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THE INFLUENCE OF MEANING ON CAREER COMPETENCY AMONG AIRCRAFT LINE MECHANICS IN JAPANESE LCCS: MEDIATING ROLE OF EXPERIENTIAL LEARNING

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Abstract:

The Japanese aircraft industry faces serious issues with competent aircraft mechanics due to business changes, reduced tacit knowledge learning, increased aircraft reliability, diversity of work values, and an unstructured development system. Therefore, this study examines the influence of meaning on career competency among the aircraft line mechanics in Japanese Low-Cost-Carriers (LCCs), using experiential learning as a mediator. Based on the expertisation and adult learning theories, this study attempts to test 12 hypotheses concerning the relationships of meaning, experiential learning, and career competency, emphasising the mediating effects of experiential learning. Data were collected using an online survey of 284 respondents, and 220 usable responses were obtained (77%). In this regard, validity, reliability, and empirical accuracy were assessed using the Partial Least Squares Structural Equation Modelling (PLS-SEM). eight hypotheses out of 12 were supported. The test result showed that meaning positively influence on experiential learning, some dimensions of experiential learning positively influence on career competency, and some dimensions of experiential learning mediate between meaning and career competency. The findings of this study have significant implications across methodology, theoretical, and practical implications. However, several limitations should be acknowledged, and these form the basis for future research directions.

Keywords:

Aircraft Line Mechanics, Meaning, Psychological Empowerment, Experiential Learning, Career Competency

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Introduction

Japan's aviation industry has significantly changed over the past fifteen years since Japan Airlines filed for bankruptcy in 2011. In 2012, aviation policy was deregulated, resulting in the emergence of new airlines and competition between new and existing operators. Each airline expanded its route networks to increase foreign tourists (Ministry of Land Infrastructure Transport and Tourism, 2022). To expand their business and maintain safety operations, it is critical to have competent aircraft mechanics because this industry is labour-intensive. These aircraft mechanics are strictly governed by Japan's Civil Aeronautics Law which has certification criteria requiring a thorough knowledge of specific aircraft types and hands-on experience.

The airline industry in Japan is experiencing a severe shortage of competent aircraft mechanics, aggravated by changing service contexts and an ageing workforce. According to International Civil Aviation Organization (2011), by 2037, Japan would face a demand for 18,206 aircraft mechanics, compared with just 11,724 in 2017, with newly 12,644 required to maintain the operational requirements. Another pressing issue is the ageing workforce, with over 50 % of Class 1 aircraft maintenance engineers approaching retirement in their late forties to mid-sixties (Ministry of Land Infrastructure Transport and Tourism, 2022, 2023). However, smaller teams reduce knowledge transfer and technological advances that minimise the maintenance required to limit hands-on learning, resulting in tacit knowledge loss. Moreover, generational differences in work values threaten collaboration and continuity of competency development. In addition, poorly coordinated and uneven skills-building efforts across organisations make it hard to develop competencies systematically. These issues require proactive structured approaches to maintaining a skilled workforce; this is essential for the successful continuation of the industry in the long term (Ministry of Land Infrastructure Transport and Tourism, 2022). The main objective of the study is to investigate the influence of meaning and learning organisation on career competency mediated by experiential learning among aircraft line mechanics in Japanese Low-Cost-Carriers (LCCs). Therefore, the study focuses on the following research objectives:

RQ1: Does meaning influence experiential learning among aircraft line mechanics in Japanese LCCs?
RQ2: Does experiential learning influence career competency among aircraft line mechanics in Japanese LCCs?
RQ3: Does experiential learning mediate the relationship between meaning and career competency among aircraft line mechanics in Japanese LCCs?

The finding of this study provides methodological, theoretical and practical implications regarding the influence of meaning on career competency and the mediating role of experiential learning between meaning and career competency among aircraft line mechanics in Japanese LCCs. More specifically, it outlines the potential influence of meaning on career competency with the mediating role of experiential learning: a potent way of developing employee human resources (Nadler & Nadler, 2012). This study is theoretically based on the 'Ten-Year Rule' (Ericsson et al., 1993) and 'intellectual skill theory' (Koike, 2005), emphasising structured skill acquisition. Practically, this study also helps LCCs improve training systems, promotes employees studying throughout their careers, and leads educators in aviation vocational training to tailor programs to meet industry needs.

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Literature Review

Meaning

Psychological empowerment is an important part of career development, competency and performance in work and education environments. Traditional theories emphasise on experience as key to expertise (Ericsson et al., 1993) yet emphasise deliberate practice, while Smith & DeFrates-Densch (2009) emphasise motivation and autonomy as key to self-directed adult learners. According to Thomas & Velthouse (1990) and Spreitzer (1995), psychological empowerment comprises four dimensions: meaning, self-efficacy, self-determination and impact. Founded on the principles laid forth by Deci et al. (1989) and supported by Ryan & Deci (2000), these dimensions coalesce to increase intrinsic motivation, which means the absence of any dimension will dilute motivation, leading to decreased empowerment.

Incredibly rooted in theories advanced by Thomas & Velthouse (1990) and Hackman & Oldham (1976), meaning is an important driver of intrinsic motivation, job satisfaction, and commitment. Engaged employees who exhibit work engagement perform much better, are more committed and dedicated and have fun working where their work is meaningful (Hackman, 1980). Work is meaningful if it adds to the motivation and emotional involvement, given that it is connected to some personal value, be it social responsibility in the non-profit industry, patient care in healthcare, or creative freedom in the arts (Spreitzer, 1995). Projects like these give employees a higher purpose and involve the kind of positive emotions such as pride and enthusiasm with the prospect of affirming their links with the organisation (Kahn, 1990).

Experiential Learning

The relationship between experience, adult learning, and leader development is embedded in the educational philosophy of John Dewey, which holds that meaningful learning emerges from interactions between the individual and their experiences/environment (Dewey, 1997). Adults reflect on their learning to use it in the future or build on what they already have learned, as reflection links what they have learned and will still learn (Boud, 1994). McCall et al. (1988) focus on 'quantum leap experiences'—significant events that can hugely propel the arc of growth of their personal and professional lives. These challenging experiences influence self-awareness, worldviews and behaviour in ways formal schooling does not. According to McCall (1998), the most effective leadership development happens in less formalised settings, where leaders experience pivotal career moments.

Concrete experience is the basis for meaningful learning according to Kolb's (1984) experiential learning theory, and it requires direct multisensory interaction (Konak et al., 2014). So, high-quality experience matters, as reflection transforms sensory input into experience into actionable knowledge (Rodriguez, 2020; Zull, 2006). Reflective observation provides an opportunity for critical discussion and analysis of those experiences, which serves to deepen understanding (Konak et al., 2014). This is where abstract conceptualisation comes in, allowing learners to generalise experiences — but it may be impeded through cognitive overload (Sweller, 1988). In high-stakes domains, such as medicine and aviation, active experimentation is the most impactful of learned theories when applied in actual and simulated environments (Bradley, 2006).

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Career Competency

As Ahmad et al. (2019) defined, career competency includes the knowledge, skills, attitudes and behaviours required for professional success. It includes self-awareness, goal setting, networking, lifelong learning, and transition resilience. Higher-order intellectual skills, including problem-solving, creativity and adaptability, complement technical knowledge, especially in knowledge-based labour markets (Koike, 2005). The network reinforces academic and vocational skills by exchanging enterprises and resources (Arthur, 1994). Firms promote job-related expertise through career development, training and education, which increases employee productivity, agility and innovation to remain competitive.

Hypotheses Development

Meaning and Experiential Learning

Santos et al. (2019) put forward a model of empowerment-based entrepreneurship education in which meaning constitutes an essential aspect of psychological empowerment and, if students experience meaning in performing their entrepreneurial activities, enables engagement with the concrete experience, which in turn, contributes to improved learning outcomes. Nistor & Samarasinghe (2019) specifically looked at the impact of induction based on experiential learning and reflective practice for academic staff and found that the amount of meaning staff make from their teaching roles before the roles change has an impact on their ability to integrate aspects of reflective practices within their teaching space. Curran et al. (2021) found that psychological empowerment improved task performance in international experiential learning projects. When students find meaning in their tasks, they better conceptualise ideas and actively apply their learning. Meaningful engagement also increases motivation to experiment in new contexts, which improves performance. Therefore, the following hypothesis is proposed:

H1a: Meaning has a positive influence on concrete experience among aircraft line mechanics in Japanese LCCs.

H1b: Meaning has a positive influence on reflective observation among aircraft line mechanics in Japanese LCCs.

H1c: Meaning has a positive influence on abstract conceptualisation among aircraft line mechanics in Japanese LCCs.

H1d: Meaning has a positive influence on active experimentation among aircraft line mechanics in Japanese LCCs.

Experiential Learning and Career Competency

Waheed & Waseem (2023) found that concrete experience and abstract conceptualisation promote adaptive competencies (e.g., clinical reasoning, problem-solving, professional grooming) among medical students. Through a literature review on reflective learning in nursing, Uswahzulhasanah & Arofiati (2021) found that health students showed that reflective practice significantly improved critical thinking and problem-solving skills and explained that these skills are essential for professional competence in the health professions. Skaltsa et al. (2022) demonstrated that active experimentation has a positive impact on the economic formation of students and recommended that students have the opportunity to implement skill development for their profession through active participation in sustainable agriculture projects. Therefore, the following hypothesis is proposed:

H2a: Concrete experience has a positive influence on career competency among aircraft line mechanics in Japanese LCCs.

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H2b: Reflective observation has a positive influence on career competency among aircraft line mechanics in Japanese LCCs.
H2c: Abstract conceptualisation has a positive influence on career competency among aircraft line mechanics in Japanese LCCs.
H2d: Active experimentation has a positive influence on career competency among aircraft line mechanics in Japanese LCCs.

Mediating Effect of Experiential Competency

Previous studies found that the meaning of psychological empowerment positively influences experiential learning (Curran et al., 2021; Nistor & Samarasinghe, 2019; Santos et al., 2019). On the other hand, other studies demonstrated that experiential learning has a positive influence on career competency (Skaltsa et al., 2022; Uswahzulhasanah & Arofiati, 2021; Waheed & Waseem, 2023). Therefore, the following hypothesis is proposed:
H3a: Concrete experience mediates the relationship between meaning and career competency among aircraft line mechanics in Japanese LCCs.
H3b: Reflective observation mediates the relationship between meaning and career competency among aircraft line mechanics in Japanese LCCs.
H3c: Abstract conceptualisation mediates the relationship between meaning and career competency among aircraft line mechanics in Japanese LCCs.
H3d: Active experimentation mediates the relationship between meaning and career competency among aircraft line mechanics in Japanese LCCs.

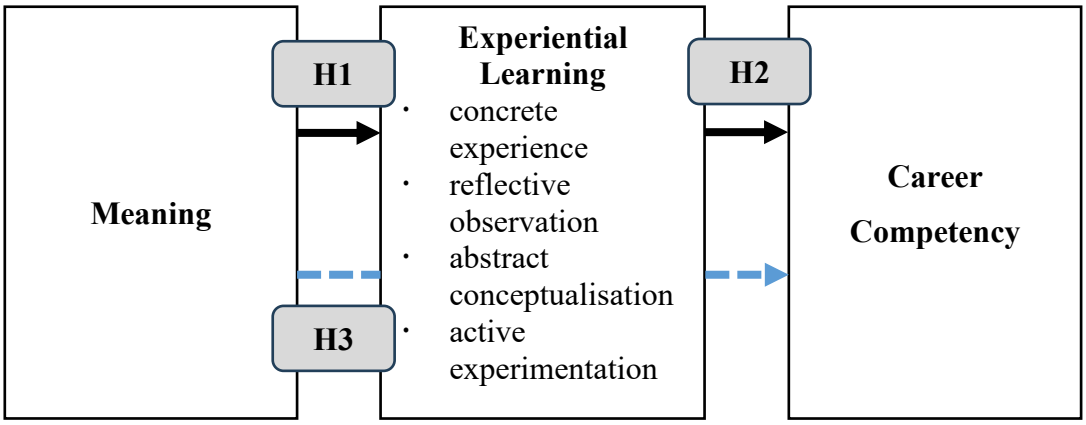

Figure 1: Conceptual Framework

Methods

Research Design and Sampling

Self-reporting is one of the most substantial measures of personality and behaviour (Schwarz & Oyserman, 2001). This is particularly relevant for measuring subjective criteria such as psychological empowerment. Validated scales were used, and a pre-test was run to ensure validity, the latter can be considered the limit of the study. Podsakoff et al. (2003) provide examples of how the anonymity of participants reduces bias and improves rating scales.

This study focuses on the aircraft mechanics of Japanese LCCs, including active certifying staff and inactive mechanics working in technical support or managerial roles. While 405 were reported in FY2023 LCC safety reports, the pre-surveys estimated 450 LCC active mechanics considering the inactive mechanics. Adhering to the recommendations of Roscoe (1975) and

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Asenahabi & Peters (2023) regarding the focus on accuracy, a minimum sample size was determined to be 208 using a 95% confidence level, ±5% precision, and a population proportion of 0.5 for representativity.

The survey was conducted against active certifying personnel and inactive mechanics. That is important to ensure the validity of the data with a clear focus on participants on line mechanics who had already worked in Japanese LCCs for at least three years, as well as in prior roles as aircraft line mechanics and certifying staff. LCCs are characterised based on operation and maintenance policy (e.g., fleet size and level of maintenance outsourcing). This guarantees compliance with the purpose of the research, which is to evaluate the meaning, experiential learning and career competency of aircraft line mechanics.

This study utilised purposive sampling to achieve the objectives of this study because a non-probability method was suitable for eliciting valuable data considering the specificity of the population (Palinkas et al., 2013; Tongco, 2007). Although selection bias is a limitation of the study, we adopted clearly defined inclusion criteria to produce valid and reliable findings (Patton, 2015; Tongco, 2007), thereby minimising subjectivity in selecting study participants.

Data Collection Procedure

The survey was conducted through SurveyMonkey for selected participants. Each participant received a consent form, instructions, and survey sheet from the representatives from selected LCCs. Respondents had four weeks to answer the survey, with reminders halfway through the period. The questionnaire employed in this study was suitable for quantitative research since it could help systematically summarise the information collected for analysis to determine potential relationships (Kabir, 2016). Established scales from prior research were employed to assess critical variables: meaning of psychological empowerment (Spreitzer, 1995), which uses three items; experiential learning (Kimura et al., 2011), which comprises four items each for concrete experience, reflective observation, abstract conceptualisation, and active experimentation; and career competency (Ahmad et al., 2019), which encompasses sixteen items. Participants evaluated all topics using a 5-point Likert scale, ranging from 1 ("strongly disagree") to 5 ("strongly agree").

Data Analysis Technique

SEM (Structural Equation Modelling) validates and confirms the measurement model, ensuring it is reliable and providing a solid basis for strong results. Ensuring observed variables accurately demonstrate numbered theoretical constructs, is vital before proceeding to structural relationships analysis (Hair et al., 2019). Assessment is closely tied to validity and reliability. An important aspect of this is validity, which refers to whether the model measures what it is supposed to measure with a high degree of convergent validity (meaning that the correlations between indicators of the same construct) and the extent to which different constructs are empirically distinct (discriminant validity). Reliability measures the consistency of the indicators, usually reported using adjusted Cronbach's alpha or composite reliability to guarantee that the indicators consistently measure a particular construct.

In SEM, path coefficients evaluate the strength and significance of variables' interactions with numbers between -1 and +1. So, the absolute value determines the strength, which is more significant in the positive coefficients that show a positive relationship and in the negative coefficients a negative relationship (Hair et al., 2019). So now, these coefficients can be used

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for hypothesis testing where we can check the statistical significance through p-values/ confidence intervals. Direct, indirect (mediated), and total effects of path coefficients in the original path model can be expressed and will thus reveal even more specifics about direct and indirect relationships in the model. They are essential for evaluating causal relationships, identifying meaningful contributors, and encouraging theoretical development in SEM.

Results

Profile of Respondents

The survey aimed at 284 aircraft mechanics, with a response rate of 77 % (220 replies), which is considered outstanding in a controlled setting. The sample of aircraft mechanics was overwhelmingly male (97.3%), 1.8% female, and 0.9% preferred not to say. Most workers were middle-aged, with the most significant number in each age group in order of size being 50-59 (29.5 %), 30-39 (29.1 %) and 40-49 (264 %). Vocational qualifications were common (68.6% of the respondents), but fewer had tertiary qualifications. The work experience of the respondents was variable, with 38.6% having 10-19 years and 30.9% having 30+ years. There was pronounced career mobility, with 42.7 % working in two companies.

Table 1: Demographic of the Respondents

		Frequency	Percent
Gender	Male	214	97.3
	Female	4	1.8
	Prefer Not to Say	2	0.9
	Total	220	100.0
Age	Under 30	7	3.2
	30 and over, but under 40	64	29.1
	40 and over, but under 50	58	26.4
	50 and over, but under 60	65	29.5
	Over 60	26	11.8
	Total	220	100.0
Educational Background	Junior high school	0	0.0
	High school	20	9.1
	Vocational school	151	68.6
	Technical college or junior college (associate degree)	18	8.2
	University (bachelor's degree)	29	13.2
	Graduate school (master's degree)	2	0.9
	Graduate school (doctor degree)	0	0.0
	Total	220	100.0
Years of experience as an aircraft mechanic	Under 10 years	15	6.8
	10 years and over, but under 20 years	85	38.6
	20 years and over, but under 30 years	52	23.6
	30 years and over	68	30.9
	Total	220	100.0
Number of companies worked	1 company	70	31.8
	2 companies	94	42.7
	3 or more companies	56	25.5

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as an aircraft mechanic	Total	220	100.0

Data Analysis

Data was analysed using SEM test using SmartPLS. In the first place, the measurement model was performed to get the values of outer loading, Cronbach alpha values (Alpha), Composite reliability (CR), average variance extracted (AVE) and Heterotrait-Monotrait (HTMT) ratio. In addition, discriminant validity and correlation analysis were conducted to examine the theoretical model. In addition, common method bias was applied, including variance inflation factor (VIF), coefficient of determination (R2), predictive relevance (Q2) and Goodness of Fit (GoF).

Assessment of Measurement Model

This study verifies that the reliability and validity of the measurements exceed acceptable criteria. The outside loadings exceeded 0.70, indicating the indicator's dependability. Cronbach's alpha scores ranged from 0.7 to over 0.9, indicating substantial internal consistency, but Hair et al. (2019) warn that values of more than 0.9 may indicate redundancy. For the first-order constructs, CR values were between 0.764 and 0.935, indicating the minimum value of 0.7 was obtained for established scales and exploratory studies, and the 0.6–0.7 range was obtained. All AVEs were above the 0.5 threshold, thus confirming adequate convergent validity. The results confirm that the model retains high reliability.

Table 2: Measurement Model

Latent	Items	Outer Loadings	Alpha	CR	AVE
Meaning	PE_M_1	0.917	0.927	0.927	0.873
	PE_M_2	0.942			
	PE_M_3	0.943			
Concrete Experience	EL_CE_1	0.57	0.741	0.818	0.569
	EL_CE_2	0.89			
	EL_CE_3	0.821			
	EL_CE_4	0.696			
Reflective Observation	EL_RO_1	0.862	0.863	0.863	0.71
	EL_RO_2	0.89			
	EL_RO_3	0.811			
	EL_RO_4	0.804			
Abstract Conceptualisation	EL_AC_1	0.558	0.741	0.764	0.575
	EL_AC_2	0.778			
	EL_AC_3	0.884			
	EL_AC_4	0.775			
Active Experimentation	EL_AE_1	0.821	0.893	0.899	0.758
	EL_AE_2	0.862			
	EL_AE_3	0.921			
	EL_AE_4	0.875			
Career Competency	CC_1	0.666	0.927	0.935	0.511
	CC_2	0.779			
	CC_3	0.79			

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	CC_4	0.759			
	CC_5	0.734			
	CC_6	0.617			
	CC_7	0.761			
	CC_8	0.687			
	CC_9	0.772			
	CC_10	0.74			
	CC_11	0.682			
	CC_12	0.682			
	CC_13	0.676			
	CC_14	0.632			

Assessment of Discrimination Validity

According to Hair et al. (2019), less than 0.90 is accepted in some circumstances; otherwise, the HTMT ratio is smaller than 0.85, and discriminant validity is discovered. In this study, the HTMT ratios were all less than 9.0.

Table 3: Discrimination Validity (HTMT Ratio)

	CC	EL_AC	EL_AE	EL_CE	EL_RO	PE_M
CC						
EL_AC	0.617					
EL_AE	0.498	0.893				
EL_CE	0.657	0.684	0.599			
EL_RO	0.459	0.779	0.752	0.638		
PE_M	0.437	0.348	0.331	0.514	0.263	

Assessment of Structural Model

The robustness of this study was assessed by multicollinearity, explanatory power, predictive relevance, and model fit. Theoretically, five or less is ideal, and those higher than 5 reflect multicollinearity issues (Hair et al., 2019). 2 of the 33 VIF values were over 5 (maximum 6.883) but below 10, so these were retained in this study. Values of R2 range between 0 and 1, while 0.75 indicates strong explanation power, 0.50 moderate explanation power, and 0.25 or less weak explanation power (Hair et al., 2019). Although the majority of the R2 values obtained in this study were lower than 0.25, thus pointing to some limited explanatory power, it should be highlighted that in disciplines such as psychology, even lower values of R2 (e.g., 0.10) can be considered informative (Falk & Miller, 1992). The minimum acceptable Q2 value is 0.02 and indicates model performance. In this study, most Q2 values are between 0.038 and 0.167, indicating some predictive relevance. Finally, the model fit was appropriate, with the GoF index of 0.339 falling into the medium fit category (0.10–0.36) (Tenenhaus et al., 2008).

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Table 4: Structural Model

	VIF	R2	Q2	GoF
CC	1.752 – 6.883	0.439	0.143	0.339
EL_AC	1.156 – 2.085	0.083	0.062	
EL_AE	2.017 – 3.588	0.092	0.075	
EL_CE	1.179 – 1.948	0.191	0.167	
EL_RO	1.756 – 3.137	0.056	0.038	
PE_M	2.964 – 4.374	---	---	

Hypothesis Test

Firstly, four hypotheses concerned the influence of meaning on concrete experience, reflective observation, abstract conceptualisation and active experimentation, and all four hypotheses (H1a, H1b, H1c, and H1d) were supported. Secondly, four hypotheses concerned the influence of concrete experience, reflective observation, abstract conceptualisation and active experimentation on career competency, and two hypotheses (H2a and H2c) were supported. Finally, four hypotheses were concerned with the mediating role of concrete experience, reflective observation, abstract conceptualisation and active experimentation between meaning and career competency, and two hypotheses (H3a and H3c) were supported.

Table 5: Hypothesis Test

Hypotheses	Statistical Paths	Path Coefficient (β)	Standard Deviation	t values	p values	Decisions
H1a	PE_M -> EL_CE	0.438	0.087	5.019	0	Supported
H1b	PE_M -> EL_RO	0.237	0.08	2.945	0.002	Supported
H1c	PE_M -> EL_AC	0.288	0.073	3.924	0	Supported
H1d	PE_M -> EL_AE	0.304	0.074	4.123	0	Supported
H2a	EL_CE -> CC	0.423	0.085	4.977	0	Supported
H2b	EL_RO -> CC	0.002	0.083	0.028	0.489	Not Supported
H2c	EL_AC -> CC	0.237	0.085	2.787	0.003	Supported
H2d	EL_AE -> CC	0.112	0.094	1.193	0.116	Not Supported
H3a	PE_M -> EL_CE -> CC	0.185	0.058	3.213	0.001	Supported
H3b	PE_M -> EL_RO -> CC	0.001	0.022	0.025	0.49	Not Supported
H3c	PE_M -> EL_AC -> CC	0.068	0.033	2.083	0.019	Supported
H3d	PE_M -> EL_AE -> CC	0.034	0.03	1.12	0.131	Not Supported

Discussion

The primary purpose of this study is to investigate the influence of psychological empowerment and learning organisation on career competency mediated by experiential learning among aircraft line mechanics in Japanese LCCs. In summary, the finding of this study showed that eight hypotheses were supported, and four hypotheses were not supported.

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Meaning and Experiential Learning

Four hypotheses concerned the influence of meaning on concrete experience, reflective observation, abstract conceptualisation and active experimentation, and all four hypotheses (H1a, H1b, H1c, and H1d) were supported. The finding of this study indicates that meaning has a positive influence on experiential learning among aircraft line mechanics in Japanese LCCs. Meaningful work promotes active, hands-on engagement (Kolb & Kolb, 2005; Seibert et al., 2011) and strengthens concrete experience. Mechanics working in safety-critical areas know their decisions impact flight safety, which ratchets up intrinsic motivations and problem-solving ability on the job (Conger & Kanungo, 1988; Spreitzer, 1995). In addition, meaningful work spreads to reflective observation, where mechanics reflect and refine their skills through autofocusing (Kolb, 1984). In high-pressure contexts, however, formal interventions like debriefing and coaching are necessary to facilitate reflection (Seibert et al., 2011). Strictly proceduralised practice can lead to abstract conceptualisation, given that the work has meaning (Spreitzer, 1995; Thomas & Velthouse, 1990). Team-based debriefing and formal learning structures can assist mechanics in translating experience and meaning into their broader conceptual understanding (Kolb & Kolb, 2005). With team-based debriefing and other formal learning structures, mechanics can translate experience and meaning into more considerable conceptual understanding (Kolb & Kolb, 2005). Associated with active experimentation is meaning (Seibert et al., 2011), which fuels innovation and problem-solving. Nonetheless, safe operation is regulated, and safe implementation must be established through planned experimentation (i.e., pilot projects) and continuous improvement (Thomas & Velthouse, 1990). In doing so, LCCs must balance the safety-related compliance agenda and the learning-focused, people-oriented initiatives supporting capability development and impact operational excellence.

Experiential Learning and Career Competency

Four hypotheses concerned the influence of concrete experience, reflective observation, abstract conceptualisation and active experimentation on career competency, and two hypotheses (H2a and H2c) were supported. The finding of this study affirms that concrete experience and abstract conceptualisation dimensions of experiential learning have a positive influence on career competency among aircraft line mechanics in Japanese LCCs. Hands-on learning developed with structured in-house training, job rotations, and work simulations (Kolb & Kolb, 2005; Kolb, 1984) helps develop career competency (experience). Integrating experiential learning into career development frameworks, such as mentorship and feedback systems, enhances professionalism and operational safety (Hall et al., 2004). In strictly controlled, time-sensitive maintenance settings, the function of reflective observation is restricted. While contemplation may cultivate significant abilities (Eraut, 2004; Schön, 1983), organised interventions, like debriefings and mentorship programs, are essential to realising its advantages (Boud et al., 1985). To optimise this effect, LCCs should include systematic reflection processes and cultivate essential abilities, such as abstract conceptualisation, that foster self-education, critical thinking, and adaptive problem-solving (Waheed & Waseem, 2023). LCCs may provide cognitive improvement instruments, including interdepartmental information exchange and training frameworks, to foster conceptual intellectualisation and career advancement using LCCs (Kolb, 1984). The active experimentation stage is limited by some constraints, such as regulatory requirements around safety, but structured experimentation (e.g. controlled pilot programs and innovation initiatives) can help balance compliance with personal capability development (Billett, 2010; D. Kolb, 1984). LCCs formalise their risk-taking approaches, enabling them to learn and be operationally efficient.

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Mediating Effect of Experiential Competency

Four hypotheses were concerned with the mediating role of concrete experience, reflective observation, abstract conceptualisation and active experimentation between meaning and career competency, and two hypotheses (H3a and H3c) were supported. The finding of this study demonstrated the mediating role of concrete experience and abstract conceptualisation in the relationship between meaning and career competency and no mediating role for reflective observation and active experimentation. Meaningful work motivates the mechanics to engage in concrete experience, reinforcing the technical and interpersonal skills that strengthen their career competency (Kolb & Kolb, 2005; Kolb, 1984). Organisations should provide structured experiences to maximise this effect by rotating tasks and providing real-time feedback (Defillippi & Arthur, 1994; Hall et al., 2004). Abstract conceptualisation mediates this relationship because people generate higher-order thinking and cognitive processing when their work is meaningful. Positive aspects of work – Internalisation of experiences enables mechanics to develop stronger skills in problem-solving and operational efficiency (Bakker & Demerouti, 2007). To improve cognitive engagement, which is crucial for engaging people (Kolb, 1984), LCCs must embed formal learning interventions like seminars and knowledge-driven conversations. Unsurprisingly, reflective observation did not mediate the relationship between meaning and competency because time constrictions and safety-based environments typically prioritise task completion over exploring the meaning of that task (Bakker & Demerouti, 2007). Reflective practice (Boud et al., 1985) could be enhanced with structured debriefing and mentoring. Likewise, active experimentation did not mediate this relationship because stoic safety regulations prevent trial-and-error learning (Spreitzer, 1995). Nevertheless, innovation initiatives underpinned by structure and piloting would mitigate these tensions towards appropriate skill development amid safety compliance (Eraut, 2004). Broadly, LCCs must scaffold experiential learning structures that translate purpose-stuffed projects into market competency while providing regulatory compliance.

Conclusion

The findings of this study on the influence of meaning career competency, mediated by experiential learning, among aircraft line mechanics in Japanese LCCs have significant implications across methodology, theoretical, and practical implications.

Methodology Implication

The study presents a comprehensive framework for examining the relationships between meaning in psychological empowerment, experiential learning and career competency. Using a mixed methods approach and advanced statistical techniques such as SEM, this study provides a replicable methodology for investigating similar phenomena in other sectors or regions. The inclusion of specific constructs such as meaning, alongside the experiential learning dimensions of concrete experience, reflective observation, abstract conceptualisation and active experimentation, facilitates a nuanced analysis of career competency development. Furthermore, by focusing on the aviation industry and aircraft line mechanics in Japanese LCCs, a research model is created focused on a specific theme. This methodological approach underlines the need to customise research techniques to meet the special demands and requirements of a profession of great technical and safety relevance. Future studies should widen this paradigm to investigate more mediating elements and the long-term consequences of experiential learning on professional growth.

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Theoretical Implication

This study clarifies career competency development by combining meaning in psychological empowerment and experiential learning. It supports and expands current ideas in technical professions such as aviation maintenance, including Kolb's experiential learning theory and Spreitzer's psychological empowerment framework. The study investigated the mediating role of experiential learning in translating organisational and individual attributes into tangible career competency. The finding of the study contributes to theoretical discussions on the mechanisms through which structured and reflective learning processes drive competency acquisition. Furthermore, investigating empowerment dimensions, such as meaning, in the cultural and organisational context of Japanese LCCs provides novel insights into the dynamics of career development.

Practical Implication

To LCC employers

The finding offers a guideline for designing and improving human resource development systems in Japanese LCCs. Employers can build psychological empowerment by enhancing supportive leadership and assigning meaningful work that enhances experiential learning.

To LCC employees

This study highlights that the individual should become genuinely engaged in learning. Employees are advised to practice reflectively, accept difficult work, and use the learning and growth opportunities offered by the organisation for their professional advancement. With the significance of meaning, employees can be more active in their career trajectory and be resilient and adaptive to differences especially in the ever-evolving airline industry.

To aviation educators

This study offers significant information for matching industrial needs with educational initiatives. Training organisations and educational institutions are urged to incorporate experiential learning approaches into their courses and deepen cooperation with LCCs. Encouragement of industry-academia relationships and a legislative environment that supports aviation sector workforce development and talent transfer would help these initiatives.

To boarder aviation industry

The finding of this study highlights the need for a coherent approach to workforce development that integrates meaning in psychological empowerment principles into training and operational practices. Such strategies are essential to enhance talent retention, improve organisational resilience, and maintain safety and innovation amidst the industry's increasing demands.

Limitation

This study provides valuable insights into the influence of meaning on career competency, mediated by experiential learning, among aircraft line mechanics in Japanese LCCs. However, several limitations should be acknowledged, and these form the basis for future research directions.

This study is limited because it only applies to Japanese LCCs, which are governed by a unique regulatory, cultural and organisational environment. Thus, the results might not necessarily extend to other areas of the airline industry, significantly where processes for certifying

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systems, corporate organisation structures and cultural norms vary. Additionally, the cross-sectional design, which is based on data collection at a single point in time, restricts the analysis to correlational results. This adds difficulty to the empirical analysis of the causal relationships of psychological empowerment, learning organisation, experiential learning and career competency.

Self-reported data is another issue that deals with the facts. This method carries the risk of bias related to social desirability and self-enhancement. While validity and reliability could be considered through a mixed method approach, the self-report survey method may still result in bias from misinterpretation of survey questions and preference selection. In addition, although these factors were not included in the analysis, external factors such as the economy, technology development and policy reforms can significantly impact experiential learning and career competency opportunities. Addressing these issues would raise the overall reliability of this study.

Finally, although the potential mediating role of experience learning was examined, none of the potential moderating variables included organisational size, team dynamics, or leadership style. As they contribute to extending the perception of psychological empowerment and approach to how learning organisations are related to career competency, these factors point to more contextual courses and relationships to be explored.

Future research might extend the current work by making similar comparisons in other locations, sectors or organisational settings to assess whether the findings will prove relevant when scaled in this way. Moreover, qualitative methodologies (for example, through interviews or case studies) beyond the quantitative ones could contribute to building a holistic view of the complexity of experiential learning and career development. Other variables (e.g., team dynamics, organisational culture, or leadership style) impacting the relationships explored in this study should be examined in future research. Lastly, assessing individual diversity (e.g., personality traits, learning styles, and motivations) could help specify customised training programs for a particular population.

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