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BRIDGING HUMAN READINESS AND DIGITAL IMMERSION: AN INTEGRATED SPSS–SMARTPLS STUDY ON BEHAVIORAL DRIVERS OF OFFSHORE VIRTUAL TRAINING ENGAGEMENT

Noor Wazikhaz Madia Wazi[1]*, Fazida Karim[2], Kittisak Wongmahesak[3]

[1]Department of Management Science, Universiti Sultan Zainal Abidin, Malaysia
nwmadia@gmail.com https://orcid.org/0009-0008-9067-8726
[2]Department of Management Science, Universiti Sultan Zainal Abidin, Malaysia
fazidakarim@unisza.edu.my https://orcid.org/0009-0007-6022-9359
[3]Department of Multimedia Studies, of Legal and Political Studies, North Bangkok University, Thailand
kittisak.wo@northbkk.ac.th https://orcid.org/0009-0000-2129-4691
*Corresponding Author

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Abstract:

Immersive virtual training (IVT) is being used more and more in the oil and gas industry to mimic dangerous offshore environments. However, its success depends on more than just advanced technology; people must also be ready and willing to participate. There are two types of analytics used in this study: SPSS and SmartPLS. The goal is to find out how safety compliance, platform familiarity, and operational readiness affect training engagement and the results of immersive learning. The poll was filled out by 154 offshore workers, including contractors and new hires. The results were looked at using both descriptive-inferential statistics and structural modelling. Exploratory factor analysis (EFA) confirmed four latent constructs, and the reliability coefficients were higher than what was considered reasonable. ANOVA and t-tests showed that IVT engagement was significantly different for men and women, as well as for people with and without offshore experience. Pearson correlations, on the other hand, showed strong links between behavioural constructs and training success. The SmartPLS structural model showed that training engagement strongly affects the link between safety compliance and IVT outcomes explaining a large part of the variation. These results show how important it is for digital learning designs to match how people learn. They also provide a strong, evidence-based framework for improving the adoption of immersive training among workers working offshore.

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Introduction

The offshore oil and gas industry is still one of the most dangerous and complicated places to work in the world. Safety and the ability of workers to do their jobs rely on people being ready and able to perform their jobs (Cekada, 2010; Neal & Griffin, 2006). Because of these problems, Immersive Virtual Training (IVT) has grown as a low-risk, scalable, and cost-effective option to traditional training that takes place in person or with equipment (Makransky & Mayer, 2022; Villena-Taranilla et al., 2019). Through interactive 3D scenarios that mimic real-life, high-risk environments, IVT platforms help offshore workers learn important skills and how to behave before they are sent to real-life sites. According to Wazi, Karim, and Noor (2024), the use of Artificial Intelligence (AI) in management science also makes business processes run more smoothly. This lowers both cognitive overload and physical exposure during the early stages of learning (Mura et al., 2020).

Immersive virtual training (IVT) technologies are increasingly utilised in high-risk sectors such as offshore oil and gas operations to enhance worker safety, preparedness, and engagement. The success of deployment hinges on the users' psychological preparedness to embrace these technologies (Wazi et. al, 2026). But for IVT to be widely used, it takes more than just setting up the gear and software. It's also important to know how ready trainees are behaviourally and cognitively. This includes knowing how to follow safety rules, find their way around digital interfaces easily, and be mentally ready for immersive learning environments (Deci & Ryan, 2000; Venkatesh et al., 2003). More and more research shows that IVT effectiveness is affected by how easy people think it is to use, how safe they think it is, how much experience they have with virtual settings, and how engaged each person is (Fredricks et al., 2016; Neal & Griffin, 2006). How learners feel about the platform, how much they trust it, and how much they have used simulation-based training in the past can all have a big effect on how ready they are to interact with IVT modules in a meaningful way.

Even though we know more about these issues, there aren't many studies that carefully include these behavioural aspects in IVT evaluation, especially among contractors and newly hired offshore workers. Previous research has mostly looked at how easy the system is to use and how well it helps people learn, but it hasn't really looked into the psychological and motivational factors that lead to interest (Makransky & Mayer, 2022; Villena-Taranilla et al., 2019). A dual-method empirical approach is used in this study to fill that gap. The study carefully looks at the measurement properties and the structural pathways between things like

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safety compliance, platform familiarity, operational readiness, and training engagement (Hair et al., 2021). It uses SPSS for initial statistical testing and SmartPLS for Partial Least Squares Structural Equation Modelling (PLS-SEM).

This study adds to our knowledge of what makes IVT successful and engaging by incorporating psychological concepts into a training framework that focusses on technology. The results are meant to help corporate learning and development teams, offshore safety leaders, and digital transformation teams figure out how to make sure that the way they create training matches the readiness of the workforce. In the end, this method leads to a more comprehensive plan for digital upskilling in dangerous settings, one that is based on both behavioural science and technological know-how.

Literature Review

Immersive Virtual Training (IVT) in Offshore Operations.

Immersive Virtual Training (IVT) technologies have changed how people learn to work together by creating 3D, interactive settings that are like real-life work situations. In dangerous fields like offshore oil and gas, IVT lets people safely practise emergency drills, operating machines and following procedures, often without having to deal with the hassles or risks of visiting the site in person. Literature on IVT adoption consistently finds that trainees are more engaged, remember more, and feel more confident (Makransky & Mayer, 2022; Mura et al., 2020). But IVT deployment doesn't always work; it depends on how ready each person is and how the organisation works (Villena-Taranilla et al., 2019).

Behavioral Foundations: Safety Compliance, Familiarity, and Readiness.

There are three main behavioural areas that make people want to use IVT: safety compliance, platform familiarity, and operational readiness. Safety compliance shows how well a learner has internalised risk-averse behaviours, which are very important for applying what they've learnt in the virtual world to real-life success (Neal & Griffin, 2006). The trainee's trust and previous experience with digital or game-based interfaces are linked to how familiar they are with the platform. This is a known indicator of how easy something is to use and how well people accept it (Venkatesh et al., 2003). How well a trainee learns and uses simulated information depends on their operational readiness, which includes both their mental and physical preparation for deployment overseas (Cekada, 2010).

Training Engagement as a Mediator

As a mediator, engagement has become an important concept in virtual learning settings. Training engagement (TE) includes the mental, emotional, and behavioural investment that learners show during training (Fredricks et al., 2016). In IVT, engagement is a keyway that behavioural factors like safety beliefs, readiness, and how easy it is to use the tool affect how well training works. Engaged students are more likely to fully understand what they are learning, use what they have learnt, and follow safety rules, which improves training transfer. Also, engagement is especially important for contractors and new employees who may not have worked abroad before and need to quickly learn technical and procedural skills. Self-Determination Theory (Deci & Ryan, 2000) and the Job Demands–Resources (JD-R) framework (Bakker & Demerouti, 2017) both support the idea that psychological involvement

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and motivational support are important in high-performance learning settings. Engagement plays a mediating role in these theories.

Research Gaps in the Past and the Present Study

Immersive virtual training (IVT) is getting more and more attention as a new way to learn in high-risk industries. However, there aren't many real-world studies that look at how it affects behaviour in offshore working settings. The Technology Acceptance Model (Venkatesh et al., 2003) and the Job Demands–Resources (JD-R) theory (Bakker & Demerouti, 2017) are useful ways to understand how people accept and use training. But most IVT study has been about how easy or useful people think the system is to use, without looking into how ready people are psychologically and behaviourally (Makransky & Mayer, 2022). This is especially important when training people in offshore settings, where bad training transfer can have serious and instant effects. Wazi et al. (2024) say that when technologies are used in real life, they make organisations much more productive and efficient.

There isn't a lot of research that looks at the specific problems freelancers and new hires face, since these groups tend to be less familiar with how organisations work and have longer learning curves (Villena-Taranilla et al., 2019). Even though IVT offers options that are both affordable and scalable, training results can be greatly affected by the lack of cognitive and behavioural readiness at the individual level. In the past, studies haven't used predictive structural modelling methods with psychometrically validated constructs like those found through factor loadings, composite reliability (CR), and average variance extracted (AVE) (Petter et al., 2007). Because of this, there is a gap between the strictness of measurement validation and the behavioural understanding that is needed to make virtual training methods better.

Additionally, the role of training engagement as a mediator is still not fully studied in IVT literature, even though there is evidence that engagement connects the impact of environmental factors like safety climate and task preparedness with learning outcomes (Fredricks et al., 2016; Deci & Ryan, 2000). Engagement is especially important for remote training, where students have to learn how to do things by simulating them instead of doing them in real life. To close this gap, we need to combine tested interaction metrics with strong structural models that look at both direct and indirect effects.

To answer this question, this study uses a full quantitative method that includes Exploratory Factor Analysis (EFA), correlation and regression analysis (SPSS), and Structural Equation Modelling (SEM) with SmartPLS. This two-part approach lets you test both psychometric validity and structural hypothesis. The study looks into how safety compliance, platform familiarity, and operational readiness affect the results of immersive virtual training, both directly and indirectly through training involvement. Case studies from several industries demonstrate the impact of these technologies on decision-making, policy development, and intervention design, in accordance with human behaviours (Wazi et al., 2024). This study adds to a body of knowledge about how to evaluate the use of IVT in high-risk offshore operations by looking at the behavioural readiness of freelancers and new hires.

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Methodology

Research Design

This study employed a quantitative, cross-sectional research design to examine the experiential and behavioural factors influencing Training Satisfaction among offshore oil and gas personnel participating in Immersive Virtual Training (IVT). The investigation focused on the relationships between Perceived Ease of Use (PEOU), Perceived Enjoyment (PE), Training Engagement (TE), and Training Satisfaction (TS), with Training Engagement examined as a mediating variable. A cross-sectional approach was considered appropriate because it enables the systematic examination of relationships among psychological and behavioural constructs at a specific point in time, providing a suitable foundation for hypothesis testing and structural modelling (Creswell & Creswell, 2018). However, this approach does not establish causal relationships.

A two-stage analytical approach was adopted to strengthen the methodological rigour and predictive assessment of the study. The first stage involved preliminary data screening and descriptive statistical analysis using IBM SPSS Statistics version 26.0. The second stage employed Partial Least Squares Structural Equation Modelling (PLS-SEM) using SmartPLS 4 to evaluate the measurement model, structural relationships, mediation effects, and predictive performance. PLS-SEM was selected because of its suitability for analysing relationships among latent constructs, assessing explanatory power, and evaluating predictive performance in behavioural research (Hair et al., 2022). Data were collected after respondents had completed an offshore immersive virtual training programme, ensuring that their evaluations were based on direct experience with the training environment.

Population and Sample

The target population consisted of newly hired personnel and employees newly assigned to offshore installations within the Malaysian oil and gas industry. A criterion-based purposive sampling strategy was employed, combined with total enumeration of the accessible organisational sampling frame, because respondents were required to have participated in the relevant immersive virtual training programme. This approach ensured that participants possessed direct experience of the training system and could provide meaningful assessments of its usability, enjoyment, engagement, and overall satisfaction.

A total of 157 questionnaires were distributed electronically. Following data screening and verification, 154 valid responses were retained for analysis, representing a response rate of 98.1%. The individual trainee served as the unit of analysis. The final sample provided the empirical basis for examining the proposed relationships among the latent constructs and evaluating the explanatory and predictive capabilities of the research model.

Research Instrument

Data were collected using a structured, self-administered questionnaire comprising two main sections. The first section gathered demographic and employment-related information, including respondents' gender, age, educational background, previous offshore experience, and job category. The second section assessed four latent constructs: Perceived Ease of Use

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(PEOU), Perceived Enjoyment (PE), Training Engagement (TE), and Training Satisfaction (TS).

The measurement items were adapted from established academic literature to ensure theoretical relevance and consistency with previous research. Perceived Ease of Use was operationalised based on Davis (1989), while Perceived Enjoyment was informed by Davis et al. (1992). Training Engagement was adapted from Fredricks et al. (2004), Saks (2006), and Saks and Gruman (2018), reflecting cognitive, emotional, and behavioural involvement in learning activities. Training Satisfaction was measured using items adapted from the Training Satisfaction Questionnaire examined by Sanduvete-Chaves et al. (2013), providing a theoretical foundation for evaluating participants' satisfaction with the training experience.
All measurement items were assessed using a seven-point Likert scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree). Prior to the main data collection, the questionnaire underwent expert review, pre-testing, and pilot testing to evaluate item clarity, content relevance, and contextual suitability for offshore immersive virtual training. These procedures helped ensure that the measurement instrument adequately represented the constructs investigated in the study.

Data Analysis

Data analysis was conducted in two stages using IBM SPSS Statistics version 26.0 and SmartPLS 4. SPSS was employed for preliminary data screening, descriptive statistics, and assessment of the respondents' demographic characteristics. Descriptive analyses included frequencies, percentages, means, and standard deviations to summarise participant characteristics and response patterns. Preliminary diagnostic procedures were also conducted to examine data distribution, multicollinearity, and potential common method variance before proceeding to structural equation modelling.

SmartPLS 4 was subsequently used to evaluate the measurement and structural models through Partial Least Squares Structural Equation Modelling (PLS-SEM). The measurement model was assessed using indicator loadings, Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE) to establish indicator reliability, internal consistency, and convergent validity. Following Hair et al. (2022), composite reliability values above 0.70 and AVE values above 0.50 were used as general assessment criteria. Discriminant validity was evaluated using the Fornell–Larcker criterion, cross-loadings, and the Heterotrait–Monotrait (HTMT) ratio, consistent with the recommendations of Henseler et al. (2015).

The structural model was evaluated through variance inflation factors (VIF), coefficients of determination (R^2), effect sizes (f^2), predictive relevance (Q^2), and standardised path coefficients. These assessments were conducted to determine the explanatory capabilities of the proposed model and the strength of the relationships between Perceived Ease of Use, Perceived Enjoyment, Training Engagement, and Training Satisfaction. Bootstrapping with 10,000 resamples was employed to evaluate the statistical significance of direct and indirect relationships through path coefficients, t-statistics, p-values, and confidence intervals. The mediating role of Training Engagement was assessed using the bootstrapping-based approach recommended by Preacher and Hayes (2008).

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To strengthen the predictive assessment, the study incorporated PLSpredict and the Cross-Validated Predictive Ability Test (CVPAT). PLSpredict was employed to evaluate out-of-sample predictive performance following Shmueli et al. (2019), while CVPAT was used to assess predictive performance through comparisons with alternative benchmark models, consistent with Liengaard et al. (2021). Prediction losses generated by the PLS model were compared with those of the Indicator Average (IA) and Linear Model (LM) benchmarks. This approach enabled the study to assess both explanatory relationships and predictive performance, strengthening the managerial relevance of the findings for immersive virtual training design and workforce development.

Ethical considerations were addressed throughout the research process. Organisational permission was obtained before data collection, and respondents provided informed consent prior to participation. Participation was voluntary, and confidentiality, anonymity, and secure data handling procedures were maintained to protect respondents' information. These measures supported responsible data collection and ethical research practices.

Results

A total of 154 valid answers were looked at to find out what behaviours offshore workers did before immersive virtual training (IVT). The descriptive analysis showed that all theories agreed on a lot of things, with mean scores ranging from 6.25 to 6.32. There were five averages: Platform Familiarity (PF) (M = 6.32, SD = 0.46), IVT (M = 6.31, SD = 0.51), Safety Compliance (SC) (M = 6.27, SD = 0.42), Training Engagement (TE) (M = 6.26, SD = 0.56), and Operational Readiness (OR) (M = 6.25, SD = 0.53). Cronbach's alpha values for all constructs were between 0.721 and 0.799, which is an acceptable level of internal consistency (See Table 1: Descriptive Statistics and Reliability for Key Constructs).

Table 1. Descriptive Statistics and Reliability for Key Constructs

Construct	Mean	Std. Deviation	Cronbach's Alpha
Safety Compliance (SC)	6.27	0.42	0.721
Platform Familiarity (PF)	6.32	0.46	0.748
Operational Readiness (OR)	6.25	0.53	0.799
Training Engagement (TE)	6.26	0.56	0.771
Immersive Virtual Training (IVT)	6.31	0.51	0.789

A two-step analytical process was used to get the answers. Exploratory Factor Analysis (EFA) with SPSS and Promax rotation was done in the first step to look at the structure and number of dimensions of the constructs. With a Kaiser-Meyer-Olkin (KMO) value of 0.824, the results showed that the samples were well chosen, and Bartlett's Test of Sphericity was very strong (χ^2 = 2349.17, p <.001). All factor loadings were higher than 0.60, which proved convergent validity and put an end to worries about cross-loading. The hypothesised structure was supported by five separate factors (See Table 2: Summary of Exploratory Factor Analysis (Promax Rotation)

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Table 2: Summary of Exploratory Factor Analysis (Promax Rotation)

Construct	Number of Items	KMO Value	Bartlett's χ^2 (df)	Sig.	Loading Range
Safety Compliance (SC)	4	0.824	2349.17 (276)	.000	0.657–0.826
Platform Familiarity (PF)	3				0.603–0.802
Operational Readiness (OR)	5				0.622–0.798
Training Engagement (TE)	6				0.661–0.859
Immersive Virtual Training (IVT)	4				0.673–0.848

We found that IVT was significantly and positively linked to three key behaviours: Safety Compliance (r = 0.547, p <.01), Operational Readiness (r = 0.428, p <.01), and Training Engagement (r = 0.524, p <.01). This means that there are moderate to strong linear relationships between the outcomes of immersive training and these behaviours (See Table 3: Correlations Between IVT and Key Independent Variables).

Table 3: Correlations Between IVT and Key Independent Variables

Variable	Correlation with IVT
Training Engagement (TE)	0.524**
Safety Compliance (SC)	0.547**
Operational Readiness (OR)	0.428**

Note: **p** < .01 (2-tailed)

SmartPLS 4 was used with a bootstrapping method of 10,000 resamples to test the structural relationships even more. This gave reliable estimates of the significance levels for both direct and indirect paths. The most important factor that predicted IVT was training engagement (TE) (^{2} = 0.615, t = 10.224, p <.001), which shows that higher engagement made immersive training much more effective. Safety Compliance (SC) had a big direct effect on IVT as well (^{2} = 0.224, t = 2.311, p =.021). Platform Familiarity (PF) and Operational Readiness (OR), on the other hand, did not have any major direct effects on IVT. To show how they indirectly affect IVT through engagement, SC (β = 0.163, t = 2.092, p =.036) and OR (β = 0.546, t = 8.494, p <.001) both had big positive effects on TE (See Table 4: Structural Model Path Coefficients (SmartPLS)).

Table 4: Structural Model Path Coefficients (SmartPLS)

Path	Beta (β)	t-value	p-value	Significance
TE → IVT	0.615	10.224	0.000	Highly Significant
SC → IVT	0.224	2.311	0.021	Significant
PF → IVT	0.065	0.770	0.441	Not Significant
OR → IVT	0.052	0.763	0.446	Not Significant
SC → TE	0.163	2.092	0.036	Significant

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Path	Beta (β)	t-value	p-value	Significance
OR → TE	0.546	8.494	0.000	Highly Significant

The model explained 55.8% of the variation in IVT and 40.8% of the variation in TE, which means it had a lot of predictive power for IVT and a modest amount of predictive power for TE (See Figure 1: Coefficient of Determination (R^2) for Endogenous Constructs).

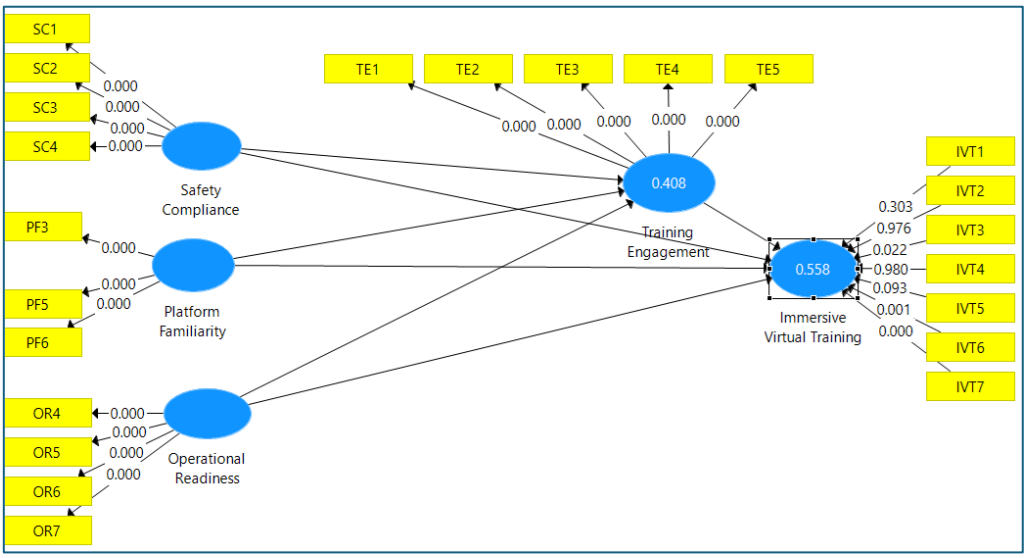

Figure 1: Coefficient of Determination (R^2) for Endogenous Constructs

Strong reliability and convergent validity were shown by the measuring model. The Composite Reliability (CR) numbers, which ranged from 0.794 to 0.842, were all higher than the 0.7 threshold. Average Variance Extracted (AVE) was between 0.515 and 0.563, which means it met the criteria for convergent validity. The Cronbach's Alpha scores were between 0.612 and 0.799, which means the internal consistency was good (Table 5). The IVT model was formatively created, so AVE and CR did not apply to its indicators. However, multicollinearity tests showed that all outer and inner VIF values were within acceptable ranges, which supported the model's structural soundness. Overall, these results show that the suggested model is sound and show how training engagement is important for connecting readiness, safety compliance, and the success of immersive training.

Table 5. Reliability and Convergent Validity of Reflective Constructs

Construct	Composite Reliability (CR)	Average Variance Extracted (AVE)	Cronbach's Alpha
Safety Compliance (SC)	0.809	0.515	0.686
Platform Familiarity (PF)	0.794	0.563	0.612
Operational Readiness (OR)	0.824	0.541	0.719
Training Engagement (TE)	0.842	0.516	0.771

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Discussion

This research looked at the behavioural factors that affect the results of immersive virtual training (IVT) for contractors and new hires working in offshore oil and gas. We used two types of analysis: first, exploratory and descriptive analysis based on SPSS; second, structure modelling with SmartPLS. The measurement model was strong, as shown by all factor loadings being higher than the acceptable level of 0.6, a high Kaiser-Meyer-Olkin (KMO) value of 0.824, and a significant Bartlett's Test of Sphericity ($\chi^2 = 2349.17$, $p < .001$), which means it was suitable for factor analysis. These results showed that the structure of the construct was based on reality and supported the need for more modelling.

The descriptive statistics showed that all the constructs were strongly agreed upon. Platform Familiarity (PF) had the highest mean score (M = 6.32), followed by Immersive Virtual Training (IVT) (M = 6.31), Safety Compliance (SC) (M = 6.27), Training Engagement (TE) (M = 6.26), and Operational Readiness (OR) (M = 6.25). Cronbach's alpha values for all constructs went from 0.721 to 0.799, which showed that the scale was reliable and consistent within itself. The Pearson correlation results showed that IVT was significantly and positively linked to TE ($r = 0.524$, $p < .01$), SC ($r = 0.547$, $p < .01$), and OR ($r = 0.428$, $p < .01$). This suggests that there are meaningful linear relationships between the outcomes of immersive training and the behaviours that can be predicted by them.

SmartPLS analysis helped us learn more about the suggested model's structural relationships. It was found that training engagement (TE) was the best predictor of IVT ($\beta = 0.615$, $t = 10.224$, $p < .001$), which means that people who were more emotionally and cognitively involved in the training reported much higher levels of training success. It was found that Safety Compliance (SC) had a direct and significant effect on IVT ($\beta = 0.224$, $t = 2.311$, $p = .021$). This suggests that following safety rules makes training events seem more valuable. PF (Platform Familiarity) and OR (Operational Readiness) did not have significant direct effects on IVT. However, SC ($\beta = 0.163$, $t = 2.092$, $p = .036$) and OR ($\beta = 0.546$, $t = 8.494$, $p < .001$) did have significant effects on TE. These results emphasise the role of participation as a mediator. They show that employees who follow safety rules and feel ready to go are more likely to participate deeply in IVT, which in turn makes training seem more useful.

With R^2 values of 0.558 for IVT and 0.408 for TE, the model had a lot of power to explain things. The findings show that the behavioural constructs explain more than half of the variation in IVT outcomes and a large part of the variation in participation levels. This supports the usefulness of the proposed theoretical framework for offshore immersive training. It is important to note that IVT was modelled as a formative construct to show that its aspects (such as presence, interactivity, and realism) cannot be switched around. Multicollinearity tests showed that all variance inflation factor (VIF) values were within acceptable ranges. This made the formative definition even more reliable. There was also proof that the reflective structures were reliable and valid, with Composite Reliability (CR) values between 0.794 and 0.842, Average Variance Extracted (AVE) values between 0.515 and 0.563, and Cronbach's alpha values meeting the requirement of 0.6 or higher.

To put in a nutshell, these results strongly suggest that increasing involvement is a key part of making immersive virtual training work better. Safety behaviour and readiness not only directly affect how well training works, but they also make people more interested, which is a very important middle ground. The fact that Platform Familiarity didn't have a big effect suggests

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that while intuitive system design is important, behavioural and psychological readiness are more important for training to go well in complex offshore settings. These ideas add to what's already been written about virtual reality in training by giving us a model based on behaviour that is backed by both formative and reflective indicators and proven by strong statistical methods.

Conclusion

In this study, the behaviours that lead to immersive virtual training (IVT) engagement were looked at in offshore oil and gas workers, focussing on new hires and third-party freelancers. The study used well-known theories like the Job Demands–Resources (JD-R) model and the Technology Acceptance Model (TAM) to look at how safety compliance, platform familiarity, and operational readiness can be used to explain differences in training engagement and IVT results. We used two different ways to look at the data: exploratory factor analysis (EFA), descriptive statistics, and correlational analysis all with SPSS; and advanced structural modelling with Partial Least Squares Structural Equation Modelling (PLS-SEM) in SmartPLS. Key results showed that training engagement is a key factor that affects how well IVT works. Safety compliance had both direct and indirect effects on IVT as an independent variable, while operational readiness had a strong indirect effect through involvement. Even though platform familiarity got the highest mean score, it didn't significantly predict IVT in the final structural model. This suggests that familiarity may not be enough on its own without safety- or motivational-related feedback. The explained variance ($R^2 = 0.558$ for IVT and $R^2 = 0.408$ for TE) shows that the behavioural model is strong.

The evaluation model was very reliable and valid; all of the reflective constructs met the requirements for composite reliability, convergent validity (AVE), and discriminant validity (Fornell-Larcker and HTMT). Multicollinearity diagnostics and large outer weights were also used to confirm the formative specification of IVT. This shows that immersive training is an outcome variable that has many dimensions.

These results are important for both theory and practice. Theoretically, this study helps us learn more about how engagement affects behaviour when it comes to using virtual learning tools. In practice, it gives overseas training providers a tried-and-true way to check if employees are ready, make training programs better, and find areas where employees aren't following through or being engaged. In particular, the framework gives us useful information on how to improve the transfer of training, especially for contractors and newbies who often work in uncertain situations and don't know much about offshore systems.

In the future, researchers may look into how IVT is used in a wider range of offshore jobs or compare how people behave when they are trained in an immersive or traditional way. Also, longitudinal studies could help us learn more about how long-term involvement affects the ability to remember things and do well at work overtime. In the end, this study helps make high-risk workplaces safer and more successful by putting IVT deployment on solid behavioural science and validated measurement.

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