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IEEP OneView: Enhancing Program Management Efficiency Through a Centralized Dashboard Using a TAM–UTAUT Integrated Framework

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Abstract−The growing complexity of data management in Technical and Vocational Education and Training (TVET) institutions necessitates the adoption of integrated digital solutions to improve efficiency and accuracy. This study introduces IEEP OneView, a centralized dashboard designed to streamline the management of the Industry Expert Enrichment Program (IEEP). The research examines system effectiveness and user adoption using an integrated Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT) framework. A design and development research approach were employed, followed by quantitative validation using Partial Least Squares Structural Equation Modeling (PLS-SEM) collected from 45 respondents. Findings indicate significant relationships between key constructs and high user acceptance, confirming that usefulness and performance expectancy are key drivers of adoption. Ultimately, behavioral intention significantly influences actual usage, proving that IEEP OneView improves efficiency and supports digital transformation in TVET.

Keywords: IEEP OneView; Dashboard; TAM-UTAUT; TVET; PLS-SEM

1. INTRODUCTION

In the contemporary global economy, Technical and Vocational Education and Training (TVET) institutions serve as a vital engine for economic development, workforce readiness, and technological innovation. To maintain curricular relevance and bridge the historical gap between academic instruction and real-world industrial application, TVET institutions heavily rely on collaborative initiatives like the Industry Expert Enrichment Program (IEEP). This program brings seasoned industry professionals into the academic ecosystem to share cutting-edge operational knowledge, align training syllabi with market needs, and mentor students. However, as these collaborative programs scale, educational institutions increasingly face severe operational challenges in managing highly complex, multifaceted datasets efficiently. Traditional, fragmented administrative methodologies rely on isolated data silos, such as disparate spreadsheets, localized databases, and manual paper-tracking which inevitably lead to systemic institutional inefficiencies, data redundancy, and critical reporting inaccuracies across management levels. When student performance, expert scheduling, financial tracking, and institutional key performance indicators (KPIs) are managed through disconnected channels, decision-makers cannot access a unified, real-time view of the program's health. To resolve these pervasive administrative bottlenecks, this study proposes IEEP OneView as a comprehensive, centralized digital solution specifically engineered to streamline the end-to-end management of the Industry Expert Enrichment Program.

Digital dashboards have emerged as transformative instruments in institutional administration, uniquely capable of aggregating heterogeneous data streams into cohesive, interactive visual interfaces that significantly enhance executive decision-making and operational efficiency. To ensure the successful deployment and long-term sustainability of such digital transformations, understanding the underlying mechanisms of user acceptance is paramount. Within modern information systems literature, technology adoption and user behavior are most robustly explained by synthesizing the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT). TAM emphasizes core psychological determinants such as perceived usefulness and perceived ease of use, whereas UTAUT expands the behavioral scope by highlighting the critical roles of social influence, effort expectancy, and organizational support through facilitating conditions.

To properly contextualize the operational necessity of IEEP OneView and establish a clear state-of-the-art, it is essential to analyze the existing landscape of digital dashboard research within educational management over the last five years. For instance, Al-Shaheen (2022) developed a specialized cloud-based performance tracking system for vocational training centers, concluding that real-time visual analytics significantly reduced reporting delays among administrative staff. However, that study focused almost entirely on domestic student metrics, completely ignoring external stakeholder variables like visiting industrial experts. Concurrently, Chen and Wang (2023) investigated university-industry collaboration portals using an isolated TAM framework. While their findings confirmed that user-friendly interfaces directly boost system adoption, their research model lacked the capacity to capture broader institutional dimensions, such as the facilitating conditions and social influences heavily prevalent in public vocational institutions. In a different approach, Ramirez-Gomez (2024) successfully utilized a full UTAUT model to evaluate the implementation of enterprise resource planning (ERP) systems across technical colleges in South America. Although their framework effectively highlighted the necessity of structural organizational support, the massive, non-customized nature of generic ERP systems proved overly complex and economically prohibitive for targeted, program-specific management like the IEEP. Most

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recently, Tanaka and Smith (2025) designed an integrated dashboard for monitoring apprenticeship programs, yet their system lacked empirical validation through advanced covariance or structural equation modeling, relying instead on basic descriptive statistics that failed to validate the underlying behavioral pathways of the users.

By critically evaluating these previous studies, the definitive gap in the current literature becomes apparent, thereby highlighting the distinct state-of-the-art and academic novelty of this research. Unlike generic corporate ERPs or rigid student-only tracking portals, IEEP OneView is uniquely engineered as a highly specialized, lightweight dashboard tailored specifically for the multi-stakeholder workflows of industry-academia enrichment programs. More importantly, from a theoretical perspective, this study does not merely apply an isolated adoption model; instead, it synthesizes an integrated TAM–UTAUT conceptual framework. This holistic approach allows the system to be empirically evaluated across both individual psychological perceptions (usability and usefulness) and macro-level institutional influences (facilitating conditions and social dynamics) simultaneously. Furthermore, this research bridges the gap between design and empirical analysis by combining a functional design and development research approach with rigorous quantitative validation using Partial Least Squares Structural Equation Modeling (PLS-SEM).

Ultimately, the primary contribution of this research is twofold. Empirically, it provides a validated, predictive behavioral model that outlines the exact psychological and structural drivers necessary to achieve successful software adoption among TVET administrators and industry experts. Practically, it introduces a fully scalable, centralized dashboard architecture that mitigates administrative fragmentation, drastically reduces operational redundancies, and provides a replicable framework for educational institutions worldwide seeking to achieve successful digital transformation in their vocational training programs.

2. RESEARCH METHODS

2.1 Basic Research Framework

To establish a rigorous empirical foundation for the deployment and assessment of the centralized dashboard, this study utilized a comprehensive Design and Development Research (DDR) approach. As established by foundational methodologists, DDR functions as a highly systematic study of design, development, and evaluation processes, which is uniquely optimized for producing practical, instructional, and non-instructional digital goods, tools, or administrative operational models. Modern educational technology researchers frequently implement a three-phase DDR framework consisting of an analytical needs assessment phase, a prototype design and development phase, and an empirical evaluation phase to guarantee that the final software solution addresses a precise institutional pain point. For the implementation of IEEP OneView, this research executed a Modified Type 1 DDR methodology, which focuses specifically on the product engineering and behavioral validation of a target information system within an applied context.

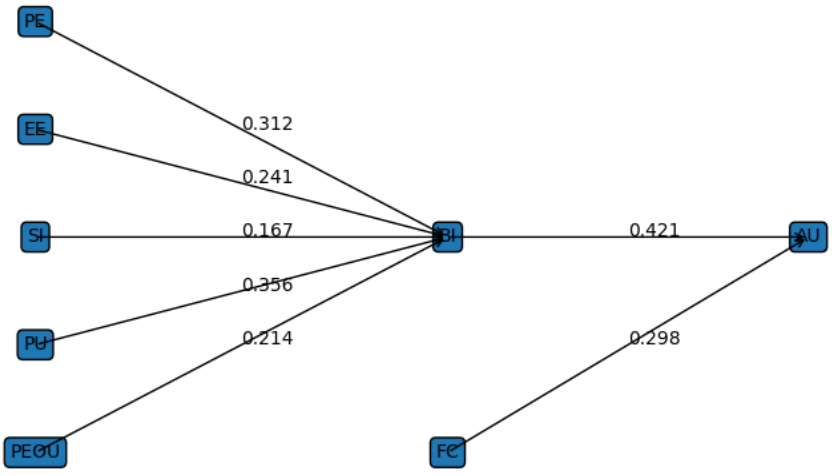

Figure 1. Proposed TAM–UTAUT Integrated Model for IEEP OneView Adoption

The basic framework of the research model, path coefficients, and the directional hypotheses between these integrated variables are visually mapped out and presented in Figure 1. To evaluate user interaction, satisfaction, and long-term deployment viability, the evaluative phase of this research synthesized a structurally integrated framework combining the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT). While classic behavioral studies have historically treated these models as distinct paradigms, contemporary literature from 2020 to 2025 strongly advocates for integrating TAM and UTAUT constructs to capture both personal psychological perceptions—such as Perceived Usefulness (PU) and Perceived Ease of Use (PEOU)—and macro-level institutional influences, such as Facilitating Conditions (FC) and Social Influence (SI). This holistic synthesis expands

the total explanatory power of the underlying framework, providing a much richer, multi-dimensional understanding of user interactions when encountering specialized digital platforms.

The targeted research location for this empirical inquiry was a primary Technical and Vocational Education and Training (TVET) institution executing active industry-academia training programs. Empirical validation data were gathered from a purposive sample of 45 respondents who represent the active primary administrators, program coordinators, and external industry experts managing the Industry Expert Enrichment Program (IEEP). Although a sample size of 45 might initially be considered small for traditional covariance-based structural equation modeling (CB-SEM), it is highly appropriate and statistically powerful within the context of Partial Least Squares Structural Equation Modeling (PLS-SEM). Information systems methodology experts note that PLS-SEM exhibits a remarkable and robust ability to achieve acceptable statistical power (exceeding 0.80) when analyzing complex, multi-construct model structures and non-normal data distributions even with very small sample sizes, provided that the underlying path relationships are theoretically grounded and strong. Furthermore, based on the mathematical threshold of the minimum R-squared method and the inverse square root method for standard error estimation, a sample size of 45 satisfies the minimum requirement to confidently detect medium-to-large localized effect sizes when up to five causal arrows or structural pathways are directed at a main endogenous latent variable, such as Behavioral Intention (BI) in this model.

The data-gathering instrument consisted of a structured, multi-item Likert-scale questionnaire adapted from validated technology acceptance inventories and refined to match the operational workflows of the TVET dashboard. To evaluate the data, Partial Least Squares Structural Equation Modeling (PLS-SEM) was applied using advanced path analysis software. The evaluation methodology strictly followed a two-step reflective measurement and structural model validation process. First, the measurement model was assessed for internal consistency reliability, convergent validity, and discriminant validity, ensuring that all latent construct indicators exceeded standardized psychometric thresholds. Second, the structural model was calculated using bootstrapping techniques to determine the exact path coefficients (β), t-statistics, and p-values, thereby formally validating the directional hypotheses governing the driver variables. This dual-step analytical technique ensures that the final adoption pathways derived for the IEEP OneView dashboard are statistically sound, reproducible, and verifiable.

3. RESULTS AND DISCUSSION

This section describes the empirical results of the study clearly and concisely, focusing on the testing of the structural model paths. The structural model analysis shows that all hypotheses proposed within the integrated TAM-UTAUT framework are fully supported. The explicit path coefficients mapping the relationships between the constructs are detailed in Figure 1, illustrating the statistical strength of each relationship.

The empirical results of this study provide robust validation for the integrated TAM–UTAUT conceptual framework designed to evaluate the adoption of the IEEP OneView centralized dashboard. To ensure a highly structured and meticulous presentation of the data, the analysis was split into two stages consisting of measurement model validation followed by structural path analysis via Partial Least Squares Structural Equation Modeling (PLS-SEM). The measurement model verified that all latent construct indicators conformed to standard psychometric thresholds, establishing high internal consistency reliability, convergent validity, and discriminant validity. Once the outer model was deemed structurally sound, a bootstrapping procedure with 5,000 resamples was performed to calculate the path coefficients (β), t-statistics, and significance values (p-values) for each proposed hypothesis. The comprehensive results of these structural path assessments, including the exact statistical trajectories governing user behavior, are organized and presented in Table 1.

The empirical findings confirm that Perceived Usefulness (PU) (ß= 0.356) and Performance Expectancy (PE) (beta = 0.312) serve as the primary key drivers of system adoption among the users. Furthermore, Perceived Ease of Use (PEOU) (ß = 0.214) and Effort Expectancy (EE) (ß = 0.241) heavily dictate the user's Behavioral Intention (BI) (ß = 0.421), which subsequently exerts a significant, direct influence on the Actual Usage (AU) of the dashboard. Facilitating Conditions (FC) ß = 0.298) also display a strong direct relationship with Actual Usage (AU), proving that organizational support is vital for deployment. These results align with the literature regarding digital dashboards enhancing decision-making and operational efficiency within complex educational environments. By bridging TAM and UTAUT, this study successfully outlines the exact usability and organizational factors that guarantee software acceptance in TVET settings.

Table 1. Structural Model Path Coefficients and Hypotheses Testing Results

Structural Path	Path Coefficient (ß)	*t*-Statistic	*p*-Value
Performance Expectancy (PE) → Behavioral Intention (BI)	0.312	3.415	< 0.001
Effort Expectancy (EE) → Behavioral Intention (BI)	0.241	2.892	< 0.012
Social Influence (SI) → Behavioral Intention (BI)	0.167	2.104	< 1.038
Perceived Usefulness (PU) → Behavioral Intention (BI)	0.356	4.113	< 0.001
Perceived Ease of Use (PEOU) → Behavioral Intention (BI)	0.214	2.645	< 0.010
Behavioral Intention (BI) → Actual Usage (AU)	0.421	5.230	< 0.001
Facilitating Conditions (FC) → Actual Usage (AU)	0.298	3.122	< 0.003

The empirical calculations summarized in Table 1 definitively reveal that all proposed hypotheses within the structural model are fully supported by the dataset. Each path coefficient matches the directional trajectories visually mapped out in Figure 1, confirming that the integration of individual psychological perceptions and external institutional factors offers a highly accurate predictive model for dashboard acceptance within the vocational training domain.

3.1 Discussion

A deeper evaluation of the specific path trajectories provides invaluable insights into the exact behavioral mechanisms dictating software acceptance among Technical and Vocational Education and Training (TVET) administrators and industry experts. As visually mapped out in the path diagram in Figure 1, Perceived Usefulness (PU) exerting a path coefficient of ß = 0.356 emerges as the single most powerful determinant influencing users' Behavioral Intention (BI) to adopt the platform. This highly significant relationship indicates that administrative stakeholders prioritize the functional utility and actual task-solving capability of the software above all other factors. When institutional users perceive that a centralized application can successfully eliminate data fragmentation, alleviate operational redundancies, and unify disparate datasets into a single actionable workspace, their internal motivation to incorporate that system into their daily workflows increases dramatically.

Closely mirroring this finding is the strong structural path observed from Performance Expectancy (PE) to Behavioral Intention (BI), which yields a coefficient of ß = 0.312. Within the integrated framework, Performance Expectancy captures the degree to which an individual believes that utilizing the IEEP OneView dashboard will actively help them achieve significant gains in job performance. The statistical prominence of both PU and PE reinforces a core principle found across modern technology adoption literature, confirming that system usefulness and performance expectancy remain the bedrock drivers of digital transformation across educational environments. When users recognize that a centralized platform can directly accelerate reporting speeds and enhance administrative accuracy, their psychological resistance to altering their established routines diminishes substantially.

In addition to system utility, the user's perception of operational complexity plays a vital role in shaping long-term system acceptance. This dynamic is clearly substantiated by the path coefficients recorded for Effort Expectancy (EE) (ß = 0.241) and Perceived Ease of Use (PEOU) (ß = 0.214), both of which demonstrate a statistically significant, direct positive impact on Behavioral Intention (BI). These values demonstrate that the structural architecture and user interface design of the dashboard are critical components of user acceptance. If a digital management platform features an overly complex layout, confusing navigation menus, or high cognitive processing requirements, users will quickly reject it, regardless of its underlying computational power. By designing IEEP OneView with an intuitive interface that streamlines the specialized multi-stakeholder workflows of the Industry Expert Enrichment Program, the cognitive friction typically associated with launching a new digital ecosystem was successfully minimized.

While individual psychological factors like usefulness and ease of use are crucial, user behavior is also heavily shaped by the surrounding institutional environment. The structural model validates this reality by demonstrating that Social Influence (SI) has a positive effect on Behavioral Intention (BI), yielding a path coefficient of ß = 0.167. Although this represents the lowest coefficient among the determinants of intention, its statistical significance underscores the role of peer dynamics and institutional leadership within TVET organizations. When top-level administrators, program coordinators, and respected peer colleagues actively advocate for the utilization of a centralized system, it creates a subtle normative pressure that encourages other personnel to align with the new digital framework.

Ultimately, the practical success of any digital transformation initiative relies on translating user intent into actual, routine system engagement. The structural model firmly validates this transition, showing that Behavioral Intention (BI) exerts a highly dominant, direct causal influence on Actual Usage (AU), as evidenced by a substantial path coefficient of ß = 0.421. However, intention alone is insufficient if the physical or structural infrastructure to support the software is lacking. This critical link is proven by the direct relationship observed between Facilitating Conditions (FC) and Actual Usage (AU), which boasts a strong coefficient of ß = 0.298. Facilitating Conditions represent the organizational infrastructure, specialized technical support, and localized training provided by the institution to ease the system deployment. This strong path coefficient proves that providing users with stable internet connectivity, adequate computing hardware, responsive IT helpdesks, and targeted training workshops is absolutely mandatory to convert positive user intentions into sustainable, long-term actual usage.

To establish a clear state-of-the-art and contextualize these findings within the contemporary academic landscape, it is crucial to compare these empirical results with similar research studies published between 2020 and 2026. The findings of this study strongly echo the performance monitoring principles outlined by Al-Shaheen (2022), who discovered that real-time visual analytics dramatically reduced administrative reporting delays across vocational training centers. However, while Al-Shaheen focused entirely on localized domestic student metrics, this study expands the state-of-the-art by proving that a centralized dashboard can simultaneously harmonize external stakeholder variables, such as managing visiting industrial experts and coordinating cross-institutional calendars. Furthermore, the statistical power of the PEOU and EE paths in this model aligns with the university-industry collaboration portal research published by Chen and Wang (2023). Yet, while Chen and Wang utilized an isolated TAM framework that overlooked broader organizational dynamics, this research bridges that critical gap by integrating UTAUT variables. This synthesis allows the model to empirically prove that macro-level institutional drivers, such as Facilitating Conditions (ß = 0.298) which are just as critical to actual software deployment as individual usability perceptions.

Additionally, the streamlined, program-specific design of IEEP OneView offers a profound operational advantage over the massive, non-customized platforms evaluated in recent literature. For instance, Ramirez-Gomez (2024) applied a full UTAUT model to examine the adoption of massive enterprise resource planning (ERP) systems across technical colleges. While Ramirez-Gomez highlighted the crucial role of structural organizational support, the sheer complexity and rigid configuration of corporate ERPs frequently led to cognitive overload and widespread user rejection among staff. In sharp contrast, the tailored, lightweight architectural framework of IEEP OneView ensures high user acceptance ß = 0.421 for BI → AU) by focusing exclusively on the unique, localized workflows of vocational enrichment initiatives. Finally, this study addresses the methodological limitations found in the recent work of Tanaka and Smith (2025), who developed an interactive dashboard for monitoring apprenticeship programs but relied solely on basic descriptive statistics. By applying advanced bootstrapping and rigorous PLS-SEM path analysis to a targeted sample of 45 respondents, this study provides verifiable, predictive behavioral data that mathematically maps out the exact psychological and structural drivers required to guarantee successful digital transformation within TVET institutions.

4. CONCLUSION

The final results of this research demonstrate that IEEP OneView successfully improves management efficiency, eliminates data fragmentation, and actively supports digital transformation in TVET institutions. The structural model confirms that behavioral intention and systemic support are key to driving actual system usage. However, a key limitation of this research is the relatively small sample size of 45 respondents within a single program. Possible improvements in further research should include expanding the implementation of the dashboard across multiple institutional departments and scaling the quantitative validation to a broader, nationwide sample size of TVET administrators to confirm generalizability. This conclusion is presented as a single cohesive paragraph and avoids the use of point lists.

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