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Implementing the Kirkpatrick model in job training management: A qualitative case study at BBPVP Semarang

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ABSTRACT

Although the Kirkpatrick model has been widely adopted to evaluate training effectiveness, its application has predominantly focused on post-training assessment rather than its strategic integration into planning, implementation, evaluation, and continuous improvement throughout the training management cycle. This study aimed to examine how the Kirkpatrick model functions as an integrated job training management framework for enhancing workforce readiness and organizational productivity at the Semarang Vocational Development and Productivity Center (BBPVP). A qualitative case study design was employed involving nine purposively selected participants. Data were collected through in-depth interviews, observations, and document analysis and analyzed using the Miles and Huberman interactive model with source triangulation to ensure credibility. The findings indicate that systematic industry-based planning, competency-based instructional implementation, and integrated multi-level evaluation collectively strengthened participant competencies, workplace readiness, and organizational productivity. However, several challenges remained, including variations in instructional quality, limited training facilities, fragmented evaluation systems, and insufficient post-training monitoring. The findings further reveal that the four Kirkpatrick levels function as interconnected managerial feedback mechanisms linking planning, instructional implementation, behavioral transfer, organizational outcomes, and continuous program improvement. This study reconceptualizes the Kirkpatrick model as an integrated vocational training management framework rather than merely a post-training evaluation model, thereby extending its theoretical application in Technical and Vocational Education and Training (TVET) and workforce development.

INTRODUCTION

The rapid advancement of digital technologies, industrial automation, and the transition toward Industry 4.0 have fundamentally transformed the competencies required in contemporary labor markets, particularly by intensifying skill gaps and increasing the demand for digital, technical, and adaptive capabilities (Eger & Žižka, 2024; Rikala et al., 2024). Organizations are therefore no longer expected merely to recruit qualified employees but also to continuously develop their workforce through systematic learning, upskilling, and competency enhancement (Vong et al., 2025). In this context, human capital has become a strategic organizational asset that contributes to adaptability, innovation, and performance (Aman-Ullah et al., 2022). Consequently, workforce development has shifted from an operational human resource function to a strategic investment aimed

at sustaining productivity, strengthening organizational readiness, and responding to increasingly dynamic industrial demands (Vong et al., 2025).

Workforce productivity has become one of the primary indicators of organizational performance because it reflects employees' ability to achieve expected quality and quantity standards while adapting to technological and organizational changes (Arefin et al., 2021). Previous studies have shown that employee productivity is influenced by multiple factors, including professional competence, work discipline, organizational support, and continuous skills development (Mathis et al., 2017; Sudarma, 2015; Zivin & Neidell, 2011). Among these factors, job training has consistently been recognized as one of the most effective approaches for improving employee competence, strengthening work performance, and supporting organizational competitiveness (Hosen et al., 2024; Vong et al., 2025). However, training can only generate meaningful organizational outcomes when it is carefully planned, effectively implemented, and systematically evaluated (Fegade & Sharma, 2023).

Within the Indonesian context, improving the quality of human resources has become a national priority to strengthen economic competitiveness and prepare a workforce capable of responding to rapid technological transformation and evolving industry requirements (ASEAN Secretariat, 2022). Government-led vocational training institutions, including the Balai Besar Pelatihan Vokasi dan Produktivitas (BBPVP), play a strategic role in supporting workforce development by delivering competency-based training programs that bridge the gap between labor market demands and workforce capabilities (Urrofik et al., 2025). Beyond equipping participants with technical competencies, these institutions are expected to foster employability through the development of adaptive skills, problem-solving abilities, teamwork, communication, and lifelong learning attitudes, enabling graduates to remain competitive and resilient in increasingly dynamic employment environments (Febriana et al., 2023; Lukitasari & Suhartini, 2025; Tushar & Sooraksa, 2023).

From the perspective of TVET, vocational training is not merely intended to transfer technical knowledge but also to develop workforce readiness through authentic learning experiences that closely reflect real workplace conditions and support lifelong learning (UNESCO, 2022). Contemporary TVET emphasizes competency-based education, strong industry engagement, experiential learning, and continuous professional development to ensure that training outcomes contribute directly to employability, career adaptability, and sustainable workforce development (Okolie et al., 2020; Tushar & Sooraksa, 2023). Accordingly, vocational training institutions are increasingly expected to demonstrate not only successful training implementation but also measurable evidence that acquired competencies are effectively transferred into workplace performance and organizational productivity (Gegenfurtner et al., 2020). This expectation highlights the growing importance of adopting comprehensive training management systems capable of connecting instructional processes, competency development, training transfer, and long-term organizational outcomes (Salas et al., 2012).

Accordingly, the effectiveness of workforce training should not be assessed solely through participants' satisfaction or immediate learning achievements, as these outcomes provide only a partial indication of training success (Kirkpatrick & Kirkpatrick, 2006). More importantly, vocational training programs should demonstrate how newly acquired competencies are effectively transferred into workplace practices, improve employee performance, strengthen organizational effectiveness, and ultimately contribute to sustainable workforce productivity (Gegenfurtner & Testers, 2022; Nabi et al., 2025). Achieving these outcomes requires training management that systematically integrates training needs assessment, planning, implementation, and evaluation within a continuous improvement framework supported by organizational learning and evidence-based decision-making (Salas et al., 2012). Therefore, comprehensive evaluation has become an indispensable component of vocational training management, ensuring that investments in workforce development generate meaningful and sustainable value for individuals, organizations, and broader economic development (Fegade & Sharma, 2023).

Although workforce training has long been recognized as an essential strategy for improving employee competence and organizational performance, evaluating its effectiveness remains a significant challenge because many organizations continue to emphasize short-term learning

outcomes rather than broader organizational impacts (Fegade & Sharma, 2023). In both organizational and vocational education settings, numerous evaluation frameworks have been developed to assess whether training programs successfully achieve their intended objectives and contribute to continuous organizational improvement (Salas et al., 2012). Among these, the Kirkpatrick four-level evaluation model has become one of the most widely adopted frameworks because it provides a systematic approach for examining participants' reactions, learning outcomes, behavioral changes, and organizational results following training interventions (Gegenfurtner & Testers, 2022; Kirkpatrick & Kirkpatrick, 2006). Consequently, the model has been extensively applied across corporate training, public institutions, professional development programs, and vocational education due to its practicality, comprehensive evaluation structure, and ability to connect learning outcomes with workplace performance and organizational effectiveness (Gegenfurtner & Testers, 2022).

Recent studies have demonstrated the continued relevance of the Kirkpatrick model in evaluating various training programs. Several researchers have primarily focused on measuring participant satisfaction and learning achievement at the first two evaluation levels, showing that positive learning experiences generally improve participants' motivation and competency acquisition (Ananda & Himawan, 2024; Humairoh & Kuswinarno, 2024; Rosadi & Syarif, 2024). Other studies have extended the evaluation to behavioural changes and organizational outcomes, indicating that effective training can contribute to improved employee performance, knowledge transfer, and workplace efficiency (Nufeto & Tahalele, 2024; Syafitri & Tumanggor, 2024). Collectively, these findings suggest that the Kirkpatrick model remains a valuable framework for assessing training effectiveness across diverse institutional settings.

Nevertheless, existing studies reveal several important limitations. First, many previous studies employ the Kirkpatrick model primarily as a post-training evaluation instrument, focusing on measuring program outcomes after implementation rather than integrating evaluation into the broader training management process that encompasses planning, implementation, and continuous improvement (Reio et al., 2026; Salas et al., 2012). Consequently, evaluation findings frequently function as summative assessments instead of generating strategic evidence to support decision-making and organizational learning (Fegade & Sharma, 2023). Second, previous studies have predominantly examined individual evaluation levels independently, particularly participants' reactions and learning outcomes (Ananda & Himawan, 2024; Rosadi & Syarif, 2024; Syafitri & Tumanggor, 2024), while comparatively fewer studies have investigated how the four Kirkpatrick levels interact as an integrated management framework capable of facilitating competency development, training transfer, and sustained organizational productivity (Gegenfurtner & Testers, 2022).

In addition to these methodological limitations, important contextual gaps remain in the existing literature (Gegenfurtner & Testers, 2022). Despite the widespread application of the Kirkpatrick model across corporate organizations, higher education institutions, healthcare settings, and government employee development programs (Hosen et al., 2024; Nufeto & Tahalele, 2024; Rosadi & Syarif, 2024; Syafitri & Tumanggor, 2024), its implementation within public vocational training institutions remains relatively underexplored (UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training, 2020). Vocational training institutions such as BBPVP possess distinctive characteristics because they simultaneously emphasize competency-based learning, workforce readiness, employability, and close alignment with labor market demands (ASEAN Secretariat, 2022; Tushar & Sooraksa, 2023). Consequently, these institutional characteristics require evaluation approaches capable of capturing not only learning effectiveness but also the broader contribution of training toward competency transfer, workforce productivity, and sustainable organizational performance (Salas et al., 2012).

From a theoretical perspective, much of the existing literature conceptualizes the Kirkpatrick model primarily as an evaluation framework for measuring training effectiveness after instructional activities have been completed (Kirkpatrick & Kirkpatrick, 2006). Although this perspective has substantially advanced training evaluation practices, it provides only limited insight into how evaluation can function as a strategic management mechanism throughout the entire training cycle (Salas et al., 2012). Training management comprises a series of interconnected processes, including

training needs assessment, program planning, instructional implementation, monitoring, evaluation, and continuous improvement, which should operate as an integrated system rather than as isolated activities (Noe & Peacock, 2008). Consequently, viewing evaluation solely as the final stage of training may overlook its broader role in facilitating organizational learning, supporting evidence-based decision-making, and strengthening the alignment between training design, competency development, and organizational performance (Hosen et al., 2024; Salas et al., 2012). Therefore, further theoretical exploration is needed to reconceptualize the Kirkpatrick model not merely as a post-training assessment instrument but as an integrated framework capable of guiding vocational training management from planning through organizational outcomes and continuous organizational improvement (Gegenfurtner & Testers, 2022).

Despite the growing body of literature on training evaluation, there remains limited understanding of how evaluation frameworks can be strategically integrated into vocational training management to enhance organizational performance (Salas et al., 2012). Rather than positioning evaluation solely as a mechanism for measuring training outcomes, vocational training institutions require evidence-based approaches that support continuous decision-making throughout the stages of needs assessment, planning, implementation, monitoring, and evaluation, thereby fostering continuous organizational improvement (Noe & Peacock, 2008). Such an integrated perspective is particularly relevant for public vocational training institutions, where training effectiveness is expected to contribute not only to individual competency development but also to workforce readiness, organizational productivity, employability, and sustainable human resource development (Tushar & Sooraksa, 2023; Vong et al., 2025).

This study contributes to the literature in three important ways. First, it extends the application of the Kirkpatrick model by conceptualizing it not merely as a post-training evaluation instrument but as an integrated framework that informs the entire job training management process, including planning, implementation, and continuous evaluation. Second, this study provides empirical evidence from a public vocational training institution BBPVP Semarang, thereby enriching the relatively limited body of research concerning the implementation of comprehensive training evaluation within TVET institutions. Third, this study offers practical insights for vocational training managers and policymakers by demonstrating how systematic evaluation can support continuous improvement, strengthen workforce competency development, and enhance organizational productivity through evidence-informed training management.

Accordingly, the novelty of this study lies in repositioning the Kirkpatrick model from a conventional evaluation framework into a strategic management approach for vocational job training. Rather than examining each evaluation level independently, this study investigates how planning, implementation, and four-level evaluation can be integrated into a continuous management cycle that supports competency development, promotes the transfer of learning into workplace practices, and contributes to organizational productivity. By adopting this perspective, the study seeks to bridge evaluation theory with vocational training management practices while reinforcing the role of comprehensive evaluation in supporting workforce development within public vocational education institutions.

Based on these considerations, this study aims to analyze the implementation of the Kirkpatrick approach in job training management at BBPVP Semarang, with particular emphasis on planning strategies, training implementation, and evaluation practices that contribute to workforce productivity. Furthermore, the study seeks to examine how the four levels of the Kirkpatrick model can function as an integrated management framework for improving competency development, strengthening workforce readiness, and supporting continuous organizational improvement within vocational training institutions.

METHOD

Research Design

This study employed a qualitative approach using a case study design to obtain an in-depth understanding of how the Kirkpatrick model was implemented as an integrated framework for job training management at the Semarang Vocational Development and Productivity Center (BBPVP). A qualitative case study was considered appropriate because the research sought to explore complex managerial processes occurring within a real-life institutional context, where the boundaries between training planning, implementation, evaluation, and organizational outcomes could not be separated from the organizational environment. Rather than testing predetermined hypotheses, the study aimed to understand participants' experiences, perceptions, and institutional practices related to the implementation of the Kirkpatrick model throughout the training management cycle.

Research Setting and Participants

The study was conducted at the Semarang BBPVP, one of Indonesia's government vocational training institutions responsible for improving workforce competencies through competency-based training programs aligned with industry needs. BBPVP was selected as the research site because it represents a strategic public TVET institution implementing workforce development programs designed to enhance employability, workforce readiness, and labor productivity.

Participants were selected using purposive sampling to ensure that all informants had direct experience with the implementation of vocational training at BBPVP and were able to provide information-rich data relevant to the research objectives (Campbell et al., 2020; Patton, 2014). The study involved nine key informants representing different perspectives within the training process, consisting of trainees participating in competency-based training programs, vocational trainers responsible for instructional delivery, and training managers involved in planning and evaluating training programs. Participants were selected based on the following criteria: (1) being actively involved in the training program at BBPVP; (2) having direct experience with the planning, implementation, or evaluation of training activities; (3) being willing to participate voluntarily; and (4) being able to provide rich and relevant information related to the research focus (Dahal et al., 2024). The inclusion of multiple stakeholder groups enabled the study to capture diverse perspectives regarding the implementation of the Kirkpatrick model across different stages of training management and strengthened the depth of the case study evidence (Yin, 2018).

Data Collection

Data were collected between 5 May 2024 to 17 July 2025 through three complementary techniques: semi-structured interviews, non-participant observations, and document analysis. Semi-structured interviews served as the primary source of data because they allowed participants to describe their experiences while enabling the researcher to explore issues emerging during the interview process. Interview questions were developed based on the research objectives and the four levels of the Kirkpatrick model, covering training planning, instructional implementation, participant reactions, learning outcomes, behavioral changes, organizational results, and continuous improvement practices. Each interview lasted approximately (45–60 minutes) and was audio-recorded with participants' consent before being transcribed verbatim for analysis.

Non-participant observations were conducted throughout training activities to examine instructional strategies, participant engagement, trainer-participant interactions, classroom dynamics, and the implementation of competency-based learning practices. Field notes were recorded systematically to complement the interview findings. Document analysis was also undertaken to strengthen the empirical evidence. The analyzed documents included training curricula, competency standards, learning modules, training schedules, attendance records, evaluation reports, institutional policies, and other official documents related to training management. The combination of interviews, observations, and documentation enabled methodological triangulation and provided a more comprehensive understanding of the implementation of the Kirkpatrick model within the institutional setting.

Data Analysis

The collected data were analyzed using the interactive model developed by Miles et al. (2013), consisting of data condensation, data display, and conclusion drawing and verification. During the data condensation stage, interview transcripts, observation notes, and institutional documents were carefully reviewed, coded, and categorized according to emerging concepts related to training planning, implementation, evaluation practices, and workforce productivity. Similar codes were then grouped into broader themes reflecting the implementation of the Kirkpatrick model throughout the training management process.

The organized data were subsequently presented in descriptive matrices and thematic narratives to facilitate interpretation and identify relationships among themes. Finally, conclusions were developed through an iterative process of comparing evidence across different data sources, verifying emerging interpretations, and refining conceptual themes until coherent findings were obtained. This analytical procedure enabled the researchers to generate a comprehensive understanding of how the Kirkpatrick model functioned not merely as an evaluation framework but as an integrated approach supporting planning, implementation, evaluation, and continuous improvement within vocational training management.

RESULTS AND DISCUSSION

Training Planning Strategy at BBPVP Semarang

The findings indicate that training planning at the BBPVP Semarang is conducted through a systematic and industry-oriented process designed to ensure that vocational training programs remain relevant to current labor market demands. Rather than functioning solely as an administrative preparation stage, planning serves as the foundation for aligning training objectives, learning content, instructional strategies, and evaluation mechanisms with the competencies required by industry. This finding supports the study's proposition that the Kirkpatrick model can be positioned not merely as a post-training evaluation framework but as an integral component of training management beginning at the planning stage.

Evidence obtained from interviews with training managers revealed that the planning process begins with identifying competency gaps through labor market information, industry needs analysis, and previous training evaluations. These findings are subsequently used to determine training priorities, formulate learning objectives, and develop competency-based curricula. In addition, institutional documents indicate that BBPVP regularly reviews training materials to ensure consistency with national competency standards and emerging industrial technologies. Such practices demonstrate that planning decisions are informed by empirical evidence rather than administrative considerations alone.

> *"The training curriculum is always revised according to industry needs and feedback from previous training programs." (Training Manager, M1)*

> *"The information shared through Instagram helped me understand the objectives and expected competencies before joining the training." (Trainee, P3)*

Another important finding concerns the institution's utilization of digital communication to improve participant recruitment and information dissemination. Interview participants explained that BBPVP actively employs digital platforms, particularly social media, to communicate training schedules, learning objectives, eligibility requirements, and expected competencies. This strategy enables prospective participants to understand the relevance of training programs before enrollment while simultaneously expanding institutional outreach. Observational data further confirmed that digital communication has become an essential component of BBPVP's planning strategy in responding to the increasing digitalization of vocational education and workforce development.

The interviews also revealed that although trainees were not directly involved in formal planning meetings, they perceived the training objectives, expected competencies, and learning outcomes to be clearly communicated before the commencement of training activities. Participants

acknowledged that the availability of open communication channels allowed them to provide feedback regarding training relevance and implementation. Such findings suggest that participant involvement occurs indirectly through continuous communication and evaluation mechanisms rather than through direct participation in institutional planning.

From the perspective of vocational education, these findings indicate that BBPVP adopts a competency-based planning approach that emphasizes alignment between training provision and workforce requirements. The integration of industry needs analysis, competency standards, digital communication, and continuous feedback reflects contemporary TVET principles that prioritize employability, workforce readiness, and labor market responsiveness. Rather than designing training programs solely to deliver technical knowledge, the institution seeks to ensure that learning experiences contribute to participants' future workplace performance and professional adaptability.

These findings are consistent with previous studies emphasizing that needs-based training planning is an important determinant of training effectiveness because it helps align learning objectives with organizational needs, performance gaps, and workplace expectations (Robert & Mori, 2025; Saputro & Syaebani, 2024). In vocational education and training, systematic and competency-based planning is also essential for maintaining curriculum relevance, strengthening alignment with industry competency standards, and supporting the transfer of acquired competencies into workplace practice (OECD, 2023; Wahyuni, 2021). However, the present study extends previous research by showing that planning activities are not separated from evaluation processes. Instead, evaluation evidence from previous training cycles is used to inform subsequent planning decisions, thereby creating a continuous management cycle that supports organizational learning and program improvement (Mehale et al., 2021).

This finding offers a theoretical contribution by broadening the role of planning within the Kirkpatrick framework. Previous studies have commonly applied the Kirkpatrick model as a post-training evaluation framework for assessing reaction, learning, behavior, and results (Kirkpatrick & Kirkpatrick, 2006). The present findings suggest that evaluation information can also function as feedback for pre-training decision-making and future training design. Consequently, the four-level evaluation model can be positioned not only as an assessment instrument but also as part of a strategic training management framework that supports evidence-based decision-making throughout the vocational training cycle.

From a practical perspective, the planning strategy implemented by BBPVP demonstrates that effective vocational training requires close integration among labor market analysis, competency-based curriculum development, digital communication, stakeholder feedback, and continuous evaluation. Such integration enables vocational training institutions to design more adaptive and responsive programs capable of strengthening workforce competence, improving employability, and enhancing long-term organizational productivity. These findings therefore reinforce the importance of positioning training planning as the first stage of an integrated vocational training management system rather than as a standalone administrative activity.

Implementation of Job Training at BBPVP Semarang

The findings demonstrate that the implementation of job training at BBPVP Semarang is characterized by a competency-based instructional approach that integrates theoretical understanding with authentic workplace practice. Consistent with the planning strategy established before program implementation, the training process emphasizes active participant engagement through practical exercises, work simulations, project-based assignments, and direct interaction with equipment commonly used in industrial settings. Rather than relying primarily on classroom instruction, the training activities are designed to facilitate experiential learning that enables participants to acquire technical competencies while simultaneously developing problem-solving abilities, teamwork, and workplace adaptability.

Interview data indicate that participants perceived the training as highly relevant to occupational requirements because the learning activities closely reflected actual workplace situations. Many participants emphasized that practical sessions allowed them to understand not only technical procedures but also the standards of performance expected within industrial environments. Observational findings further confirmed that participants were actively engaged throughout training

sessions, with instructors encouraging collaborative learning, independent practice, and immediate feedback during practical exercises. These learning conditions contributed to increased participant confidence in applying newly acquired competencies beyond the training environment.

Another important finding concerns the pivotal role of instructors in facilitating effective vocational learning. Interviews revealed that most instructors possessed substantial professional experience in their respective occupational fields, enabling them to connect theoretical concepts with practical industrial applications. Rather than delivering learning materials through conventional lectures alone, instructors frequently incorporated workplace examples, problem-based discussions, and demonstrations based on their professional experiences. Such instructional practices enabled participants to better understand the practical relevance of training content while strengthening the transferability of acquired competencies to real work contexts.

Nevertheless, the findings also identified variations in instructional quality among instructors. While experienced trainers effectively employed experiential and competency-based learning strategies, several newly appointed instructors demonstrated relatively limited experience in facilitating active learning environments. Consequently, although the overall implementation of training was considered effective, differences in instructional competence occasionally influenced participant engagement and learning experiences. These findings suggest that instructor professional development remains an important component in ensuring consistent training quality across different vocational programs.

The observations further revealed that the availability of learning facilities substantially supported the implementation of competency-based training. Practice workshops, industrial equipment, digital learning media, and simulation facilities created learning environments that closely resembled actual workplace conditions. Such facilities enabled participants to repeatedly practice technical skills while receiving continuous guidance from instructors. The combination of adequate infrastructure and authentic learning experiences contributed to participants' perceptions that the training was directly applicable to future employment situations.

From a TVET perspective, these findings indicate that the implementation of job training at BBPVP reflects several fundamental principles of contemporary vocational education. Competency-based instruction, experiential learning, industry relevance, and authentic workplace simulation collectively support the development of workforce readiness rather than merely improving theoretical knowledge. This approach aligns with the evolving role of vocational education in preparing graduates who are capable of adapting to rapidly changing technological and industrial environments while simultaneously strengthening employability and lifelong learning competencies.

The findings are consistent with previous studies emphasizing that practice-based learning represents one of the most effective instructional approaches within vocational education because it facilitates the transfer of learning into workplace performance (OECD, 2023). Previous research has similarly demonstrated that industry-relevant instructional strategies, experienced trainers, and authentic workplace simulations positively influence participant motivation, competency acquisition, and employability (OECD, 2023). However, the present study extends existing knowledge by demonstrating that effective training implementation cannot be viewed independently from the preceding planning process. Instead, implementation effectiveness emerges from the systematic alignment among industry needs assessment, competency-based curriculum design, instructor expertise, learning facilities, and continuous evaluation throughout the training cycle (Wuryanto et al., 2026).

From a theoretical perspective, these findings reinforce the argument that the Kirkpatrick model can function beyond its conventional role as an evaluation framework. Although the model is traditionally associated with measuring participant reactions, learning outcomes, behavioral change, and organizational results following training (Kirkpatrick & Kirkpatrick, 2006), the present findings indicate that successful implementation of each evaluation level depends substantially on the quality of instructional processes established during training delivery. In this regard, implementation constitutes an essential managerial component connecting training design with subsequent evaluation outcomes, thereby extending previous applications of the Kirkpatrick model that have primarily emphasized post-training evaluation (Alsalamah & Callinan, 2022). This perspective strengthens the

conceptualization of the Kirkpatrick model as an integrated vocational training management framework rather than merely a post-training evaluation instrument.

Practically, the implementation strategy adopted by BBPVP offers valuable implications for vocational training institutions seeking to strengthen workforce development. The integration of competency-based instruction, experienced practitioners as instructors, authentic workplace simulation, digital learning resources, and continuous participant engagement provides an effective model for enhancing workforce readiness in response to evolving industry demands. At the same time, the identified variation in instructional quality highlights the necessity of continuous professional development for vocational trainers to ensure consistent implementation standards across training programs. Consequently, effective job training implementation should be viewed not as an isolated instructional activity but as an integral component of a comprehensive training management system that supports sustainable competency development and long-term organizational productivity.

Challenges in Training Evaluation

The findings reveal that, despite the systematic implementation of competency-based training at BBPVP Semarang, several challenges remain in evaluating training effectiveness across the entire training management cycle. While reaction and learning outcomes were generally documented through participant satisfaction surveys, competency assessments, and instructor observations, the institution encountered greater difficulties in evaluating behavioral changes and long-term organizational outcomes following training completion. Consequently, the evaluation process tended to emphasize short-term instructional achievements rather than capturing the broader impact of training on workplace performance and workforce productivity.

Interview findings indicate that one of the principal challenges concerns the limited availability of post-training monitoring mechanisms. Although participants completed competency assessments and received certificates upon successfully finishing the training program, systematic follow-up regarding the application of acquired competencies in the workplace was relatively limited. Training managers acknowledged that monitoring graduates after employment remained difficult because participants entered diverse industries and geographical locations, making continuous tracking both administratively and financially demanding. As a result, evidence concerning behavioral transfer and organizational impact was not always comprehensively documented.

Another important challenge identified through interviews relates to the availability and integration of evaluation data. Information regarding participant satisfaction, competency achievement, attendance, instructional implementation, and institutional documentation was available; however, these data were often managed separately according to administrative functions rather than being integrated into a unified evaluation system. This fragmentation limited the institution's ability to generate comprehensive evidence demonstrating the relationship between training implementation, competency acquisition, workplace performance, and organizational productivity. Consequently, evaluation findings were primarily utilized for reporting purposes instead of functioning as strategic information supporting continuous organizational learning and evidence-based decision-making.

The study also identified challenges associated with measuring long-term training outcomes. Participants acknowledged that improvements in knowledge and technical competence were immediately observable during practical sessions. Nevertheless, both trainers and training managers emphasized that measuring behavioral change and organizational productivity requires longer observation periods and collaboration with employers after trainees enter the workforce. These findings suggest that the complexity of vocational training evaluation extends beyond instructional effectiveness, requiring institutional partnerships capable of monitoring competency transfer within authentic workplace settings.

From the perspective of TVET, these findings reflect a common challenge encountered by vocational training institutions worldwide. Although competency-based training emphasizes employability and workforce readiness, demonstrating the long-term contribution of training to organizational productivity remains methodologically challenging because learning outcomes are

influenced by multiple workplace factors beyond the training environment itself. Therefore, effective evaluation requires collaboration among training providers, industry partners, employers, and graduates to generate comprehensive evidence regarding workforce development outcomes.

These findings are consistent with previous studies reporting that vocational training institutions frequently encounter difficulties in evaluating higher levels of the Kirkpatrick model, particularly behavioral transfer and organizational results (Alsalamah & Callinan, 2022). Previous research has shown that many organizations successfully measure participant reactions and learning achievements but experience greater challenges in collecting longitudinal evidence concerning workplace performance and organizational impact (Kirkpatrick Partners, 2024). The present findings reinforce this pattern while further demonstrating that these challenges are closely associated with institutional evaluation systems rather than with the evaluation model itself. In other words, the limitations originate not from the Kirkpatrick framework but from the organizational capacity required to implement comprehensive evaluation throughout the training cycle (Kirkpatrick Partners, 2024).

From a theoretical perspective, these findings extend existing discussions regarding the application of the Kirkpatrick model within vocational education. Rather than viewing the four evaluation levels as independent measurement stages (Kirkpatrick & Kirkpatrick, 2006), the present study suggests that their successful implementation depends on the availability of an integrated training management system capable of linking planning, instructional delivery, post-training monitoring, data management, and organizational feedback (Sutadji et al., 2022). Consequently, the Kirkpatrick model should be understood not only as an evaluation framework but also as a strategic mechanism supporting continuous organizational learning and evidence-based management within vocational training institutions (OECD, 2023).

Practically, the findings imply that vocational training institutions should strengthen post-training evaluation through systematic graduate tracking, closer collaboration with employers, integrated evaluation databases, and digital monitoring systems capable of documenting competency transfer and workplace performance over time. Such initiatives would enable evaluation findings to become valuable organizational knowledge that informs future planning, improves instructional quality, and enhances workforce development policies. By integrating evaluation more closely with organizational management, vocational training institutions can maximize the long-term value of training investments while strengthening accountability to industry and other stakeholders.

Integration of the Four Kirkpatrick Levels as an Integrated Training Management Framework

The findings demonstrate that the four levels of the Kirkpatrick model should not be interpreted as isolated evaluation stages but rather as interconnected components within a comprehensive vocational training management system. Throughout the implementation of training at BBPVP Semarang, planning, instructional delivery, participant learning, behavioral development, and organizational outcomes were found to influence one another in a continuous and dynamic manner. This finding suggests that the effectiveness of each evaluation level depends substantially on the quality of managerial processes established before, during, and after training implementation.

Evidence obtained from interviews, observations, and institutional documentation indicates that training planning serves as the foundation for the successful implementation of subsequent Kirkpatrick levels. The identification of industry needs, formulation of competency-based learning objectives, curriculum development, instructor preparation, and participant recruitment collectively determine participant reactions toward the training program. Positive participant reactions subsequently facilitate meaningful learning experiences, which in turn increase the likelihood of competency transfer into workplace behavior and ultimately contribute to organizational productivity. Rather than functioning independently, each level forms a sequential management process in which improvements achieved at one stage strengthen the effectiveness of subsequent stages.

The findings further reveal that evaluation information generated at each Kirkpatrick level continuously informs managerial decision-making throughout the training cycle. Participant

feedback collected during the reaction stage provides valuable information regarding instructional quality and learning facilities. Learning assessments identify participants' competency achievement and reveal areas requiring instructional improvement. Behavioral evidence obtained through follow-up observations contributes to understanding competency transfer into workplace practice, while organizational outcomes provide strategic information regarding the overall contribution of vocational training to workforce productivity. Consequently, evaluation functions not merely as an instrument for measuring success but also as a mechanism supporting continuous organizational learning and evidence-based program improvement.

This integrated perspective differs from the dominant approach reported in previous studies, where the Kirkpatrick model is generally applied as a framework for evaluating completed training programs. Many previous investigations have concentrated on individual evaluation levels, particularly participant satisfaction and learning achievement, without explicitly demonstrating how information generated from each level contributes to planning future training programs or improving institutional management. The present findings indicate that the four evaluation levels operate as interconnected managerial feedback loops rather than discrete assessment components. This perspective broadens the conceptual application of the Kirkpatrick model by positioning evaluation as a continuous process embedded within vocational training management.

From the perspective of TVET, the integration of the four Kirkpatrick levels is particularly relevant because vocational training institutions are expected not only to develop technical competencies but also to respond continuously to evolving labor market demands and industrial skill requirements (OECD, 2023). Competency-based vocational education therefore requires adaptive management systems capable of integrating labor market analysis, curriculum development, instructional implementation, competency assessment, graduate performance, and organizational evaluation into a coherent cycle of continuous improvement (OECD, 2023; UNESCO-UNEVOC, 2020). The findings of this study demonstrate that the Kirkpatrick model provides a useful conceptual structure for supporting this integration when applied beyond its conventional evaluative function (Kirkpatrick & Kirkpatrick, 2006). This interpretation is consistent with recent developments that position the Kirkpatrick model not only as a framework for evaluating training outcomes but also as a strategic mechanism for improving organizational performance and evidence-based training management (Kirkpatrick Partners, 2024).

Theoretically, this study contributes to the development of training evaluation literature by extending the role of the Kirkpatrick model from an outcome-oriented evaluation framework toward an integrated vocational training management framework. Rather than viewing planning, implementation, evaluation, and organizational improvement as separate managerial activities, the findings suggest that these processes should be understood as mutually reinforcing components connected through continuous feedback mechanisms. This reconceptualization contributes to the broader literature on Human Resource Development (HRD), TVET, and competency-based training by demonstrating that evaluation should be embedded throughout the training lifecycle to strengthen organizational learning and evidence-based management.

Practically, the integrated framework offers valuable implications for vocational training institutions seeking to improve workforce development programs. Training providers should establish systematic connections among labor market needs assessment, competency-based curriculum development, instructional implementation, participant evaluation, graduate monitoring, and organizational performance measurement. Such integration enables evaluation findings to become strategic organizational knowledge that supports curriculum revision, instructor development, policy formulation, resource allocation, and continuous improvement of training quality. Consequently, vocational training institutions can enhance workforce readiness while simultaneously strengthening institutional accountability and responsiveness to evolving industrial demands.

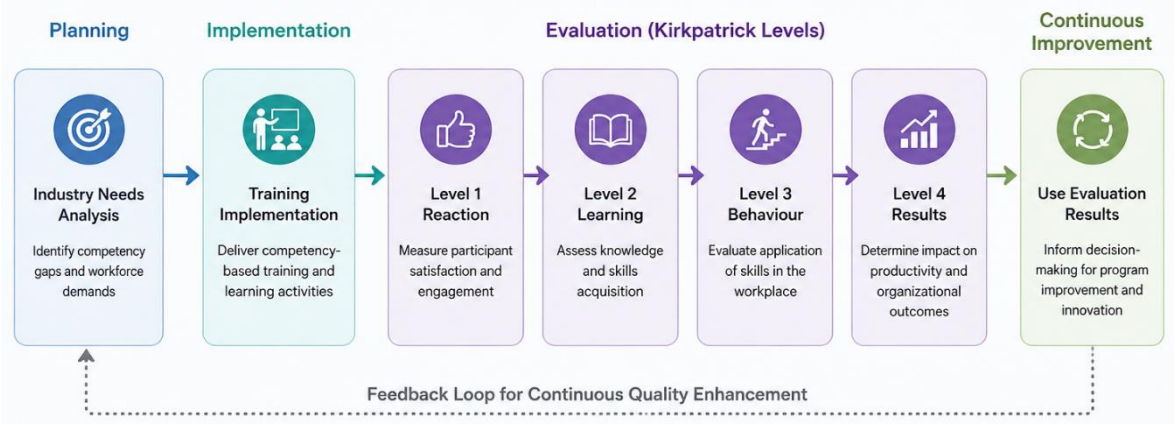

Figure 1. Integrated Kirkpatrick-based vocational training management framework developed from the findings of this study

Figure 1 summarizes the conceptual contribution of this study. Unlike the conventional interpretation of the Kirkpatrick model as a linear post-training evaluation framework, the proposed framework conceptualizes the four evaluation levels as interconnected management processes embedded throughout vocational training planning, implementation, evaluation, and continuous organizational improvement. This integrated perspective highlights the central role of evaluation as an evidence-based management mechanism that supports sustainable workforce development.

CONCLUSION

This study demonstrates that the Kirkpatrick model can be applied not merely as a post-training evaluation framework but as an integrated vocational training management framework that supports planning, implementation, evaluation, and continuous organizational improvement. The findings indicate that competency-based planning aligned with industry needs, practice-oriented instructional implementation, and systematic multi-level evaluation collectively contribute to strengthening workforce readiness and improving organizational productivity. Furthermore, the study highlights that the effectiveness of vocational training depends not only on participants' immediate learning outcomes but also on the institution's capacity to utilize evaluation findings as strategic information for continuous program refinement.

The primary theoretical contribution of this study lies in reconceptualizing the Kirkpatrick model from an outcome-oriented evaluation framework into an integrated vocational training management framework. Unlike previous studies that primarily employed the model to assess training effectiveness after program completion, this study demonstrates that the four Kirkpatrick levels function as interconnected managerial feedback mechanisms linking planning, instructional implementation, behavioral transfer, organizational outcomes, and continuous improvement. This perspective contributes to the literature on TVET, HRD, and competency-based workforce development by extending the conceptual role of evaluation beyond measurement toward evidence-based organizational management.

From a practical perspective, the findings provide valuable implications for vocational training institutions, policymakers, and workforce development agencies. Training evaluation should be integrated into the entire management cycle rather than conducted solely for administrative reporting purposes. Institutions should systematically utilize evaluation findings to improve curriculum design, instructor development, industry collaboration, resource allocation, and post-training monitoring. Such an integrated management approach has the potential to strengthen workforce readiness, organizational productivity, institutional accountability, and responsiveness to rapidly evolving labor market demands.

This study has several limitations. First, the research was conducted within a single public vocational training institution, which may limit the transferability of the findings to other institutional settings. Second, the qualitative case study approach emphasizes contextual understanding rather than statistical generalization. Future studies are therefore encouraged to examine the proposed

integrated training management framework using mixed-methods or longitudinal research across multiple vocational training institutions and industrial sectors. Further investigation into digital learning ecosystems, industry partnerships, learning analytics, and post-training organizational support would also provide deeper insights into sustainable workforce development within contemporary TVET systems.

AUTHOR CONTRIBUTIONS STATEMENT

This journal uses the Contributor Roles Taxonomy (CRediT) to recognize individual author contributions, reduce authorship disputes, and facilitate collaboration.

Name of Author	C	M	So	Va	Fo	I	R	D	O	E	Vi	Su	P	Fu
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C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

CONFLICT OF INTEREST STATEMENT

The authors declare that they have no known competing financial or non-financial interests that could have appeared to influence the work reported in this paper.

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