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## Virtual Reality Onboarding as Innovation Enhancing Newcomer Adjustment Outcomes

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**Abstract:** This study investigates how Virtual Reality (VR) onboarding functions as a digital innovation to enhance newcomer organizational socialization. By integrating Diffusion of Innovation (DoI) theory with organizational socialization literature, we develop and test a process model linking VR experience qualities—presence and usability—to perceived innovation attributes (relative advantage, compatibility, complexity, trialability, and observability), and subsequently to newcomer adjustment outcomes. Using survey data from 375 newcomers exposed to VR onboarding, we use a two-stage analytical approach that combines measurement validation and path analysis. We examine indirect effects whereby experience qualities shape innovation perceptions, which in turn predict role clarity, self-efficacy, social acceptance, and cultural understanding. Results indicate that presence and usability enhance favourable innovation perceptions, thereby accelerating integration. By clarifying this “innovation-to-integration” process, the study contributes to digital innovation research in HRM and offers a framework for assessing the organizational value and adoption of VR onboarding solutions.

**Keywords:** Virtual Reality (VR) onboarding; Diffusion of Innovation; Organizational Socialization; Presence quality; Usability quality; Newcomer Adjustment; Digital Innovation; HRM; Technology Adoption.

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## 1 Context and research question

In increasingly competitive labour markets, organizations face mounting pressure to attract, integrate, and retain talent effectively. Organizational socialization—the process through which newcomers acquire the knowledge, behaviours, and social understanding required to participate as effective members—remains a critical determinant of performance, commitment, and retention (Bauer & Erdogan, 2004; Saks & Ashforth, 1997). Yet, traditional onboarding practices often fail to transmit tacit knowledge, contextual cues, and cultural norms, leading to delayed role clarity, reduced self-efficacy, and weaker social integration. These limitations ultimately hinder time-to-productivity and increase early turnover risks.

Digital innovations, and particularly Virtual Reality (VR), offer promising avenues to address these shortcomings. VR enables immersive, interactive, and repeatable simulations that can enhance experiential learning and facilitate the transfer of complex knowledge. Central to its effectiveness are the notions of presence—the subjective experience of “being there” (Slater, 2003; Witmer & Singer, 1998)—and usability, which influences perceived ease of use and cognitive effort (Davis, 1989). These experiential qualities can improve engagement, attention, and learning outcomes, positioning VR as a potentially transformative onboarding tool.

However, despite its technological potential, organizational adoption of VR onboarding remains uneven. From an innovation perspective, adoption decisions depend not only on technological capabilities but also on how innovations are perceived by users and stakeholders. The Diffusion of Innovation (DoI) framework (Rogers, 2003), further operationalized in information systems research (Moore & Benbasat, 1991), highlights five key attributes shaping adoption: relative advantage, compatibility, complexity, trialability, and observability. Similarly, technology acceptance models emphasize perceived usefulness and ease of use as central determinants of user acceptance (Davis, 1989; Venkatesh et al., 2003). Yet, while these frameworks explain adoption intentions, they are rarely connected to downstream human outcomes such as newcomer adjustment.

This disconnect is particularly problematic in the context of HR innovations, where value creation ultimately depends on improvements in human capital. From a dynamic capabilities perspective, organizations must not only adopt new technologies but also integrate them effectively into routines that enhance learning and performance (Teece, 2007). VR onboarding can be understood as such a capability, enabling organizations to reconfigure learning processes and accelerate knowledge integration (Chiva & Alegre, 2005). However, the mechanisms through which VR translates into improved newcomer socialization remain underexplored.

This study addresses this gap by proposing an integrative framework that links VR experience qualities to innovation perceptions and, subsequently, to newcomer adjustment outcomes. The research specifically investigates how presence and usability shape perceptions of VR’s innovation attributes, and how these perceptions influence role clarity, self-efficacy, social acceptance, and cultural understanding. Accordingly, the central research question guiding this study is: *How do perceptions of VR’s innovation attributes affect newcomer adjustment outcomes, and to what extent are these perceptions*

*shaped by VR experience qualities such as presence and usability?* By articulating this “experience–perception–outcome” chain, the study seeks to clarify when and why VR onboarding creates value, thereby informing both innovation theory and HR practice.

## **2 Literature review**

Digital technologies have become a central driver of innovation in HRM, reshaping how organizations design, deliver, and experience HR practices across the employee lifecycle. Digital HRM refers not merely to the automation of administrative processes but to the transformative reconfiguration of HR activities through advanced technologies such as artificial intelligence, analytics, and immersive media (Bondarouk, Parry, & Furtmueller, 2017). VR onboarding exemplifies an advanced form of digital HR innovation. Unlike traditional e learning or video based onboarding, VR offers immersive, interactive, and embodied experiences that simulate organizational environments and social situations (Makransky & Petersen, 2019). As such, VR onboarding represents a shift from information transmission to experiential learning, positioning it as a transformative innovation rather than a mere technological enhancement.

This study integrates three major bodies of literature—organizational socialization, technology and innovation adoption, and VR-enabled experiential learning—to explain how a digital onboarding innovation can generate measurable newcomer adjustment outcomes. This review first defines the key constructs within each domain and then articulates their theoretical integration into an “experience–perception–outcome” framework consistent with the research question.

### *2.1. Organizational Socialization and Newcomer Adjustment*

Organizational socialization constitutes a foundational theoretical lens for understanding onboarding effectiveness. It refers to the process by which newcomers acquire the knowledge, skills, attitudes, and behaviours as well as social relationships necessary to participate effectively within an organization and to assume an organizational role effectively (Bauer & Erdogan, 2004; Van Maanen & Schein, 1979). It is a critical phase in the employee lifecycle, as early experiences shape long-term attitudes, performance trajectories, and retention. Foundational research identifies four proximal adjustment outcomes that signal successful organizational socialization: role clarity, self-efficacy, social acceptance, and cultural understanding (Bauer, Bodner, Erdogan, Truxillo, & Tucker, 2007; Saks & Ashforth, 1997).

Role clarity reflects the degree to which newcomers understand job responsibilities, expectations, and performance standards. Self-efficacy captures individuals’ confidence in their ability to perform required tasks. Social acceptance refers to the extent to which newcomers feel integrated into interpersonal networks, while cultural understanding involves internalizing organizational norms, values, and informal practices. Role clarity and self-efficacy reflect newcomers’ cognitive and motivational adjustment, while social acceptance and cultural understanding capture relational and normative integration (Chao, O’Leary Kelly, Wolf, Klein, & Gardner, 1994). Together, these dimensions form a comprehensive view of newcomer adjustment that goes beyond early performance to encompass identity and belonging. These dimensions are not only interrelated but also

predictive of distal outcomes such as job satisfaction, organizational commitment, and turnover intentions.

Despite the recognized importance of these outcomes, traditional onboarding approaches often fail to achieve them effectively. Conventional methods—such as classroom training, static e-learning modules, or document-based induction—tend to emphasize explicit knowledge while neglecting tacit, contextual, and socially embedded forms of learning. In addition, traditional socialization research has largely assumed face to face interaction as the dominant mode of onboarding. These limitations align with broader insights from organizational learning theory, which emphasize that knowledge is not merely transmitted but constructed through experience, interaction, and reflection (Chiva & Alegre, 2005). As such, onboarding processes that lack experiential richness may hinder newcomers' ability to make sense of their roles and environments.

This gap has prompted increasing interest in innovative onboarding approaches that can better support situated learning. Among these, VR emerges as a promising tool due to its ability to simulate realistic environments, embed learners in context, and enable active experimentation.

Recent shifts toward remote, hybrid, and technology mediated work challenge these assumptions (Saks & Gruman, 2021). Digital onboarding environments must therefore compensate for the reduction of informal social interactions and contextual learning opportunities that typically occur through physical co presence.

Research increasingly suggests that technology mediated onboarding can be effective when it supports active engagement, social interaction, and sensemaking rather than passive information delivery (Allen, Vardaman, & Otondo, 2012). VR onboarding is theoretically well suited to address these challenges, as it enables newcomers to “experience” organizational realities rather than merely read about them. This experiential dimension aligns with contemporary views of socialization as a sensemaking process shaped by subjective interpretations and lived experiences.

## *2.2. Experiential Learning in Virtual Reality: Presence and Usability*

VR is defined as a computer generated environment that enables users to experience a sense of presence within a simulated space (Slater & Wilbur, 1997). It is a class of immersive technologies capable of delivering highly interactive and engaging learning experiences. Unlike traditional media, VR allows users to navigate and manipulate simulated environments, thereby fostering experiential learning. Central to this capability are the constructs of presence and usability. Presence refers to the psychological state of “being there” in the virtual environment, while usability captures the extent to which the system is intuitive, controllable, and cognitively manageable for the user (Davis, 1989; Makransky & Petersen, 2019).

Defined as the subjective sensation of “being there” in a virtual environment (Slater, 2003; Witmer & Singer, 1998), presence plays a pivotal role in shaping learning outcomes. As a core experiential quality, presence may enhance perceived relative advantage by making onboarding more engaging and realistic. When newcomers feel immersed in organizational scenarios, they may perceive VR onboarding as more effective than static or text based alternatives. Similarly, perceived presence may

strengthen compatibility by allowing newcomers to align the onboarding experience with their expectations of “real work” environments. High levels of presence enhance perceived realism, emotional engagement, and attentional focus, which are critical for encoding and retaining information. In onboarding contexts, presence may enable newcomers to experience realistic job scenarios, observe behavioural norms, and practice responses in a psychologically safe environment. This aligns with the notion that learning is more effective when it is situated in contexts that resemble real-world applications. However, presence alone is insufficient to ensure effective user experiences.

Usability, defined as the perceived ease of use and effort required to interact with a system, is equally critical. Rooted in the Technology Acceptance Model - TAM (Davis, 1989), usability influences users’ willingness to engage with technology and their ability to focus on learning tasks rather than operational challenges. High usability reduces cognitive load, allowing users to allocate attentional resources to task-relevant information. Intuitive interfaces, clear instructions, and smooth interactions reduce cognitive load and mitigate feelings of technological anxiety. When usability is high, newcomers are less likely to perceive VR onboarding as complex or burdensome. High usability reduces extraneous cognitive load, allowing users to focus on task-relevant information. Conversely, poor usability can introduce friction that detracts from learning, even in highly immersive environments. Moreover, usability may indirectly increase trialability by making newcomers more willing to explore and experiment with the technology. The Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2003) further reinforces the importance of usability and perceived usefulness as key determinants of technology acceptance. In VR contexts, usability encompasses intuitive interfaces, ease of navigation, and minimal technical friction. When usability is low, the cognitive burden associated with interacting with the system may undermine the benefits of immersion, reducing overall effectiveness.

By shaping perceived innovation attributes, experience quality functions as a bridge between technological design and user acceptance. While prior research has established that presence and usability influence engagement and learning outcomes, their role in shaping how users perceive VR as an innovation remains insufficiently explored. This gap is critical, as perceptions of the technology may influence not only its adoption but also its effectiveness in producing desired outcomes.

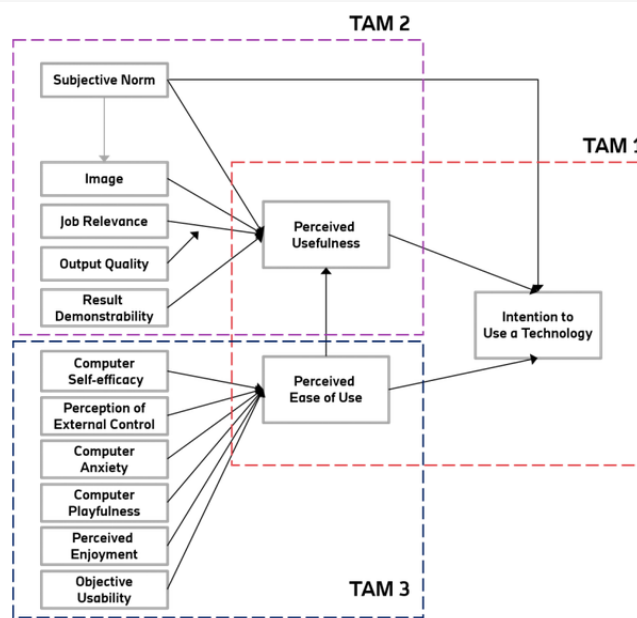
### *2.3. Innovation Adoption and Perception: Diffusion of Innovation Theory*

The Diffusion of Innovation (DoI) theory (Rogers, 2003) provides a foundational framework for understanding how individuals and organizations evaluate and adopt new technologies. According to this theory, the adoption of an innovation is largely driven by users’ perceptions of five key attributes: relative advantage, compatibility, complexity, trialability, and observability.

Relative advantage refers to the extent to which an innovation is perceived as superior to existing alternatives. In the context of VR onboarding, this may involve perceptions of enhanced learning effectiveness or engagement compared to traditional methods. Compatibility captures the degree to which the innovation aligns with users’ values, experiences, and organizational practices. Complexity reflects the perceived difficulty of understanding and using the innovation, while trialability refers to the opportunities and

ability to experiment with the innovation on a limited basis before full adoption. Observability concerns the visibility of the innovation's outcomes to others. These attributes have been extensively validated across technological and organizational contexts, including HR systems adoption (Marler & Fisher, 2013).

Moore and Benbasat (1991) further operationalized these constructs in the context of information systems, providing validated measurement instruments that have been widely used in empirical research. Complementing DoI, the Technology Acceptance Model (Davis, 1989) emphasizes perceived usefulness and ease of use as primary determinants of user acceptance, while subsequent integrative models (Venkatesh et al., 2003) incorporate social and contextual factors.



**Figure 1** Simplified TAM1, 2 &3, omitting moderators and respectively based on Davis (1989), Venkatesh and Davis (2000), Venkatesh and Bala (2008).

Despite their robustness, these frameworks predominantly focus on predicting adoption intentions rather than post-adoption outcomes. In other words, they explain why individuals choose to use a technology, but not how such usage translates into meaningful performance or behavioural changes. This limitation is particularly salient in HR contexts, where the ultimate objective is not merely adoption but improved human capital outcomes.

In digital HRM, adoption decisions are not purely rational or economic; they are shaped by experiential and symbolic considerations. Employees evaluate whether a digital HR practice “makes sense,” feels legitimate, and supports their integration into the organization. DoI theory thus offers a complementary perspective to technology acceptance models by emphasizing perceptions of innovation characteristics rather than

individual attitudes alone. Applying DoI to VR onboarding is particularly relevant because VR represents a novel, highly visible, and potentially complex technology. Newcomers' willingness to engage with VR onboarding is likely influenced by whether the experience signals clear advantages, fits their expectations of onboarding, and is perceived as manageable and supportive rather than overwhelming.

#### *2.4. Bridging Innovation Adoption and Organizational Socialization*

The disconnect between innovation adoption and organizational outcomes highlights a critical gap in the literature. While VR research emphasizes experiential qualities and DoI focuses on adoption perceptions, organizational socialization research concentrates on adjustment outcomes. As a consequence, these streams seem to rarely intersect, leaving unanswered questions about the processes through which HR digital innovations create value. From a strategic perspective, this gap can be understood through the lens of dynamic capabilities. Organizations must not only adopt new technologies but also integrate and reconfigure them within organizational processes to generate value (Teece, 2007). VR onboarding may enable such a capability, enabling organizations to enhance learning processes and accelerate knowledge integration. However, the effectiveness of this capability depends on how users perceive and engage with the technology.

We argue that innovation perceptions serve as a critical mediating mechanism between VR experience and newcomer adjustment. Specifically, the experiential qualities of VR—presence and usability—shape how newcomers evaluate the technology along DoI dimensions. These evaluations, in turn, influence their engagement with the onboarding process and their subsequent adjustment outcomes.

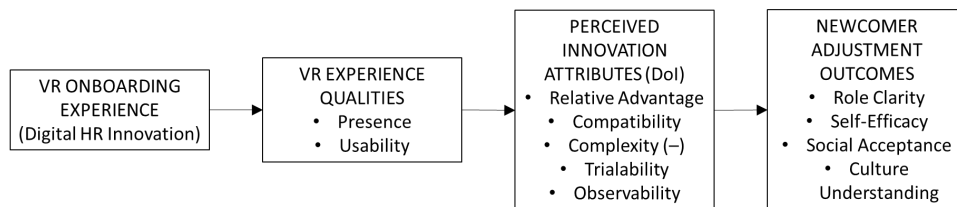
For instance, presence, as a core experiential quality, may enhance perceived relative advantage by making onboarding more engaging and realistic. When newcomers feel immersed in organizational scenarios, they may perceive VR onboarding as more effective than static or text based alternatives. Similarly, perceived presence may strengthen compatibility by allowing newcomers to align the onboarding experience with their expectations of “real work” environments. High presence may enhance perceived relative advantage by making learning experiences more realistic and impactful. Similarly, high usability may reduce perceived complexity, increasing compatibility with users' expectations and learning preferences. Usability, is closely linked to complexity perceptions. Intuitive interfaces, clear instructions, and smooth interactions reduce cognitive load and mitigate feelings of technological anxiety. When usability is high, newcomers are less likely to perceive VR onboarding as complex or burdensome. Moreover, usability may indirectly increase trialability by making newcomers more willing to explore and experiment with the technology. Trialability allows newcomers to learn through exploration without fear of failure, supporting incremental mastery and confidence building. Observability may further reinforce social acceptance by making onboarding progress visible to peers and supervisors, thereby legitimizing newcomer participation. Trialability and observability may be influenced by how easily users can experiment with VR and perceive its benefits in practice. Low perceived complexity reduces frustration and cognitive overload, which is critical for newcomers already navigating uncertainty. These perceptions collectively shape the extent to which newcomers internalize knowledge, build confidence, and integrate socially and culturally.

This perspective extends existing theories by linking micro-level experiential factors (presence, usability) to meso-level perceptual evaluations (innovation attributes) and macro-level organizational outcomes (socialization). It thus provides a more comprehensive understanding of how digital innovations create value in HR contexts.

### 2.5. Toward an Integrated Conceptual Framework

Building on the reviewed literature, this study proposes an integrated framework that captures the full sequence from VR experience to newcomer adjustment. The framework is grounded in three core assumptions:

- **Experiential Primacy:** Learning outcomes in VR are driven by experiential qualities such as presence and usability.
- **Perceptual Mediation:** These experiential qualities shape innovation perceptions, which mediate the relationship between experience and outcomes.
- **Outcome Relevance:** Innovation perceptions influence not only adoption but also the effectiveness of onboarding in achieving socialization outcomes.



**Figure 2** Research Design Overview: From VR Experience to Newcomer Integration

This approach responds directly to the research question by specifying how and why VR onboarding influences newcomer adjustment. In sum, this literature review demonstrates that while organizational socialization, VR learning, and innovation adoption have each been extensively studied, their integration remains limited. By positioning innovation perceptions as the missing link between VR experience and newcomer adjustment, this study advances a novel “innovation-to-integration” perspective. This framework not only enriches theoretical understanding but also provides a practical basis for evaluating the value of VR onboarding as a digital innovation in HRM.

## 3 Methods

This research is grounded in a collaborative research design combining academic expertise with industry practice, following a long-standing tradition in innovation management research at the intersection of digital technologies and organizational transformation. The study was conducted as part of a joint project between a university specializing in human-centric innovation and organizational transformation, and industry partners deploying VR solutions for onboarding in real organizational settings.

The objective of this collaboration was to examine VR onboarding as a digital innovation in HRM, and to assess how newcomers experience, evaluate, and internalize this innovation during early organizational entry.

### *Research design and analytical framework*

The research design conceptualizes VR onboarding as an innovation whose organizational value materializes through human experience and perception. The study therefore integrates DoI theory (Rogers, 2003) with organizational socialization research to empirically test the process through which VR onboarding contributes to integration, linking three conceptual blocks.

1. VR experience qualities (presence and usability),
2. Perceived innovation attributes (relative advantage, compatibility, complexity, trialability, observability),
3. Newcomer adjustment outcomes (role clarity, self-efficacy, social acceptance, culture understanding).

Presence and usability capture the experiential quality of VR onboarding and reflect the extent to which the technology delivers immersive, intuitive, and cognitively manageable experiences. In line with DoI theory, perceived innovation attributes represent newcomers' evaluation of VR onboarding as an innovation relative to existing onboarding practices. Adjustment outcomes are conceptualized as proximal indicators of successful organizational socialization.

The model follows a sequential logic in which experience quality shapes innovation perceptions, which in turn predict integration outcomes, allowing for the examination of both direct and indirect (mediated) effects. This design enables a fine-grained analysis of how digital HR innovations generate organizational value through human integration processes.

### *Sample and data collection*

Data were collected through a cross-sectional survey administered to newcomers who had participated in a VR-based onboarding program during the first months of their employment. Eligible respondents were employees with limited tenure in their current organization who had completed at least one VR onboarding module related to role familiarization, organizational orientation, or cultural immersion.

A total of 375 usable questionnaires were collected. Respondents represented a variety of industries, organizational contexts, and functional roles. Participation was voluntary and anonymous, and responses were analysed at an aggregate level only. The survey was administered online shortly after the onboarding experience to ensure recall accuracy while allowing sufficient exposure to VR onboarding content.

To control for individual differences that may influence technology perceptions or socialization outcomes, background variables were collected, including tenure in months, age, prior experience with VR, industry, role, and general technology affinity.

### *Measurement Instrument*

All constructs were measured using seven-point Likert-type scales ranging from 1 (“strongly disagree”) to 7 (“strongly agree”). The questionnaire was designed by adapting and integrating validated measures from VR research, innovation adoption literature, and organizational socialization studies, ensuring content validity and theoretical consistency.

#### 1. VR Experience Qualities

- Presence was measured through four items capturing perceived realism, immersion, engagement, and the feeling of “being there” in the virtual onboarding environment.
- Usability assessed perceived ease of use, intuitiveness, confidence, and autonomy in using the VR onboarding system.

#### 2. Innovation Attributes (Diffusion of Innovation)

Five perceived innovation attributes were operationalized using four items each:

- Relative advantage (perceived superiority of VR onboarding over traditional methods),
- Compatibility (alignment with organizational practices, culture, and learning preferences),
- Complexity (perceived difficulty and cognitive effort; reverse coded),
- Trialability (opportunity to test and experiment before full adoption),
- Observability (visibility of benefits and results).

#### 3. Newcomer Adjustment Outcomes

Four core socialization outcomes were assessed:

- Role clarity (understanding of role expectations and responsibilities),
- Self-efficacy (confidence in performing job tasks),
- Social acceptance (sense of belonging and peer integration),
- Culture understanding (grasp of organizational values and norms).

Each adjustment construct was measured with four items adapted from established organizational socialization scales and reformulated to reflect the context of early onboarding.

### *Data Analysis Strategy*

Data analysis followed a two-stage analytical approach consistent with best practices in innovation and HRM research.

First, the psychometric properties of the measurement model were assessed. Internal consistency was evaluated using Cronbach’s alpha and composite reliability, while convergent validity was examined through factor loadings and average variance extracted. Discriminant validity was assessed by comparing inter-construct correlations.

Second, the hypothesized relationships were tested using a path analytic approach. The analysis examined the effects of presence and usability on innovation attributes, the effects of these attributes on adjustment outcomes, and the indirect effects linking VR experience qualities to outcomes through innovation perceptions. Mediation effects were assessed using bootstrapped confidence intervals. Model quality was evaluated using

explained variance ( $R^2$ ), effect sizes, and predictive relevance indicators, while alternative specifications—including direct paths from experience qualities to outcomes—were tested for robustness.

This design enables a theoretically grounded examination of VR onboarding as a digital innovation, moving beyond adoption intentions toward measurable integration outcomes. By capturing the sequence from experience quality to innovation appraisal and newcomer adjustment, the study provides a rigorous framework for assessing how VR onboarding generates organizational value. The instrument integrates VR-specific experience measures with innovation diffusion and socialization constructs, supporting replication and extension to other digital HR innovations.

## 4 Findings

The results of the study provide empirical support for the proposed “experience–perception–outcome” process framework, confirming that VR onboarding functions as a digital innovation whose impact on newcomer adjustment is mediated by innovation perceptions.

The measurement model demonstrated satisfactory psychometric properties with moderate variability across constructs. Cronbach’s alpha values indicate acceptable to high internal consistency without evidence of redundancy. Composite reliability values exceeded 0.83 for all constructs. Convergent validity was supported, with average variance extracted values above the recommended 0.50 threshold. Factor loadings were all significant and within acceptable ranges, reflecting realistic variation across items. Discriminant validity was confirmed using the HTMT criterion. Notably, constructs such as complexity and social acceptance exhibited slightly lower reliability, consistent with their conceptual nature and the inherent variability of cognitive and social perceptions. Overall, these results support the robustness of the measurement model.

Consistent with expectations, both presence and usability exert significant effects on perceived innovation attributes. Presence strongly predicts relative advantage and compatibility, while negatively influencing perceived complexity. This suggests that immersive experiences enhance the perceived value and realism of VR onboarding, making it more comparable to real-world situations and therefore more beneficial than traditional approaches. Usability exhibits an even stronger effect on perceived complexity, significantly reducing the perceived effort required to engage with the system. It also positively influences relative advantage and compatibility, indicating that ease of use is a critical determinant of how VR is evaluated as an innovation. Together, these findings confirm that experiential qualities shape cognitive evaluations of VR along the key dimensions identified in Diffusion of Innovation theory.

Innovation attributes significantly predict newcomer adjustment outcomes. Relative advantage emerges as a strong predictor of role clarity, suggesting that when VR is perceived as superior to traditional onboarding methods, newcomers develop a clearer understanding of their roles and responsibilities. Compatibility significantly predicts self-efficacy, indicating that alignment with expectations and learning preferences enhances confidence in task performance. Observability is positively associated with social acceptance, suggesting that visible benefits of VR onboarding facilitate social integration,

potentially by reinforcing shared experiences or signalling competence. Trialability contributes to culture understanding, highlighting the importance of low-risk experimentation in enabling newcomers to internalize organizational norms and values.

These findings demonstrate that innovation perceptions are not merely antecedents of adoption but also critical drivers of learning and integration outcomes.

The mediation analysis provides strong support for the central theoretical proposition. Indirect effects linking presence and usability to adjustment outcomes through innovation attributes are significant across multiple pathways. For example, the effect of presence on role clarity is largely mediated by perceived relative advantage, while the effect of usability on self-efficacy is mediated by compatibility.

These results confirm that innovation perceptions act as key mechanisms translating experiential qualities into behavioural outcomes. While some direct effects of presence and usability on adjustment outcomes were observed, the mediated pathways account for a substantial proportion of explained variance, reinforcing the importance of the “innovation-to-integration” process. The model explains a substantial proportion of variance in adjustment outcomes ( $R^2$  values). This indicates that the combined effects of experiential qualities and innovation perceptions provide strong predictive power for newcomer integration. Predictive relevance indicators further support the robustness of the model.

Alternative model specifications, including direct paths from experience qualities to outcomes, yielded consistent results. Control variables such as age, prior VR experience, and technology affinity showed limited but meaningful effects, suggesting that the model holds across different demographic groups.

Overall, the findings support a coherent and theoretically grounded explanation of how VR onboarding generates value. Experiential qualities shape innovation perceptions, which in turn drive newcomer adjustment outcomes. This confirms that VR onboarding is not merely a technological enhancement but a meaningful organizational innovation capable of accelerating integration and improving early-stage employee outcomes.

The findings confirm that VR onboarding creates value through an experience–perception–outcome chain: immersive experiences shape favourable innovation perceptions, which in turn accelerate newcomer adjustment. This extends innovation adoption theory by showing that perceived attributes do not only drive adoption, but also mediate performance-relevant outcomes such as role clarity and self-efficacy. It also reinforces organizational socialization theory by highlighting the importance of experiential, context-rich learning environments.

Managerially, organizations should prioritize high usability and immersive design to maximize perceived value and reduce complexity. Pilots and phased rollouts can enhance trialability, while dashboards and success stories strengthen observability. Designing VR scenarios aligned with real tasks and cultural norms is critical to improve integration and justify scaling VR as a strategic HR innovation.

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