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Bridging training and creativity through technical competence: Evidence from Indonesian '*Kenshusei*' alumni

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Orientation: Training is often expected to improve both competence and creativity. However, the training–creativity link remains unclear, particularly in technical training contexts and emerging economies.

Research purpose: This study examines whether training effectiveness (TrE) relates to creativity-related work outcomes directly or indirectly through hard-skill competence (HSC) among Indonesian alumni of the Japan-based Kenshusei programme.

Motivation for the study: Prior studies show that training supports employee development, but less is known about the mechanism through which technical training is translated into creativity-related outcomes. This study addresses this gap using Human Capital Theory.

Research approach/design and method: A cross-sectional survey was conducted with 121 Indonesian *Kenshusei* alumni. Data were analysed using covariance-based structural equation modelling (CB-SEM) in AMOS.

Main findings: Training effectiveness did not directly predict creativity-related work outcomes. Instead, its effect operated through HSC. Training strengthened HSC, which in turn supported adaptive and creativity-related work orientations.

Practical/managerial implications: Organisations should not expect technical training alone to generate creativity. Training should build usable competence and be supported by work settings that allow employees to apply their skills adaptively.

Contribution/value-add: This study shows that HSC is the key competence-based pathway through which technical training supports creativity-related outcomes. It adds evidence from a specialised post-training context in an emerging economy.

Keywords: training effectiveness; hard-skill competence; employee creativity; human capital theory; *Kenshusei*; Indonesia.

Introduction

In a knowledge-driven economy, organisational competitiveness is no longer defined primarily by physical assets or cost efficiency alone. Increasingly, it depends on the quality of human capital, particularly employees' capacity to learn, adapt and generate useful ideas in response to changing work demands. While short-term productivity remains important, long-term organisational resilience is more closely tied to the ability of employees to develop context-sensitive solutions and contribute to continuous improvement (Beheshtifar & Zare, 2013; Zhao et al., 2023). For this reason, organisations in both developed and developing settings continue to invest in training, not only to strengthen technical competence but also in the hope that such investments will encourage greater creativity and innovation at work (Chaubey, 2022; Fitriani et al., 2023).

Even so, the link between training and creativity remains less straightforward than often assumed. Training has consistently been associated with better task performance, stronger role readiness and improved job-related capability, yet evidence that it directly enhances employee creativity (EmC) is still mixed. Some studies suggest that training can stimulate new ways of thinking and broaden problem-solving capacity, whereas others imply that training improves performance mainly when its outcomes are translated into more specific competencies or supported by an enabling work environment (Chaubey, 2022; McKay et al., 2024; Onarheim & Friis-Olivarius, 2013). This inconsistency raises an important question: Does training directly

Note: Additional supporting information may be found in the online version of this article as Online Appendix 1.

stimulate creativity, or does its influence depend on other mechanisms that connect learning to creative action in the workplace?

Human Capital Theory (HCT) provides a useful foundation for addressing this question. In broad terms, HCT explains that investments in education and training enhance the value of human resources by developing knowledge, skills, and productive capacity that can improve individual and organisational outcomes (Auerbach & Green, 2024; Leoni, 2023; Pasban & Nojedeh, 2016). From this perspective, training should not be viewed merely as a routine organisational activity, but as a strategic investment that may generate higher-order outcomes when newly acquired capabilities are effectively mobilised in practice. At the same time, HCT does not imply that all forms of training will automatically produce creativity. Creativity is a more complex outcome, shaped not only by learning exposure but also by the extent to which employees possess usable expertise and can apply that expertise under conditions that require adaptation, judgement and problem-solving (Amabile, 1988; Zhao et al., 2023). This is why training may strengthen human capital without necessarily producing an immediate direct effect on creativity.

Within this discussion, hard-skill competence (HSC) becomes especially important. Prior studies have shown that domain-specific competence can provide the practical and cognitive foundation needed for employees to move beyond routine execution and respond more creatively to work-related challenges. Technical competence in areas such as production, management and related operational functions can expand employees' ability to interpret problems, combine knowledge and implement solutions more effectively (Choe et al., 1997; Garcez et al., 2022; Lamri & Lubart, 2023). Likewise, employees with stronger domain expertise are generally better equipped to apply structured knowledge in unfamiliar or ambiguous situations, which is often a necessary condition for creativity in organisational settings (Cocco & Quttainah, 2015; Ogbeibu et al., 2021). Yet despite this theoretical promise, empirical work that explicitly examines HSC as the mechanism linking training effectiveness (TrE) to EmC remains limited, particularly in developing-country contexts and in technically oriented training environments (Muñoz-Pascual et al., 2020).

This gap is important because much of the existing discussion still treats training and creativity as though they were directly connected, while giving less attention to the possibility that training may first need to build transferable competence before creativity can emerge. The present study addresses that issue by examining both the direct effect of TrE on EmC and its indirect effect through HSC. In doing so, the study focuses on Indonesian alumni of the Japan-based *Kenshusei* programme, a group that offers a particularly relevant empirical setting. These individuals experienced structured and discipline-oriented training designed to strengthen technical capability, work habits and applied skills in a cross-cultural environment. Such a context provides a useful opportunity to examine whether technically oriented training contributes to creativity directly, or whether its influence is more plausibly channelled through competence development.

Accordingly, this study develops and tests a mediated model linking TrE, HSC, and creativity-related work outcomes. The study contributes to the literature in two main ways. Firstly, it extends the application of HCT by showing how training-related investments may be translated into creativity-related outcomes through competence development rather than through a simple direct pathway. Secondly, it provides evidence from a specialised technical-training context in an emerging economy, thereby adding a contextual perspective to debates on how organisations convert training into broader forms of employee capability and innovation potential.

Literature review

Training effectiveness, hard-skill competence and employee creativity

Training is widely viewed not merely as an administrative routine, but as a strategic investment through which organisations build employee capability and strengthen long-term performance. In human resource development, training becomes meaningful when it does more than deliver content; it must also help employees retain, transfer and apply what they learn in real work settings (Ochoa et al., 2018; Riyanto et al., 2023). This distinction is important because, in knowledge-intensive environments, organisations increasingly expect training to produce workers who are not only technically capable but also adaptive in responding to evolving task demands.

Existing studies generally support the view that effective training contributes to stronger work-relevant competence. In particular, structured training has been associated with improvement in technical and functional domains such as production, management and other operational areas that support organisational performance (Fitriani et al., 2023; Lista et al., 2022; Marnisah et al., 2021). At the same time, the literature also suggests that training outcomes depend on how learning is designed and delivered. Training tends to be more effective when it is pedagogically coherent, context-sensitive, and closely linked to real work situations, so that participants can move from knowing to doing rather than treating training as abstract instruction alone (Andoh et al., 2022; Dignath, 2021).

This logic is consistent with HCT, which explains that investments in education and training enhance the productive value of employees by developing knowledge, skills and capability that can be mobilised in organisational practice (Auerbach & Green, 2024; Pasban & Nojedeh, 2016). From this perspective, HSC can be understood as one of the most immediate returns on training investment, particularly when training is designed to strengthen applied capability in

concrete work domains (Homer, 2001; Sutton, 2015). In technically oriented programmes, training is therefore expected to improve not only knowledge acquisition but also employees' readiness to perform specialised tasks with greater precision and confidence.

A more difficult question concerns whether training also enhances EmC. Some studies suggest that training can broaden cognitive flexibility, expose employees to new problem-solving approaches, and increase openness to experimentation, all of which may support creativity in work settings (Chaubey, 2022; Clapham, 2003). However, the literature is less consistent on this point than it is for competence development. Research increasingly shows that creativity-related outcomes are more likely to emerge when training is accompanied by supportive conditions such as autonomy, feedback and collaborative learning climates (Islam & Asad, 2024; Joo et al., 2023). This implies that training may create the potential for creativity, but its direct effect is unlikely to be uniform across contexts.

Taken together, prior research supports two related expectations. Firstly, effective training should improve HSC because capability development is one of its most immediate aims. Secondly, training may also contribute to EmC, although this relationship is likely to be more contingent and less direct. Based on this reasoning, the following hypotheses are proposed:

H1: Training effectiveness has a positive and significant effect on hard-skill competence.

H2: Training effectiveness has a positive and significant effect on employee creativity.

Hard-skill competence and employee creativity

Hard-skill competence refers to the practical and technical ability required to perform work tasks effectively. It is developed through formal learning, repeated practice and domain-relevant experience, and it reflects an employee's readiness to handle operational demands in a reliable and purposeful way. Within HCT, such competence is not only a marker of productivity but also a resource that can support more adaptive and value-creating forms of performance (Auerbach & Green, 2024; Pasban & Nojedeh, 2016).

The relationship between HSC and creativity becomes clearer when creativity is understood not simply as originality, but as the ability to generate useful and workable responses to work-related challenges. Employees who possess stronger technical expertise are often better able to interpret complex situations, identify constraints, and combine existing knowledge into more effective solutions. Evidence from industrial and service settings suggests that competence in areas such as production, operations and management contributes not only to task execution but also to more creative engagement with work processes (Choe et al., 1997; Jandaghi et al., 2019; Woodcock, 1996). More recent work also indicates that digital fluency and system-based capability can strengthen organisational adaptability by allowing employees to apply knowledge more dynamically and collaboratively (Garcez et al., 2022; Jia et al., 2024).

At the same time, competence does not operate in isolation. The literature shows that technically capable employees are more likely to act creatively when their work environments support learning, participation and knowledge use. Strategic human resource practices, developmental climates and participatory leadership structures all help create conditions in which domain expertise can be translated into innovative action rather than routine performance alone (Beugelsdijk, 2008; Chaubey, 2022). In this sense, HSC can be seen as an enabling resource: it does not guarantee creativity by itself, but it increases employees' capacity to explore alternatives, combine ideas and respond effectively under uncertainty. This view is consistent with findings showing that domain-relevant skills are closely associated with adaptive creativity and innovation-related outcomes (Ogbeibu et al., 2021; Zhao et al., 2023).

Accordingly, HSC is expected to have a positive relationship with EmC because it provides the cognitive and operational foundation through which useful ideas can be generated and applied in practice. Based on this reasoning, the following hypothesis is proposed:

H3: Hard-skill competence has a positive and significant effect on employee creativity.

Employee creativity and the mediating role of hard-skill competence

Employee creativity is commonly understood as the capacity to generate ideas, approaches or responses that are both novel and useful within a work domain (Amabile, 1996; Fisher & Amabile, 2009). In organisational settings, this matters because competitiveness increasingly depends not only on efficiency, but also on the ability of employees to adapt, improve processes and respond constructively to new challenges. From a HCT perspective, such capacity is not detached from learning and development. Rather, it can emerge through the accumulation of knowledge, experience and competence that enables employees to work more flexibly and effectively (Auerbach & Green, 2024; Pasban & Nojedeh, 2016).

Even so, prior research suggests that the pathway from training to creativity is unlikely to be purely direct. Training may broaden cognitive exposure and improve problem-solving readiness, but creativity-related outcomes often depend on whether employees acquire capabilities that can be actively deployed in their work roles. Studies on leadership, communication and learning climates indicate that creativity is more likely to develop when employees are not only trained, but also positioned to use their knowledge with confidence, feedback and situational support (Joo et al., 2023; Lee & Kim, 2021). This helps explain why the effect of training on creativity is often found to be conditional rather than automatic.

In this study, HSC is proposed as the main mechanism linking TrE to EmC. The reasoning is straightforward: when training is effective, employees should become more competent in the technical and operational aspects of their work; when that competence strengthens, they may be better able to interpret work problems, connect ideas across tasks and implement useful responses in practice. In other words, HSC helps convert training from a learning input into a more usable work resource. This argument is supported by research showing that employees with stronger domain-specific and system-based capability are generally better positioned to apply structured knowledge in ways that support innovation and adaptive problem-solving (Garcez et al., 2022; Jia et al., 2024; Lamri & Lubart, 2023; Ogbeibu et al., 2021).

Seen in this way, competence functions as a bridge between formal training and creativity-related work outcomes. Training may create knowledge exposure, but competence is what makes that knowledge operational. Employees with stronger technical capability are often more confident in engaging with work challenges, more capable of handling ambiguity, and more prepared to move from instruction to application. For this reason, the indirect pathway through HSC is expected to be more meaningful than a simple direct link between training and creativity. Based on this reasoning, the following hypothesis is proposed:

H4: Training effectiveness has a positive and significant effect on employee creativity through hard-skill competence.

Conceptual framework

Based on the foregoing discussion, this study proposes a mediated model linking TrE, HSC and EmC. The framework draws on HCT and related empirical research to explain how training investment may be translated into higher-order work outcomes. More specifically, the model assumes that TrE contributes directly to HSC and EmC, while HSC also contributes directly to EmC and serves as the mediating mechanism through which training is converted into creativity-related outcomes.

Figure 1 presents the hypothesised relationships tested in this study. Accordingly, the model proposes that: (1) training effectiveness positively influences HSC (H1); (2) training effectiveness positively influences EmC (H2); (3) hard-skill competence positively influences EmC (H3); and (4) hard-

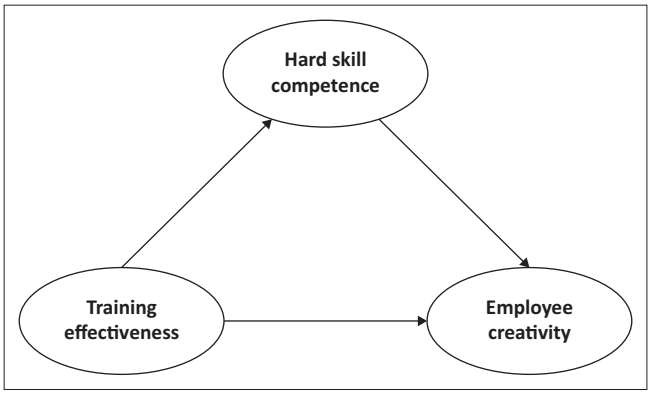

FIGURE 1: Conceptual framework.

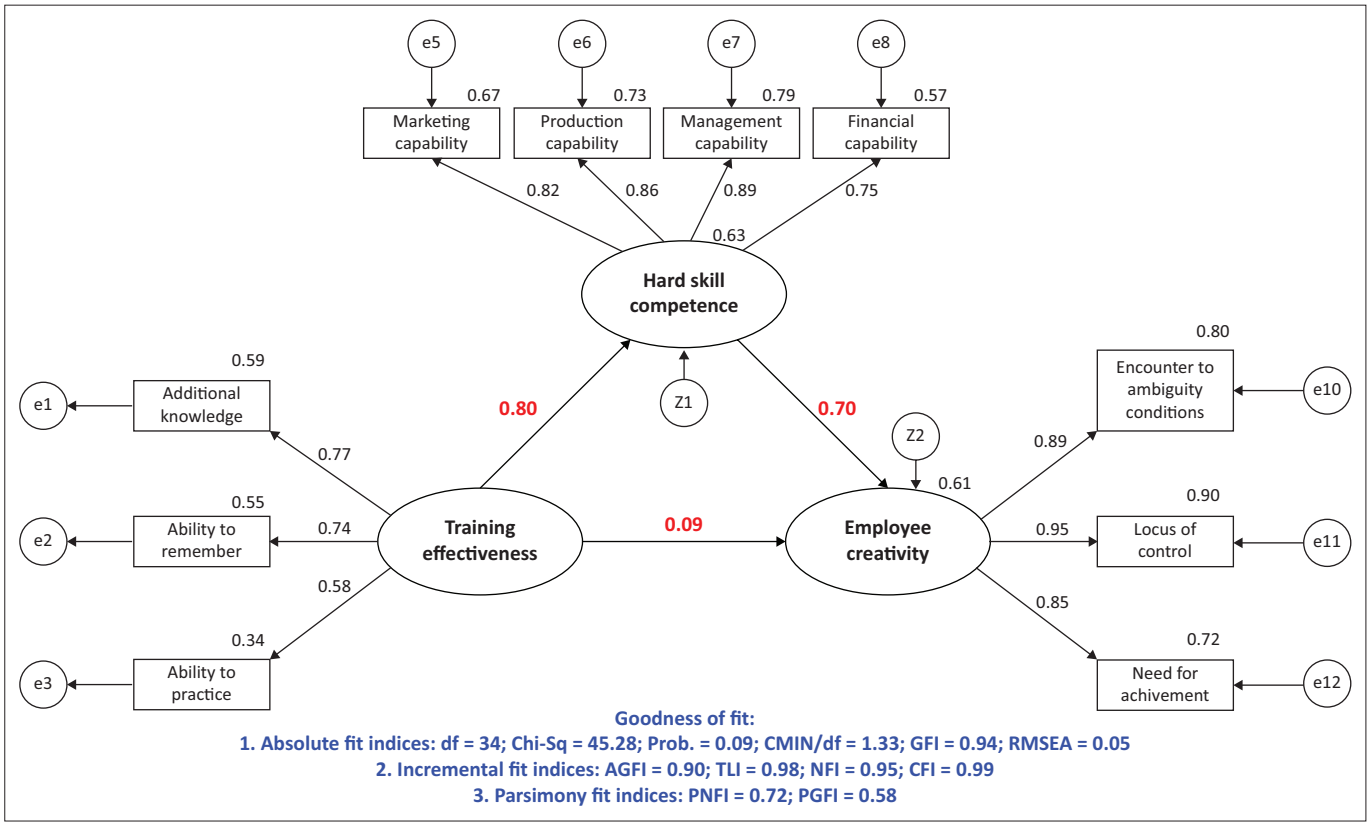

FIGURE 2: Structural equation model.

skill competence mediates the relationship between TrE and EmC (H4). Table 1 presents the indicators used to operationalise each construct and the main references informing instrument development.

Research design

Population and sample

This study employed a cross-sectional survey design to examine the relationships among TrE, HSC and EmC in a specialised post-training context. The study focused on Indonesian alumni of the Japan-based *Kenshusei* programme, a population selected because of its relevance to the research objective: these participants had experienced structured technical and discipline-oriented training and therefore provided an appropriate setting for examining whether training-related learning outcomes are associated with later competence and creativity-related work outcomes.

Participants were recruited through alumni-based access channels, including several WhatsApp communities associated with Indonesian *Kenshusei* alumni. Because this population is relatively specialised and not easily reached through conventional sampling frames, the study used a non-probability, access-based recruitment approach. The initial sampling frame included 523 members across the identified communities, and the final analytic sample consisted of 121 respondents. All respondents were male, reflecting the composition of the accessible participant pool in this training network.

The final sample included participants from different occupational backgrounds, including civil servants, business owners, managers, employees and freelancers, as well as varying levels of educational attainment. This diversity is useful for capturing post-training variation in work roles, although the all-male and specialised nature of the sample necessarily limits the generalisability of the findings. In addition, recruitment through alumni WhatsApp groups may have introduced some degree of self-selection bias, and this issue is acknowledged explicitly in the limitations section.

Sample adequacy was assessed in relation to the complexity of the model and the estimation approach used. Given that the study tested a relatively parsimonious covariance-based structural equation modelling model with three latent

TABLE 1: Measurement of variable.

Construct	Major references	Indicator	Item
Training Effectiveness (TrE)	Perdue et al. (2002), Wilson et al. (2002)	Additional knowledge	I have gained additional knowledge about the work culture in Japan after participating in training as a *Kenshusei* in Japan.
			I have acquired additional work skills after training as a *Kenshusei* in Japan.
		Ability to remember	I can recall the training material that was provided during my time as a *Kenshusei* in Japan.
			I can reapply the knowledge I learned during the training as a *Kenshusei* in Japan.
		Ability to practice	I can apply the skills and knowledge obtained during the training as a *Kenshusei* in Japan in my current job.
			I feel confident and prepared to use the skills and knowledge acquired during the training as a *Kenshusei* in Japan in my current job.
Hard-Skill Competence (HSC)	Chou et al. (2010), Dwi Riyanti et al. (2016), Salina Daud et al. (2012), Spencer and Spencer (1993)	HR capability	I have the ability to prioritise the most important tasks and manage time effectively.
			I am able to communicate effectively with colleagues and build good relationships within the team.
			I have good analytical skills and can use data to make accurate decisions.
		Marketing capability	I have the ability to conduct market research and understand customer needs and desires, thus aiding in marketing products (goods or services).
			I have a wide network and am able to build good relationships with customers, colleagues, and business partners, thus assisting in marketing products (goods or services).
			I have the ability to design effective marketing strategies and attract customer attention, as well as package products (goods or services) well to increase sales.
		Production capability	I have a good technical understanding of the production process (goods or services) being worked on.
			I have the ability to manage the production process (goods or services) efficiently and effectively.
			I have the ability to produce quality products (goods or services) that meet the specified specifications.
		Management capability	I have the ability to plan, coordinate, and control work effectively to achieve organisational goals.
			I am able to identify problems and find the right solutions to improve work effectiveness.
			I have the ability to lead and inspire a work team to achieve optimal performance.
		Financial capability	I am capable of generating income well.
			I am able to manage (allocate) the money I have well (efficiently and effectively).
			I have good financial analysis skills.
Employee Creativity (EmC)	Beheshtifar and Zare (2013), Shilling (2008)	Creativity-related skills	I have the ability to think creatively in solving problems at work, especially in difficult situations like the current COVID-19 pandemic.
			I am always looking for new ways to improve work efficiency and achieve better goals, even in challenging situations like the COVID-19 pandemic.
		Encounter to ambiguity conditions	I can face ambiguous and uncertain situations calmly and find the right solutions.
			I am able to adapt quickly in difficult situations and find creative and effective solutions, including in facing the COVID-19 pandemic.
		Locus of control	I have the belief that I have control over my work outcomes and can handle them well, even in difficult conditions like the COVID-19 pandemic.
			I feel confident and capable of adapting to changes or challenges that come, even in difficult situations like the COVID-19 pandemic.
		Need for achievement	I am always looking for new challenges to solve at work, even in difficult situations like the COVID-19 pandemic.
			I feel driven to achieve the best results in my work, even in difficult situations like the COVID-19 pandemic.

Note: Please see the full reference list of the article, Abdul, L.R., Hasmin, H., & Nurung, J. (2026). Bridging training and creativity through technical competence: Evidence from Indonesian 'Kenshusei' alumni. *SA Journal of Human Resource Management/SA Tydskrif vir Menslikehulpbronbestuur, 24*(0), a3430. https://doi.org/10.4102/sajhrm.v24i0.3430, for more information.

COVID-19, coronavirus disease 2019; TrE, Training Effectiveness; HSC, Hard-Skill Competence; EmC, Employee Creativity.

constructs and a limited number of indicators, the sample size was considered acceptable for maximum-likelihood estimation, particularly when interpreted alongside the model diagnostics. This assessment is supported by Hoelter's Critical N values of 131 and 154 at the 0.05 and 0.01 levels, respectively, which indicate adequate sample stability for model estimation in the present analysis.

Measures

Three latent constructs were assessed using seven-point Likert-type scales ranging from 1 ('strongly disagree') to 7 ('strongly agree'): Training Effectiveness, HSC and EmC. The construct indicators and their source references are presented in Table 1, while the main measurement results are reported in Table 2 and supplemented in Online Appendix 1: Table 1-OA1.

Training Effectiveness was operationalised as respondents' perceived post-TrE in terms of retained, recalled and applicable learning outcomes. In this study, the construct does not represent a full multi-level training evaluation framework; rather, it captures whether participants perceived the training experience as having produced knowledge and skills that remained usable in their later work context. This narrower interpretation is important for conceptual clarity, especially because the construct combines elements of additional knowledge, memory retention and practical application.

Hard-Skill Competence was measured as domain-relevant technical and operational capability. The indicators reflect practical competence across several work-related domains, including marketing, production, management and finance. In the context of this study, these domains were retained because they represent the applied capability areas most closely associated with post-training work performance among *Kenshusei* alumni. At the same time, the breadth of these domains should be interpreted with some caution, and future research may benefit from refining these dimensions into more narrowly specified sub-constructs.

Employee Creativity was measured using indicators that capture creativity-related work orientations within the available dataset. The operationalisation used in the present study should not be read as a narrow behavioural creativity scale alone. Rather, it reflects respondents' perceived tendency to engage with work challenges in adaptive, problem-solving and creativity-related ways. This clarification is important for avoiding overstatement in interpreting the findings.

TABLE 3: Model fit indices.

Model	Fit index	Recommended threshold	Result	Interpretation
Measurement model (CFA)	χ^2	Non-significant preferred	45.281	Fit
	df	-	34	-
	p	≥ 0.05	0.093	Fit
	χ^2/df	< 3.00	1.332	Good fit
	GFI	≥ 0.90	0.936	Fit
	AGFI	close to / ≥ 0.90	0.897	Marginal and/ or acceptable
	CFI	≥ 0.90	0.986	Good fit
	TLI	≥ 0.90	0.982	Good fit
	NFI	≥ 0.90	0.947	Fit
	IFI	≥ 0.90	0.986	Good fit
	RMSEA	≤ 0.08	0.053	Good fit
	PCLOSE	≥ 0.05	0.429	Fit
	PNFI	> 0.50	0.716	Fit
	PCFI	> 0.50	0.745	Fit
Structural model	χ^2	-	97.154	Acceptable
	df	-	50	-
	χ^2/df	< 3.00	1.943	Good fit
	CFI	≥ 0.90	0.964	Good fit
	TLI	≥ 0.90	0.948	Fit
	RMSEA	≤ 0.08	0.078	Acceptable
	RMR	Lower values preferred	0.032	Acceptable
	Bollen–Stine *p*	≥ 0.05	0.330	Acceptable
	Hoelter CN *p* = 0.05 / 0.01	Higher than sample or near sample size preferred	131 / 154	Adequate

Note: The measurement model and structural model are reported separately to avoid inconsistency between CFA fit and structural-model fit. The structural model showed acceptable fit, while the measurement model showed good fit. Bollen–Stine bootstrap was used to support model adequacy under possible non-normality.

GFI, goodness-of-fit index; AGFI, adjusted goodness-of-fit index; CFI, comparative fit index; TLI, Tucker-Lewis Index; NFI, normed fit index; IFI, incremental fit index; RMSEA, root mean square error of approximation; PCLOSE, probability of close fit; PNFI, parsimonious normed fit index; PCFI, parsimonious comparative fit index; RMR, root mean square residual; CN, Hoelter's Critical N.

TABLE 2: Measurement model results.

Construct	Indicator	Standardised loading	Estimate	s.e.	C.R.	*p*	CR	AVE
Training Effectiveness (TrE)	Additional knowledge	0.765	1.000	-	-	-	0.74	0.49
	Ability to remember	0.743	1.000	-	-	-		
	Ability to practice	0.580	1.000	-	-	-		
Hard-Skill Competence (HSC)	Marketing capability	0.818	1.000	-	-	-	0.90	0.69
	Production capability	0.857	1.108	0.100	11.132	*		
	Management capability	0.890	1.325	0.116	11.382	*		
	Financial capability	0.752	0.893	0.097	9.192	*		
Employee Creativity (EmC)	Encounter to ambiguity conditions	0.893	0.895	0.055	16.416	*	0.93	0.81
	Locus of control	0.949	1.000	-	-	-		
	Need for achievement	0.851	0.760	0.052	14.593	*		

Note: Fixed parameters are shown with estimate = 1.000 and no s.e., C.R., or *p*-value. TrE showed acceptable reliability but marginal AVE; therefore, its convergent and discriminant validity should be interpreted cautiously. Heterotrait-monotrait (HTMT) values remained below 0.85 for all construct pairs, supporting overall discriminant validity. HR capability and creativity-related skills were not retained in the final confirmatory factor analysis (CFA) model. Indicators not meeting the loading threshold (e.g. HR capability and creativity-related skills) were excluded during the CFA refinement process.

CR, composite reliability; AVE, average variance extracted; s.e., standard error; C.R., critical ratio; TrE, Training Effectiveness; HSC, Hard-Skill Competence; EmC, Employee Creativity.

*, $p < 0.001$.

TABLE 4: Hypothesis results.

Hypothesis	Standardised estimate	s.e.	Critical ratio	*p*	Result
H1: Training Effectiveness → Hard-Skill Competence	0.79	0.194	7.312	*	Accepted
H2: Training Effectiveness → Employee Creativity	0.09	0.238	0.585	0.56	Not Accepted
H3: Hard-Skill Competence → Employee Creativity	0.70	0.131	4.575	*	Accepted
H4: Training Effectiveness → Hard-Skill Competence → Employee Creativity	0.56		-	0.01	Accepted

Note: H4 reports the standardised indirect effect tested using bias-corrected bootstrap procedures; therefore, S.E. and C.R. are not reported for the indirect path.
s.e., standard error.
*, $p < 0.001$

The measurement properties of the constructs were evaluated using standardised factor loadings, construct reliability (CR), average variance extracted (AVE) and discriminant validity checks. As reported in Online Appendix 1: Table 1-OA1, HSC and EmC met conventional thresholds for both reliability and convergent validity, while TrE showed acceptable reliability but marginal AVE. Specifically, CR values were 0.74 for TrE, 0.90 for HSC, and 0.93 for EmC, whereas AVE values were 0.49, 0.69 and 0.81, respectively. Given the marginal AVE for TrE, discriminant validity was interpreted more cautiously and assessed not only with the Fornell–Larcker criterion but also with HTMT, which remained below 0.85 for all construct pairs.

Procedures, ethics and data protection

Data were collected through an online survey. Participation was voluntary, and respondents were informed of the purpose of the study before completing the questionnaire. Electronic informed consent was obtained before participation, and respondents could discontinue at any stage without penalty. No direct personal identifiers were retained in the analytic dataset, and all results are reported in aggregate form.

Because the study involved a non-interventional anonymous survey of adult participants, the main ethical safeguards concerned informed consent, voluntary participation, confidentiality and aggregate reporting.

Data screening and quality diagnostics

Prior to the main analysis, the dataset was screened for missing data, potential common method bias, outliers and distributional assumptions. The final dataset contained complete responses for all analysed cases (Valid $N = 121$), with no item-level missing values requiring imputation.

Because the study relied on self-reported survey data collected at a single point in time, common method bias (CMB) was assessed using multiple diagnostic approaches rather than a single test alone. Harman's single-factor test indicated that the first unrotated factor accounted for approximately 50.90% of the total variance, which is borderline and therefore not sufficient on its own to dismiss CMB concerns. For this reason, the analysis also considered complementary evidence reported in Online Appendix 1: Table 4-OA1. Full collinearity Variance Inflation Factor (VIF) values were below 3.3 for all constructs, and the unmeasured latent method factor (ULMF) assessment showed negligible method loadings, together suggesting that common method bias was unlikely to threaten the substantive interpretation of the model.

Non-response bias was assessed by comparing early and late respondents, with no systematic differences observed on key variables. In addition, sample composition was compared with the accessible sampling frame and showed no substantial proportional deviations.

Potential multivariate outliers were examined using Mahalanobis distance at $p < 0.001$. Flagged cases were reviewed in relation to their influence on model estimation, and the final analysis retained observations judged not to distort the substantive pattern of results. Because multivariate normality could not be assumed fully, the study relied on Bollen–Stine bootstrap procedures to improve the robustness of model interpretation under non-normal conditions.

Data analysis

The data were analysed using CB-SEM in AMOS, following a two-step procedure commonly recommended in SEM research (Ferdinand, 2014; Ghozali, 2017; Hair et al., 2014). The first step involved confirmatory factor analysis (CFA) to assess the adequacy of the measurement model. The second step involved estimation of the structural model to test the hypothesised direct and indirect relationships among TrE, HSC and EmC. This sequencing was used to ensure that the structural relationships were interpreted only after the measurement properties of the constructs had been examined.

Measurement-model adequacy was evaluated using conventional fit indices together with reliability and validity diagnostics. The CFA results indicated good overall fit: $\chi^2 = 45.281$, degrees of freedom (df) = 34, $p = 0.093$, $\chi^2/df = 1.332$, Goodness of Fit Index (GFI) = 0.936, Comparative Fit Index (CFI) = 0.986, Tucker–Lewis Index (TLI) = 0.982, Normed Fit Index (NFI) = 0.947, Incremental Fit Index (IFI) = 0.986, Root Mean Square Error of Approximation (RMSEA) = 0.053 and Probability of Close Fit (PCLOSE) = 0.429. These values support the adequacy of the measurement model and justify proceeding to the structural analysis.

The structural model was then assessed using the same CB-SEM framework. The final structural-model fit was

acceptable, with $\chi^2 = 97.154$, $df = 50$, $\chi^2/df = 1.943$, CFI = 0.964, TLI = 0.948, RMSEA = 0.078 and Root Mean Square Residual (RMR) = 0.032. To address possible multivariate non-normality, model adequacy was additionally evaluated using the Bollen–Stine bootstrap, which yielded $p = 0.330$, supporting the acceptability of the model under bootstrap conditions.

Direct and indirect effects were evaluated using standardised path estimates and bias-corrected bootstrap procedures. The structural results showed that TrE significantly predicted Hard-Skill Competence, and Hard-Skill Competence significantly predicted EmC, whereas the direct path from TrE to EmC was not significant. The indirect effect of TrE on EmC through HSC was significant, supporting the mediation hypothesis. This analytic strategy was chosen because it allows the study to distinguish between immediate and competence-based pathways linking training to creativity-related work outcomes.

To improve transparency, discriminant validity, model fit, and additional diagnostic checks are reported in Online Appendix 1: Table 1-OA1; Table 2-OA1; Table 3-OA1 and Table 4-OA1, rather than being condensed into the main text alone. This includes reliability and convergent-validity evidence, Fornell–Larcker and HTMT results, measurement-model and structural-model fit indices, common method bias diagnostics, outlier checks and sample adequacy indicators.

Ethical considerations

Ethical clearance to conduct this study was obtained from the Institutional Review Board/Research Ethics Committee of the Research and Community Service Centre (PPPM), STIE Amkop Makassar. The ethical clearance approval number is: 112/KomTik-PPPM/STIEAMKOP/IX/2024, approved on 23 September 2024. The certificate was issued on 24 February 2025 under certificate No. 03/SRT/PPPM/STIEAMKOP/II/2025. Participation was voluntary, informed consent was obtained before participation, and responses were anonymised and reported only in aggregate form.

Results

Measurement model evaluation

The analysis began with an evaluation of the measurement model to assess the adequacy of the latent constructs before testing the hypothesised structural relationships. Following the two-step CB-SEM procedure, CFA was first conducted to examine indicator loadings, reliability, convergent validity and discriminant validity.

Overall, the measurement model showed good fit to the data. The CFA results produced $\chi^2 = 45.281$ with $df = 34$ and $p = 0.093$, indicating that the model fit was acceptable. Additional indices further supported this conclusion, including $\chi^2/df = 1.332$, GFI = 0.936, AGFI = 0.897, CFI = 0.986, TLI = 0.982, NFI = 0.947, IFI = 0.986 and RMSEA = 0.053, with PCLOSE = 0.429. Taken together, these values indicate that the measurement model provided a satisfactory representation of the observed data.

At the indicator level, the retained items loaded adequately on their intended constructs. Training Effectiveness showed standardised loadings of 0.765, 0.743 and 0.580 across its three indicators. Hard-Skill Competence showed loadings of 0.818, 0.857, 0.890 and 0.752 across the retained dimensions. Employee Creativity showed strong loadings on its retained indicators, including 0.893, 0.949 and 0.851. These results suggest that the indicators contributed meaningfully to their respective latent variables.

The reliability and convergent-validity assessment also produced generally acceptable results. Composite reliability values were 0.74 for TrE, 0.90 for HSC and 0.93 for EmC, indicating satisfactory internal consistency across the three constructs. Average variance extracted (AVE) values were 0.49 for TrE, 0.69 for HSC and 0.81 for EmC. Thus, convergent validity was clearly supported for HSC and EmC, while TrE should be interpreted more cautiously because its AVE fell slightly below the conventional 0.50 threshold.

Discriminant validity was assessed using both the Fornell–Larcker criterion and the heterotrait–monotrait ratio (HTMT). The Fornell–Larcker matrix indicated satisfactory separation for HSC and EmC, whereas TrE showed a marginal pattern relative to HSC because the square root of AVE for TrE (0.70) was lower than the latent correlation between TrE and HSC (0.795). However, HTMT values for all construct pairs remained below 0.85, with approximate values of 0.80 for TrE–HSC, 0.65 for TrE–EmC and 0.78 for HSC–EmC. On this basis, discriminant validity was considered acceptable overall, although the TrE construct should still be interpreted with appropriate caution.

Taken together, the CFA results suggest that the measurement model was sufficiently robust to support the next stage of analysis. While the TrE construct showed slightly weaker convergent performance than the other two constructs, the overall pattern of reliability, factor loadings and HTMT results justified proceeding to structural-model testing.

Structural model and hypothesis testing

After the adequacy of the measurement model had been established, the structural model was estimated to test the hypothesised relationships among TrE, HSC and EmC. In contrast to the CFA results reported above, this stage focused on the fit of the full structural model and on the direct paths specified in H1–H3.

The structural model showed acceptable overall fit. The final structural-model indices were $\chi^2 = 97.154$ with $df = 50$, $\chi^2/df = 1.943$, CFI = 0.964, TLI = 0.948, RMSEA = 0.078 and RMR = 0.032. In addition, the Bollen–Stine bootstrap yielded $p = 0.330$, providing further support for model adequacy under bootstrap conditions. These values indicate that the hypothesised structural model fit the data at an acceptable level and was suitable for hypothesis testing.

The path estimates revealed a clear pattern. Firstly, TrE had a positive and significant effect on HSC ($\beta = 0.79$, CR = 7.312, $p < 0.001$), supporting H1. This result indicates that respondents who perceived the training as more effective also reported stronger post-training technical and operational competence.

Secondly, the direct effect of TrE on EmC was not significant ($\beta = 0.09$, CR = 0.585, $p = 0.56$). Accordingly, H2 was not supported. This finding suggests that, in the present technical-training context, TrE did not translate directly into creativity-related work outcomes without the competence pathway.

Thirdly, HSC had a positive and significant effect on EmC ($\beta = 0.70$, CR = 4.575, $p < 0.001$), supporting H3. This indicates that employees with stronger technical and operational competence were more likely to report higher levels of creativity-related capability in their work context.

Taken together, these structural results point to an asymmetric pattern: training was strongly associated with competence development, and competence was strongly associated with EmC, but the direct path from training to creativity was not statistically significant. This pattern already suggests that the relationship between training and creativity may be better understood through an indirect competence-based pathway than through a simple direct effect.

Mediation analysis

To assess whether HSC mediated the relationship between TrE and EmC, the study examined the indirect effect using bias-corrected bootstrap procedures. This step was important because the direct path from TrE to EmC was not significant, whereas the two component paths forming the indirect route were both significant.

The results showed that the indirect effect of TrE on EmC through HSC was positive and significant ($\beta = 0.56$, $p = 0.01$), thereby supporting H4. This result provides evidence that HSC functions as the main competence-based pathway through which TrE is associated with creativity-related work outcomes.

Substantively, this mediation result means that training became relevant for EmC only insofar as it strengthened HSC. In other words, the training–creativity relationship in this study was competence-based rather than immediate. This is fully consistent with the earlier structural results: training was effective in building usable capability, and that capability then provided the basis through which creativity-related outcomes could emerge.

Additional diagnostic results

To strengthen the robustness of the findings, additional diagnostic checks were conducted and are reported in Online Appendix 1: Table 3-OA1. These diagnostics addressed common method bias, non-response bias, outlier sensitivity and sample adequacy.

Because the data were self-reported and collected cross-sectionally, common method bias was examined using multiple approaches. Harman's single-factor test showed that the first factor accounted for approximately 50.90% of the total variance, which is borderline and therefore insufficient to dismiss method bias concerns on its own. However, complementary diagnostics indicated that this risk was limited: full collinearity VIF values were below 3.3 for all constructs, and the ULMF assessment suggested negligible method loadings. Taken together, these results support the conclusion that common method bias was unlikely to be a substantial threat to the interpretation of the model.

Further checks showed no meaningful evidence of non-response bias when early and late respondents were compared on key variables. In addition, sample composition did not show substantial proportional deviation from the accessible sampling frame. Outlier screening using Mahalanobis distance identified flagged cases that were subsequently reviewed against influence diagnostics, and the final retained observations did not distort the substantive pattern of results.

Finally, the model-estimation diagnostics supported sample adequacy. Hoelter's Critical N values were 131 and 154 at the 0.05 and 0.01 levels, respectively, suggesting acceptable estimation stability for the model used in this study. Taken together, these robustness checks increase confidence that the reported findings are not merely artefacts of method bias, outlier distortion or unstable estimation.

Discussion

The effect of training effectiveness on hard-skill competence

The findings show that TrE has a positive and significant effect on HSC. This result is important because it confirms the most immediate expectation of the study: when training is perceived as useful, memorable, and applicable, it is more likely to strengthen employees' technical and operational capability. In the present context, this suggests

that the *Kenshusei* training experience did not function merely as short-term exposure, but as a capability-building process that remained relevant to participants' later work roles.

This finding is consistent with earlier studies showing that effective training improves work-relevant competence by helping employees acquire, retain and apply technical knowledge more successfully (Fitriani et al., 2023; Lista et al., 2022; Marnisah et al., 2021). It also aligns with research emphasising that training outcomes become stronger when learning is grounded in real tasks and delivered in ways that support transfer into practice (Andoh et al., 2022; Dignath, 2021). In other words, training is most valuable when it moves beyond information delivery and contributes to usable capability. That pattern is clearly reflected in the present result.

From the perspective of HCT, this finding is theoretically expected. Human Capital Theory argues that investments in training increase the value of employees by building knowledge, skills and productive capacity that can later be mobilised in organisational contexts (Auerbach & Green, 2024; Pasban & Nojedeh, 2016). The present study supports that logic by showing that effective training is associated with stronger HSC, which can be interpreted as one of the clearest returns on training investment. In this sense, the result strengthens the argument that technically oriented training remains a meaningful pathway for capability development, especially when it is linked to concrete work demands (Homer, 2001; Sutton, 2015).

At the same time, this result should not be interpreted too narrowly. The positive effect of training on competence does not mean that all training automatically produces equally strong outcomes. The broader literature indicates that competence development also depends on training relevance, learning design, learner engagement, and post-training opportunities to apply what has been learned (Aragón-Sánchez et al., 2003; Santos & Stuart, 2003). This broader perspective is important because it helps explain why training works more effectively in some contexts than in others. In the present study, the positive path from TrE to HSC suggests that participants did not merely attend training, but experienced it as sufficiently meaningful to influence later capability.

Overall, the finding reinforces the view that training should continue to be understood as a strategic human capital investment. For organisations, the implication is clear: if training is designed well and connected closely to actual work practice, it can strengthen the kinds of technical competence that remain essential for performance and later higher-order outcomes.

The effect of training effectiveness on employee creativity

In contrast to H1, the direct effect of TrE on EmC was not significant. This is one of the most important findings of the study because it suggests that training, even when perceived as effective, does not automatically generate creativity-related work outcomes in a technical post-training context.

This result does not necessarily contradict prior literature, but rather adds nuance to it. Some studies have reported that training can stimulate creative thinking by broadening cognitive flexibility, problem-solving capacity and openness to experimentation (Chaubey, 2022; Clapham, 2003; Singh & Phoolka, 2024; Zhao et al., 2023). However, other studies suggest that creativity tends to flourish only when training is reinforced by enabling conditions such as developmental feedback, autonomy, work engagement and knowledge-sharing opportunities (Islam & Asad, 2024; Joo et al., 2023). Seen in that light, the present finding is not surprising. It indicates that technically effective training may create learning potential, but creative outcomes may still depend on whether employees have sufficient space and support to use what they have learned in more exploratory ways.

A second explanation relates to the nature of the training itself. The *Kenshusei* context is strongly associated with technical discipline, structured practice and operational competence. These are valuable features, but they do not necessarily emphasise the kinds of learning experiences most closely associated with direct creativity enhancement, such as experimentation, divergent thinking or psychologically safe trial-and-error processes. This interpretation is consistent with the broader literature arguing that creativity is unlikely to emerge from technical instruction alone unless employees also encounter environments that support exploration and adaptive thinking (Amabile, 1988; Shalley & Gilson, 2004).

The non-significant direct effect also helps explain why alternative mediators are theoretically meaningful. Training may influence creativity more plausibly through pathways such as competence, autonomy, self-efficacy, feedback or innovation climate than through a simple direct route. The current study focuses on one such mechanism – HSC – and the findings suggest that this narrower pathway is more credible in the present context than a broad direct-effect claim. Rather than weakening the value of training, this result refines our understanding of it: training may matter for creativity, but its influence is likely to be indirect and conditional rather than immediate and universal.

For this reason, the present finding contributes to the literature by cautioning against overly linear assumptions about training and creativity. Organisations should not assume that technically effective training will by itself produce creative outcomes. Instead, training appears to require a mediating capability base and, potentially, a supportive work environment before its benefits can extend to creativity-related performance.

The effect of hard-skill competence on employee creativity

The results further show that HSC has a positive and significant effect on EmC. This finding supports the argument

that technical capability is not relevant only for routine performance, but also for higher-order responses to work problems. Employees who possess stronger domain-relevant competence may be better equipped to interpret unfamiliar situations, combine existing knowledge in useful ways, and respond more adaptively when work becomes complex or uncertain.

This interpretation is consistent with prior studies showing that competence in production, operations, management, and related domains contributes not only to productivity but also to more effective problem-solving and creative engagement with work processes (Choe et al., 1997; Jandaghi et al., 2019; Woodcock, 1996). More recent evidence also indicates that system-based and digital capability can enhance adaptability by helping employees mobilise knowledge in more collaborative and flexible ways (Garcez et al., 2022; Jia et al., 2024). The present study fits within that literature by showing that technical competence remains an important foundation for creativity-related outcomes, even in a context where the direct influence of training is not significant.

From a HCT perspective, this result is also meaningful because it shows that accumulated skill and expertise do not merely improve output efficiency; they can also broaden employees' capacity to generate useful responses under changing conditions (Auerbach & Green, 2024; Pasban & Nojedeh, 2016). This supports a more dynamic reading of human capital, one in which competence becomes a basis for adaptation and not only execution. In practical terms, employees appear more likely to demonstrate creativity-related capability when they have already developed the technical confidence and operational understanding needed to engage with work challenges constructively.

At the same time, this result should not be interpreted as if competence alone is sufficient. The literature remains clear that creative expression is shaped by contextual conditions such as leadership support, learning climate and organisational opportunity structures (Beugelsdijk, 2008; Chaubey, 2022; Zhao et al., 2023). What the present finding suggests is that HSC is a necessary enabling resource in this process. It provides a stronger basis from which creativity-related work responses can emerge, even if broader contextual support remains important.

Thus, the result strengthens the view that organisations seeking innovation should not separate technical capability from creativity too sharply. In many work settings, especially those requiring disciplined application and problem-solving, creativity appears to depend partly on the depth of employees' technical competence.

The mediating role of hard-skill competence

The mediation result provides the clearest integrative finding of the study. Training effectiveness had a significant indirect effect on EmC through HSC, indicating that competence serves as the main pathway through which training is translated into creativity-related outcomes. This is important because it helps reconcile the earlier findings: training did not directly predict creativity, yet it still mattered because it strengthened a capability that, in turn, contributed to creativity.

This result is closely aligned with the central logic of HCT. Training investments do not necessarily generate higher-order outcomes in a single step; rather, they first build knowledge and competence, which then shape how employees perform and respond in practice (Auerbach & Green, 2024; Pasban & Nojedeh, 2016). In the present study, HSC appears to be the mechanism through which technically oriented training becomes meaningful for creativity-related work outcomes. This suggests that the value of training lies not only in exposure to learning, but in the extent to which that exposure is converted into usable capability.

The finding also speaks directly to earlier studies arguing that competence can function as a bridge between learning input and innovative action. Employees with stronger domain-specific capability are generally better able to identify relevant problems, connect ideas across tasks and implement more effective responses when faced with uncertainty (Garcez et al., 2022; Lamri & Lubart, 2023; Ogbeibu et al., 2021). In this sense, competence does not replace creativity; rather, it makes creativity-related action more feasible. The present study, therefore, contributes by showing that, in a specialised technical-training context, the indirect route through competence is more empirically convincing than a direct training–creativity pathway.

This mediated relationship also helps explain why organisations may be disappointed when training programmes fail to produce immediate innovation gains. The problem may not be that training is ineffective, but that its benefits require an intermediate capability-building stage before they can influence more complex outcomes. For practitioners, this means that training evaluation should not stop at knowledge acquisition alone. Organisations should also ask whether training has strengthened the kinds of technical competence that enable employees to adapt, improve and respond creatively in their work.

Overall, the mediation finding is one of the strongest contributions of the study. It shows that the relationship between training and creativity is better understood as a competence-based process than as a simple direct effect. This interpretation remains theoretically grounded, empirically consistent with the current results, and more cautious in light of the broader literature.

Theoretical implications

This study contributes to the literature by offering a more precise explanation of how training may relate to creativity-

related work outcomes. Rather than assuming that training directly stimulates creativity, the findings show that its influence is more plausibly channelled through HSC. This extends HCT by showing that the value of training lies not only in knowledge acquisition, but also in the development of applied capability that can later support adaptation and useful idea generation in the workplace (Auerbach & Green, 2024; Pasban & Nojedeh, 2016).

The study also contributes by clarifying that, in technically oriented training contexts, competence development may be a more defensible explanatory mechanism than a broad direct-effect claim about creativity. This does not diminish the importance of creativity; rather, it places it within a more realistic developmental pathway. In that sense, the study helps bridge human capital research and the creativity literature by showing that training-related investments may influence creativity-related outcomes through capability formation.

Managerial implications

From a practical perspective, the findings suggest that organisations should be cautious about expecting direct creativity gains from technical training alone. Training remains valuable, but its contribution to creativity appears to depend on whether it strengthens technical capability and whether that capability can be used meaningfully in the workplace. For managers, this means that effective training design should prioritise applied competence, transfer opportunities and post-training environments that support problem-solving and adaptive use of knowledge.

The results also imply that organisations should integrate training into a broader development system rather than treating it as a standalone intervention. If creativity is desired as an outcome, technical training may need to be complemented by autonomy, developmental feedback, supportive leadership and opportunities for knowledge use. In short, organisations are more likely to benefit from training when they see it as part of a capability-building process rather than as a direct trigger of innovation.

Limitations and future research

Several limitations should be acknowledged. Firstly, the study uses a cross-sectional design, which limits causal interpretation. Secondly, the sample is specific to Indonesian alumni of the Japan-based *Kenshusei* programme and consists entirely of male respondents, which constrains the generalisability of the findings. Thirdly, participants were recruited through access-based alumni networks, which may introduce self-selection bias.

A further limitation concerns measurement. The EmC construct in this study should be interpreted cautiously as capturing creativity-related work orientations within the available dataset rather than a full behavioural creativity scale. Some indicators are closer to adaptive orientation and problem-solving readiness than to observed creative behaviour. Future studies should therefore use more established and externally validated creativity measures, including supervisor-rated or multi-source behavioural creativity scales.

Future research may also extend the present model by examining other theoretically relevant mediators and contextual conditions, such as autonomy, leadership climate, knowledge sharing, self-efficacy and soft-skill development. Such work would help build a more comprehensive explanation of how training is converted into creativity-related outcomes across different organisational environments.

Conclusion

This study set out to examine whether TrE contributes to EmC directly or whether that relationship is better explained through HSC. Drawing on HCT, the study tested a mediated model using data from Indonesian alumni of the Japan-based Kenshusei programme.

The results suggest that, in this context, training is more meaningfully linked to creativity-related work outcomes when it first strengthens usable technical and operational capability. Put simply, training created value primarily by building HSC, and this competence then provided the foundation for adaptive and creativity-related responses at work.

These findings add a more nuanced perspective to the training and creativity literature. Rather than assuming that effective training automatically produces creative outcomes, the study shows that the pathway is better understood as competence-based and conditional. This interpretation is consistent with HCT, which views training as an investment whose value is realised through the development of productive capability that can later influence broader performance outcomes (Auerbach & Green, 2024; Pasban & Nojedeh, 2016). In the present study, HSC emerged as the key mechanism through which training was translated into creativity-related capability.

From a practical standpoint, the findings suggest that organisations should be cautious about expecting technical training alone to generate direct creativity gains. Training remains important, but its impact appears to depend on whether it builds transferable competence and whether employees are able to use that competence in work settings that require adaptation, judgement and problem-solving. For this reason, training should be designed and evaluated not only in terms of knowledge delivery, but also in terms of its contribution to competence formation and its relevance to actual work demands.

At the same time, the findings should be interpreted within the limits of the study. The cross-sectional design, the specialised all-male sample, and the use of access-

based recruitment constrain generalisability. In addition, the EmC construct should be read cautiously as reflecting creativity-related work orientations within the available dataset rather than narrowly defined behavioural creativity alone. Even so, the study offers a useful contribution by showing that the relationship between training and creativity is more credibly explained through an indirect competence pathway than through a simple direct effect.

Overall, this study reinforces the importance of viewing training as part of a broader human capital development process. In specialised technical-training contexts, organisations may be more likely to obtain creativity-related benefits when training first strengthens the HSC that employees need in order to respond constructively and adaptively to workplace challenges.

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Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

CRediT authorship contribution

Abdul Latief R: Conceptualisation, Data curation, Formal analysis, Methodology, Writing – original draft, Writing – review & editing. Hasmin Hasmin: Conceptualisation, Investigation, Resources, Supervision, Validation, Writing – original draft, Writing – review & editing. Jumiaty Nurung: Data curation, Investigation, Project administration, Validation, Writing – review & editing. All authors reviewed the article, contributed to the discussion of results, approved the final version for submission and publication and take responsibility for the integrity of its findings.

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Data availability

The data that support the findings of this study are available from the corresponding author, Abdul Latief R., upon reasonable request.

Disclaimer

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