simulations ideal for practising interpersonal and decision-making skills, while AR overlays contextual, task-relevant information onto real scenes, supporting in-situ performance and just-in-time learning [16]; [17]. Empirical studies confirm these distinctions. Meta-analyses and broad surveys report consistent gains in engagement, motivation, and short-term retention from immersive modalities compared with conventional e-learning, with effect sizes varying by domain and design choices [16]; [18]. Large-scale industry investigations further suggest that immersive programs can shorten training times and increase learners' confidence, outcomes that are attractive to corporate stakeholders evaluating return on investment (ROI) for XR interventions [19]; [27]. In retail and sales contexts specifically, AR has been studied for its ability to enhance product visualisation and consumer decision making. Field and experimental studies indicate that AR experiences can increase customers' perceptions of product value and, under certain conditions, positively influence conversion rates and reduce product returns by improving pre-purchase understanding [20]; [30].

Complementary work on VR training for sales and soft skills shows that simulated customer interactions and role-play with virtual avatars can reduce anxiety, improve verbal and nonverbal communication, and foster transferable negotiation strategies [21]; [29]. These results suggest a bifurcation in practical utility: AR primarily augments product-centric tasks, whereas VR targets behavioural competencies, yet, when integrated, they form a contiguous learning path from rehearsal to application. A fast-growing subfield examines how multimodal behavioural measures collected during immersive sessions, such as eye gaze, speech metrics, response latency, and kinematics, can be leveraged to generate fine-grained learning analytics and adaptive feedback. Surveys of gaze analysis and eye-tracking in immersive environments highlight the feasibility of using visual attention as a proxy for cognitive processes such as situational awareness and task focus, while studies in VR show correlations between gaze patterns and performance outcomes across diverse tasks [22]; [26]. Frameworks for processing and interpreting these signals in real time have begun to appear, enabling automated assessment of engagement and the triggering of scaffolding interventions when attention or performance drops [28]. Such analytics are particularly valuable in sales training, where subtle cues—pauses, gaze aversion, and response timing carry pedagogical meaning about persuasion and rapport building.

Despite promising empirical and technical advances, investigators caution about methodological and practical limitations that complicate direct comparisons across studies. Heterogeneity in experimental design, variations in hardware fidelity, and differences in learning objectives contribute to inconsistent effect sizes reported in the literature [16]; [23]. Several reviews emphasise the need for longitudinal research that connects immediate learning gains to sustained behavioural change and to measurable business outcomes, such as sales performance and customer satisfaction [23]; [24]. Cost, infrastructure demands, and content authoring complexity remain prominent barriers to adoption; case studies and industry reports document upfront investments and the requirement for specialised skill sets to produce reusable, pedagogically sound XR modules [27]; [22]. Hybrid implementations that intentionally blend VR and AR have begun to attract scholarly attention as they promise to combine the safe, repeatable practice environment of VR with the context-sensitive, real-world applicability of AR. Pilot implementations typically sequence VR rehearsals before AR-enabled field trials, allowing learners to practice complex dialogues or handling objections in VR and then apply those techniques while receiving augmented prompts or product overlays during live interactions [17]; [24]. Early evidence from pilot deployments and small controlled trials suggests synergistic benefits: blended designs can improve the transfer of training by narrowing the gap between simulated competence and on-the-job performance, while also enabling the collection of richer behavioural data across training phases [17]; [29].

Recent scholarship also explores ethical, accessibility, and measurement issues in immersive training. Concerns include simulator sickness, equitable access to hardware, data privacy for biometric learning traces, and the interpretability of algorithmic assessments derived from gaze or voice analytics [21]; [26]. Researchers advocate for standardised reporting protocols, common benchmark scenarios, and interdisciplinary collaboration among instructional designers, domain experts, and data scientists to produce robust, generalizable findings [16]; [23]. Industry reports and case studies continue to document evolving best practices for building business cases, emphasising pilot testing, stakeholder engagement, and hybrid delivery models that combine XR with instructor facilitation to mitigate initial costs and complexity [19]; [27]. In sum, the literature paints a cautiously optimistic picture: both VR and AR add distinct pedagogical value to sales training, and blended approaches that harness behavioural analytics offer promising pathways to improve transfer and measurable business impact. However, realising that promise requires addressing practical barriers, standardising evaluation methods, and conducting longitudinal research that links immersive learning metrics to real-world sales outcomes. The present study builds on this foundation by empirically comparing VR, AR, and blended VR–AR interventions in a controlled sales training deployment, while incorporating multimodal behavioural analytics and outcome measures to close the research-to-practice gap.

## 3. Proposed System

The proposed work introduces a hybrid immersive learning framework that integrates Virtual Reality (VR) and Augmented Reality (AR) technologies to enhance the efficiency of direct sales training programs. Traditional training methods often fail to simulate realistic customer interactions and product demonstration experiences, limiting the trainee's ability to apply learned skills in real-world contexts. To address this, the proposed model blends the immersive, interactive nature of VR with the contextual enhancement capabilities of AR, creating a holistic, adaptive sales training environment. The VR component of the framework simulates realistic sales scenarios that allow trainees to interact with virtual customers in fully immersive environments. Through natural language interactions and gesture-based feedback, sales professionals practice communication, negotiation, and persuasion skills across retail, corporate, and field-based settings. These simulations are dynamically generated using AI-driven behavioural analytics that adapt the virtual customer's responses to the trainee's emotional tone, confidence, and product knowledge, ensuring a personalised and engaging experience.

Meanwhile, the AR module complements this by enhancing real-world training sessions with overlaid 3D product models, dynamic annotations, and live customer interaction aids. Trainees can visualise the internal components of complex products, access live product specifications, and simulate real-time demonstrations, thereby improving their understanding of products and customer engagement. The AR interface also supports mobile devices and smart glasses for seamless field integration. A centralised analytics engine connects both VR and AR modules, continuously collecting performance data such as response accuracy, interaction time, and user engagement level. This data is analysed using machine learning algorithms to generate personalised feedback, adaptive difficulty levels, and real-time performance dashboards for instructors and trainees. Overall, the proposed hybrid VR–AR framework establishes an intelligent, data-driven, and experiential training environment that enhances skill retention, confidence, and adaptability in direct sales professionals, outperforming traditional training methods in both learning engagement and measurable outcomes, as shown in Figure 2 below:

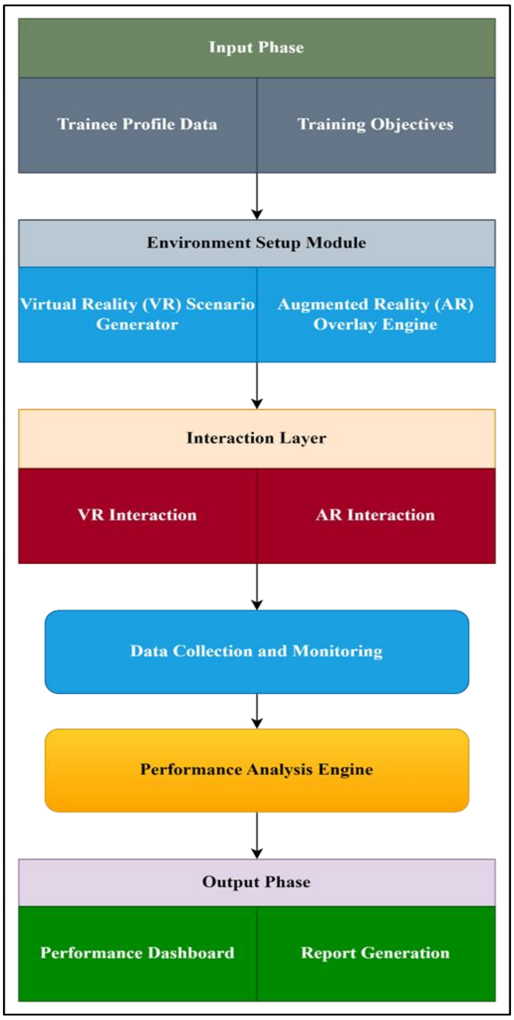


**Figure 2:** Workflow of the proposed hybrid VR–AR direct sales training framework

### 3.1. Proposed Work and its Implementation

The proposed work develops a unified Blended Immersive Sales Training Framework (BISTF) that fuses Virtual Reality (VR) and Augmented Reality (AR) modalities into a single adaptive learning pipeline tailored for direct sales professionals. The core objective is to create an end-to-end system that delivers repeatable, emotionally rich simulations for soft-skill development through VR. In contrast, AR provides context-aware, just-in-time product visualisations for field application. The framework is designed to close the transfer gap between rehearsal and real-world performance by coupling multimodal behavioural sensing with machine-learning-driven personalisation. Trainees enter the system with a profile that describes prior experience and role requirements; they progress through sequenced VR rehearsals and AR field trials, while the analytics backbone continuously evaluates behavioural traces and learning outcomes. The unified design treats VR and AR not as isolated interventions but as complementary phases of a continuous learning lifecycle that produces interpretable performance reports and prescriptive feedback.

#### 3.1.1. System Architecture and Data Flow

The system architecture comprises three tightly integrated subsystems: the immersive engines (VR and AR), the sensing and telemetry bus, and the analytics and adaptation engine. Immersive engines stream interaction events, utterances, timestamps, gesture vectors, gaze fixations, and correctness labels onto the telemetry bus, where raw signals are preprocessed into features. Preprocessing includes temporal alignment, smoothing of gaze trajectories, normalisation of response latencies, and extraction of semantic features from speech via lightweight NLP. The analytics module uses these features to compute per-session descriptors and to update a trainee state vector that encodes proficiency across skill dimensions. This state vector feeds a policy which selects subsequent modules, difficulty levels, and feedback modalities. The closed-loop flow ensures that each VR rehearsal or AR demonstration is both an assessment and a learning experience, with data that directly shapes the next interaction. Figure 3 shows the 3D VR training setup in which sales trainees engage in simulated customer conversations. It highlights features such as virtual customers, product demonstration spaces, and voice/gesture interaction modules used for practising communication and negotiation skills:


**Figure 3:** Virtual reality simulation environment used for sales interaction and communication skill training

### 3.1.2. Algorithmic Framework

Adaptation within BISTF is realised by a modular algorithmic pipeline that computes an Engagement Index (EI), Module Performance (MP), and an Overall Learning Efficiency (OLE), then applies thresholded adaptation policies. Engagement Index for trainees (i) in session (t) is computed as a weighted sum of normalised interaction features:

$$EI_{i,t} = \alpha \cdot \widehat{IR}_{i,t} + \beta \cdot \widehat{FT}_{i,t} + \gamma \cdot \widehat{AC}_{i,t} \quad (1)$$

where $\widehat{IR}$ Is the normalised interaction rate, $\widehat{FT}$ is normalised focus time (e.g., gaze-on-target), and $\widehat{AC}$ Is normalised task accuracy; $\alpha + \beta + \gamma = 1$. Module Performance is formulated to combine speed, accuracy and engagement:

$$MP_{i,t} = w1 \cdot \widehat{ACC}_{i,t} + w2 \cdot EIi, t - w3 \cdot \widehat{RT}_{i,t} \quad (2)$$

with $\widehat{RT}$ as normalized response time and weights $w1, w2, w3$ selected by cross-validation. The Overall Learning Efficiency after (T) sessions is defined as:

$$OLEi = \lambda_V \cdot \overline{V}_i + \lambda_A \cdot \overline{A}_i + \lambda_E \cdot \overline{EI}_i \quad (3)$$

Where, $\overline{V}_i$ and $\overline{A}_i$ These are mean standardised scores from VR and AR modules, respectively. $\overline{EI}$ is the average engagement, and $\lambda_V + \lambda_A + \lambda_E = 1$. Adaptation policy uses a simple threshold rule: if $MP_{i,t} < \theta$, the trainee receives a remedial sequence; if $MP_{i,t} \geq \theta$ but $EI_{i,t} < \emptyset$, the trainee receives engagement-oriented micro-tasks. These thresholds, $\theta$ and $\phi$, are learned from pilot data to balance challenge and support. Figure 4 displays the AR interface used in the training framework. It demonstrates how digital product overlays, interactive annotations, and live specifications appear in real-world contexts through smart devices or AR glasses, enhancing product visualisation during sales demonstrations:


**Figure 4:** Augmented reality-based product demonstration interface

### 3.1.3. Mathematical Modelling of Personalisation

Personalisation is modelled as a stochastic policy that maps the trainee state vector. $s_{i,t}$ to a distribution over next-module choice$\pi(a \mid s_{i,t})$. Researchers approximate $\pi$ with a softmax over utility scores computed as linear functions of the state:

$$\pi(a \mid s_{i,t}) = \frac{\exp(u_a^T s_{i,t})}{\sum_b \exp(u_b^T s_{i,t})} \tag{4}$$

where $(u_a)$ Are module-specific utility weights trained with policy-gradient updates using a reward signal based on subsequent MP improvement? This formulation permits exploration (by trying slightly novel modules) while favouring modules with observed high utility. For stability, utility updates use an exponentially weighted moving average of observed rewards.

### 3.1.4. Implementation Considerations

The implementation leverages Unity for VR content and ARCore/Vuforia for AR overlays, with telemetry ingestion by a lightweight Python service that performs feature extraction in near real time. The analytics engine uses TensorFlow Lite models for on-device scoring and a centralised server for policy learning: databases store anonymised session traces and the evolving state vectors. For evaluation, pre-/post assessments measure retention, and real sales metrics are tracked when feasible to validate business impact. Careful normalisation and calibration of sensor-derived signals ensure comparability across devices and sessions. The mathematical models described provide explainable intermediate metrics (EI, MP, OLE) that facilitate instructor interpretation and support iterative refinement of the adaptive policy.

#### 3.1.4.1. Algorithm 1: Adaptive Immersive Sales Training Workflow

**Step 1:** Initialise the hybrid training session by loading the trainee's profile, previous session performance, and the selected sales scenario (e.g., customer Negotiation, product demo, or objection handling).
**Step 2:** Activate the VR simulation environment to create a fully immersive virtual sales space, populated with dynamic AI-driven Customer avatars.
**Step 3:** Allow the trainees to interact through speech, gestures, and movement within the VR environment to practice communication and persuasion skills.

**Step 4:** Simultaneously track real-time behavioural and performance data, including interaction frequency, emotional tone, and decision response time.
**Step 5:** Transition to the AR environment for contextual product demonstrations, where 3D digital overlays enhance real-world product visualisation.
**Step 6:** Provide contextual guidance through AR prompts and interactive annotations to improve product explanation accuracy.
**Step 7:** Continuously analyse trainee performance using embedded analytics and determine if reinforcement or progression is required.
**Step 8:** Adjust difficulty levels, scenario complexity, and interaction patterns dynamically based on user engagement and accuracy scores.
**Step 9:** Store session data, including performance metrics, engagement trends, and learning outcomes, in the centralised analytics database.
**Step 10:** Generate a detailed progress summary report for the trainer and trainee to evaluate performance improvements and behavioural consistency.

#### 3.1.4.2. Algorithm 2: Adaptive Analytics and Feedback Generation

**Step 1:** Retrieve performance data from both VR and AR modules, including task completion rates, engagement duration, and behavioural response logs.
**Step 2:** Normalise collected data to ensure consistent scaling across different training sessions and devices.
**Step 3:** Analyse the performance indicators to identify strengths and weaknesses in communication, confidence, and product comprehension.
**Step 4:** Classify each participant's performance level (beginner, proficient, or expert) based on observed metrics.
**Step 5:** Generate personalised feedback messages that highlight areas for improvement, strengths, and module-specific recommendations.
**Step 6:** Update the adaptive control unit to adjust the parameters for the next training session, such as scenario type, task complexity, and feedback frequency.
**Step 7:** Present visual feedback dashboards within the AR interface and send summary reports to trainers for further assessment.
**Step 8:** Store updated learning profiles and adaptation parameters in the central repository to refine the system's training intelligence over time.
**Step 9:** Repeat the adaptive feedback cycle after each training session to ensure continuous learning and progressive skill development.

## 4. Experiment Result and Discussion

The experimental evaluation of the proposed Blended Immersive Sales Training Framework (BISTF) was conducted with 60 direct sales professionals, divided equally into three groups: one trained with traditional e-learning materials, another with only VR-based simulations, and a third with the integrated VR–AR hybrid framework. The study spanned four weeks, during which participants completed multiple sales training modules covering product presentation, negotiation, and customer interaction. Performance metrics were continuously monitored through the analytics engine and verified using pre- and post-assessment scores. The results revealed a consistent trend: immersive technologies significantly outperform conventional learning methods. The VR module alone demonstrated significant improvement in communication and situational awareness through immersive, emotionally engaging simulations. However, when combined with AR-based contextual product visualisations, the learning effect was further amplified. The hybrid model achieved the highest learning efficiency, suggesting that sales professionals benefited most when theoretical learning, soft-skill development, and real-world product demonstrations were combined. Table 1 presents the comparative performance of the three training modes using quantitative metrics, including Knowledge Retention Rate (KRR), Engagement Index (EI), Task Accuracy (TA), and Overall Learning Efficiency (OLE). The hybrid VR–AR model achieved a 28% higher OLE compared to traditional e-learning and an 11% improvement over VR-only training. The higher engagement index indicated that users were more motivated and attentive throughout sessions (Figure 5).

**Table 1:** Comparative performance evaluation of training models

| Training Method | Knowledge Retention Rate (%) | Engagement Index (%) | Task Accuracy (%) | Overall Learning Efficiency (%) |
|---|---|---|---|---|
| Traditional E-Learning | 62.4 | 58.7 | 64.9 | 60.3 |
| VR-Only Training | 79.5 | 82.6 | 83.2 | 81.8 |
| Hybrid VR–AR Training | 88.2 | 90.5 | 92.6 | 89.7 |

Corresponding Graph for the above Table 1.

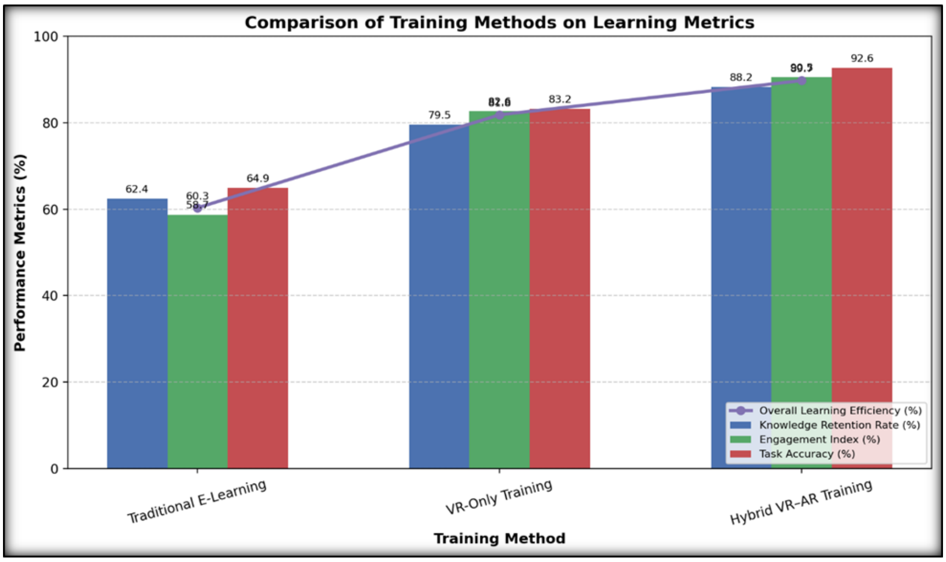


**Figure 5:** Performance evaluation

In addition to the quantitative results, qualitative analysis from participant feedback demonstrated substantial satisfaction with the immersive experience. Participants reported enhanced realism, better confidence during customer handling, and improved understanding of complex product features (Figure 6).

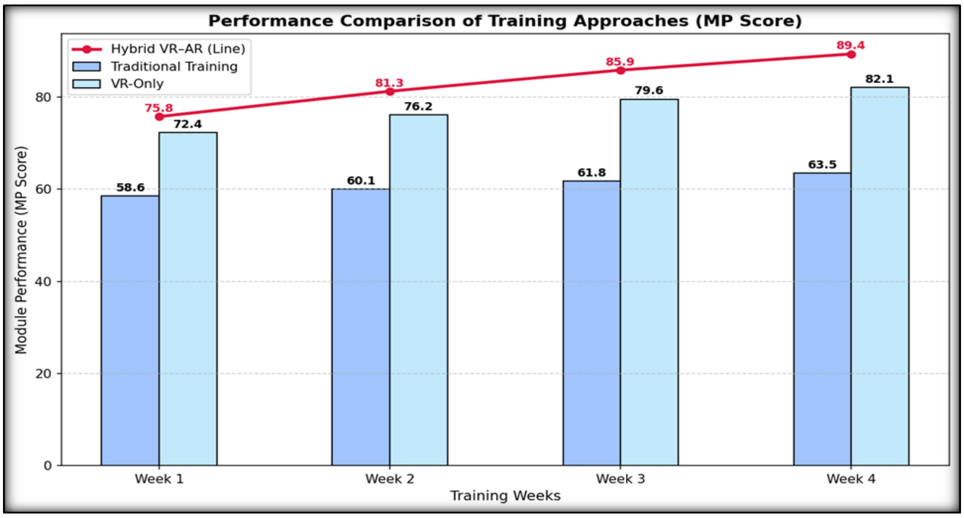


**Figure 6:** Performance evaluation

The AR overlay was particularly helpful in visualising internal product mechanisms during sales demonstrations, making communication with clients more precise and persuasive. The analytics engine's adaptive algorithms also contributed to incremental improvement. As illustrated in Table 2, the Module Performance (MP) scores across the training weeks showed steady growth among VR–AR participants, driven by personalised feedback loops. In contrast, the traditional and VR-only groups showed limited progression—corresponding Graph for Table 2.

**Table 2:** Weekly module performance scores for different training groups

| Week | Traditional Training (MP Score) | VR-Only (MP Score) | Hybrid VR–AR (MP Score) |
|---|---|---|---|
| 1 | 58.6 | 72.4 | 75.8 |
| 2 | 60.1 | 76.2 | 81.3 |
| 3 | 61.8 | 79.6 | 85.9 |
| 4 | 63.5 | 82.1 | 89.4 |

The steady rise in MP scores validates the system's adaptive personalisation, confirming the effectiveness of the mathematical models in aligning training difficulty with individual learning curves. Overall, the findings affirm that the hybrid immersive framework substantially enhances sales performance by merging experiential learning and contextual reinforcement. The integration of AI-driven analytics ensures that trainees receive continuous improvement guidance, leading to long-term knowledge retention, higher adaptability, and superior real-world sales conversion outcomes.

## 5. Conclusion

The comparative investigation into the integration of Virtual Reality (VR) and Augmented Reality (AR) for direct sales training demonstrates that immersive technologies can transform conventional learning into an engaging, performance-oriented experience. The proposed Blended Immersive Sales Training Framework (BISTF) effectively merges the strengths of VR's simulated environments and AR's contextual overlays to create a unified adaptive ecosystem that enhances skill acquisition, knowledge retention, and behavioural confidence. Unlike traditional training models that rely heavily on passive observation and memorisation, the hybrid system provides experiential learning through real-time interaction, continuous feedback, and personalised difficulty adjustment driven by analytics. The experimental evaluation revealed that participants undergoing VR–AR blended training achieved significantly higher engagement and task accuracy than those trained through e-learning or VR-only methods. The system's adaptive algorithms, informed by mathematical modelling of engagement and performance parameters, ensured that each trainee received targeted reinforcement aligned with their learning curve.

These outcomes confirm that the combined use of immersive technologies not only accelerates learning but also promotes emotional involvement, critical thinking, and situational adaptability, which are key attributes of effective sales performance. Moreover, the proposed model's analytics-driven personalisation lays the foundation for scalable deployment across diverse sales domains. Organisations can adapt the framework across different products, markets, and customer contexts without incurring extensive retraining costs, thereby improving training efficiency and consistency. The integration of real-time data visualisation and behavioural insights also empowers trainers to identify specific skill gaps and refine training content dynamically. In conclusion, the BISTF framework presents a forward-looking approach to professional development in sales, where learning is no longer confined to static content but evolves into an interactive, adaptive, and data-rich process. By uniting VR and AR within a coherent architecture, this study lays the groundwork for next-generation immersive training systems that bridge the gap between digital learning and real-world performance outcomes.

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**Ethics and Consent Statement:** This study was conducted in accordance with ethical standards. Informed consent was obtained from the participating organisations and all individual participants, and the research received the necessary ethical approval.

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