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A SYSTEMATIC LITERATURE REVIEW STUDY ON TRAINING EFFECTIVENESS

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ABSTRACT

Purpose: This research paper aims to explore the variable influencing training effectiveness and to identify the commonly used training evaluation models through a systematic review of recent literature. Through this analysis the researcher seeks to provide a comprehensive understanding of how training outcomes are measured across different organisational and industrial context and the factors contributing to the effectiveness. Methodology: This study adopted the Systematic Literature Review (SLR) approach using the PSALSAR framework and the PICOC framework. The research articles published within the period of 2023 to 2026 were reviewed from sources such as Scopus, Google Scholar, and Emerald. The article for review was selected using the predefined search strings. Findings: The analysis reveals that training effectiveness is influenced by key factors such as trainer quality, training methods and organisational support and learner-related factors. The findings indicated the Donald Kirkpatrick Evaluation Model as the most widely used evaluation framework, followed by other models such as CIRO, CIPP and ROI-based approach. However, the Kirkpatrick Model is extensively applied an inconsistency such as limited focus given to long-term outcomes, highlights the need for integrated and multidimensional evaluation frameworks.

KEYWORDS: Training, Training Effectiveness, Training Evaluation, Kirkpatrick Evaluation Model.

1 INTRODUCTION

Training within Industry (TWI), a nation-wide service, was a partnership between the Industry and the U.S War Manpower Commission developed during World War II (Dooley, 1945). Post-war, although training reduced in size remained a permanent fixture in most companies (Torraco, 2016). Years later the Human Resource Development established a new profession “the training director.” Their performance and need across industry led to the formation of the American Society of Training Directors, the forerunner to the American Society for Training and Development (ASTD) and the Association for Talent Development (ATD). Post-war, classroom training and on-the-job training were the prevalent forms used for training. The ISD model (Instructional Systems Development) was the dominant model used to design training modules, which led to the birth of the ADDIE, the acronym the five phases of the ISD model Analyse, Design, Develop, Implement and Evaluate. Later, Training for Performance System (TPS), an adaptation of the ISD model with a strong work performance orientation providing training mostly for job skills, was introduced (Campbell, 1984). The Industrial Revolution of the 1800’s brought with it technological changes, as a response to which technical training was born. (Swanson & Torroca, 1994) Technical training focused on developing technical expertise of the internal and the external customer therefore enjoying a special position in the human resource development. Technical training played a unique role in the human resource development profession as a result training forming as a profession. Therefore, the present study aims to conduct a systematic literature review to identify the

key variables influencing training effectiveness and to examine the commonly used training evaluation models.

2 THE METHOD

Systematic Literature Review: Conducting a literature review allows the researcher to assess the intellectual and existing territory of a concept (Tranfield et al. 2003). Management review earlier had been criticised for being narrative and lacking critical assessment. Therefore, to improve the quality of the management review literature, synthesising the review process in a systematic process had become significant known as systematic literature review (Okoli et al. 2010). A systematic literature applies specific principles, aiming to minimise bias through exhaustive search for literature from various sources. It can be thought there is a thread between meta-analysis and systematic literature review. Systematic literature review (SLR) is very specific and focused. The latter includes several studies to answer a single question while the former includes many studies to eliminate discrepancies (Hutchings et al. 2020). It provides a broader qualitative and quantitative synthesis of existing research. Fink (2005) defined systematic literature review as “a systematic, explicit, comprehensive, (2007, p. 17)]” and reproducible method for identifying, evaluating, and synthesizing the existing body of completed and recorded work produced by researchers, scholars, and practitioners.” There are steps required for a systematic literature review presented by which the researcher has implemented to address the research objectives Selçuk (2019).

The Framework for systematic analysis.

| | Steps | Outcome | Methods |
|-------------------|-----------|--|---|
| PSALSAR Framework | Protocol | Define the research question | Studies related to Training and Development. |
| | Search | Define the strategy for collecting research review | Search strings and Database. |
| | Appraisal | Selecting studies based on quality assessment | Inclusion and exclusion criteria of the article. |
| | Synthesis | Extract Data, Categorise the data | Categorise the data on the research question to be answered. |
| | Analysis | Analysis of the Data | Analyse the data based on Quantitative categories, narrative analysis , trends. |
| | Report | Journal writing | PRISMA methodology. |

Source: Mengist et al. (2020)

Defining the scope : The first step of SLR is to outline the scope of study which is achieved through outlining the research area through analysis of the research area. Narrowing down the broad area of study helps to focus on specific information and on the research questions (Counsell, 1997). The researcher decides on the research scope which serves as a means through which research questions

would be formulated (Ibrahim, 2008). To decide on the research question to be formulated for the search of resource a specialised framework known as PICOC (Population, Intervention, Comparison, Outcome and Context) was applied to formulate the research questions (Booth et al. 2016). Based on the PICOC framework, the present study addresses the following research question.

1. What are the variables used to measure training effectiveness? measure training effectiveness?
2. Which Training tool has been commonly used to The detail components of PICOC framework as applied in the study are presented below in Table 1

Table 1 : PICOC Framework

| Component | Description |
|--------------|---|
| Population | Research studies related to Training and Development, focusing on training effectiveness. |
| Intervention | Research works pertaining to Measuring Training Effectiveness and the variables used to measure training effectiveness. |
| Comparison | Comparing the outcomes of two or more interventions (Framework context). Repetitive Training evaluation models used to measure Training Effectiveness. |
| Outcome | What is being measured and what is the desired outcome from the study? (Framework context). The review will identify the frequently used method and the variables influencing the effectiveness of the training. |
| Context | Organisational and institutional settings, including challenges and application of training evaluation models. |

Source: (Petticrew & Roberts, 2005)

Search :Deciding the search terms or strings used to generate the relevant database should be based upon the terminology identified in the PICOC framework to ensure a focused and systematic identification of

relevant literature. For this purpose several combination of keywords, phrases and subject heading, were used to generate relevant articles for the review.

Table 2 :Search Terms

| Category | Search Terms |
|---------------------|---|
| Core Concepts | Training Effectiveness, Training Evaluation, In-service Training, |
| Influencing Factors | Factors Affecting, Factors Influencing, Contributing Variables |
| Outcome Measures | Training Success, Training Impact |

Secondly the search for an article can include any of these technique in total : conventional subject searching, reference list checking, contact with experts, citation searching and comprehensive pearl growing but the conventional subject and citation searching techniques (citation searching) was employed to identify the literature for the systematic review (Papaioannou et al. 2009).

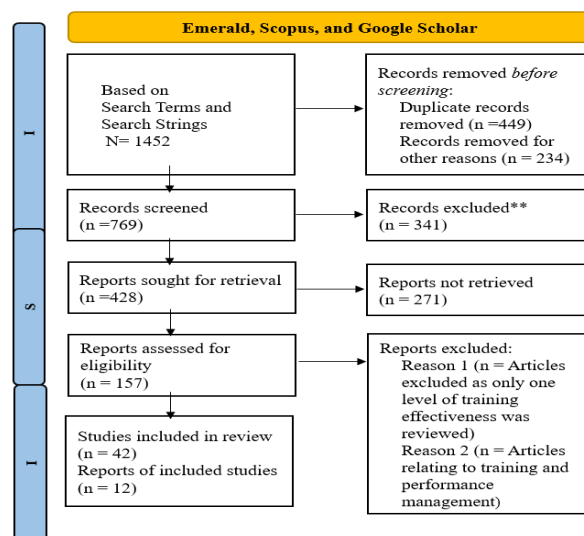
and of English language. The search conducted generated the following details. The data given in Table 3 includes original article and article relating in English. The selected studies were drawn from internationally recognised, peer -reviewed sources to ensure the quality and credibility of the review.

Table 3

| Database | Search String/ Search Terms | Article Identified |
|----------------|---|--------------------|
| Emerald | Training Effectiveness, Variables for training effectiveness, Training Evaluation | 32, 58,70 |
| Scopus | Training Effectiveness, Variables for training effectiveness, Training Evaluation | 50, 31, 124 |
| Google Scholar | Training Effectiveness, Variables for training effectiveness, Training Evaluation | 102, 82, 220 |

For this purpose, the researcher collected secondary data and other relevant works from the period 2023 to 2026 in the form of articles from Scopus, Science Direct, Google Scholar, and Emerald data base publication. Initially the researcher began the collection of articles, a total of 769 articles were identified across the selected database using various keyword combination by browsing through the database of Emerald and Science Direct through which 183 articles were obtained. Following which the Publish or Perish application was used to obtain related articles from Scopus and Science Direct. The article taken into review were papers fully available

Appraisal



3 SYNTHESIS:

The synthesis steps involved the systematic extraction and classification of relevant literature from the selected papers to derive meaningful conclusions. This systematic literature review

identifies articles that meet the predefined criteria. To address the SLR objectives, the data extraction process involved the identification of key information from the selected papers. This stage is critical as it transforms raw data into structured knowledge aligning with the research objectives. The extracted data includes both general characteristics of the studies and specific parameters related to training effectiveness. The variables of interest were categorised into two broad dimensions

- a. Variables influencing training effectiveness.
- b. Training evaluation models and tools.

The synthesised results are presented below and the criteria used for the extraction of the information. The review focused on publications within the timeline of 2023 to 2026 to gather knowledge in the field of training effectiveness. Review studies from high-quality sources, were considered to maintain the credibility of the study. To understand the contextual variation in training practices, the literature was examined across diverse research settings as organisations, educational institutions, healthcare systems and service industries. To address the first objectives emphasises were focused on key variables influencing training effectiveness, variables such as learner-related factors such as self-efficacy, instructional quality and (Hussien *et al.*, 2021; Yu *et al.*, 2022) organisational support (Zalukhu *et al.*, 2025). To assess training effectiveness, indicators such as knowledge acquisition, Drydak (2022) skill development, behavioural change and organisational outcomes. The second objectives reviews examined the widely used training evaluation models and tools such Kirkpatrick Model, CIRO Model, CIPP Model, and ROI-based approaches. These models provide different perspectives of evaluating training, ranging from the immediate reaction of the learner to the long-term organisational impact. The synthesised findings are presented in the subsequent sections.

4 ANALYSIS:

The analysis phase of the study was carried out keeping in mind the predefined research questions.

The selected studies were based on key dimensions such as variables influencing effectiveness, evaluation tools, and outcome measures. Both qualitative and quantitative approaches were employed to interpret the findings from the selected articles. Qualitative analysis was employed to determine the frequency of variables and provide a qualitative understanding of the contextual relevance. While many researchers implement a structured evaluation model, there is considerable variation in how these models are put into use. This lack of consistency suggests the need for more standardised evaluation practices. The analysis revealed a strong emphasis on individual and organisational factors, with a lack of agreement on standardised measurement criteria for evaluation (Thaliyan, 2023). At the same tie the variations in the selection of variables further complicated the review as some studies emphasise on individual competencies, while others focus on organisational processes. The lack of integration between these variables results in incomplete insights and limits the study uniformity. In terms of the evaluation model (Miranda, Santos, Kristman, and Mininel, 2025), the Kirkpatrick framework dominated the literature (Strojny & Misiarczyk, 2023), with the model continuing to be appropriate and applicable in various contexts and, at the same time, adaptable at many training environments (Alsalamah & Callinan, 2022). Most studies focused on participant reactions and learning gains as the first two levels of training effectiveness are feasible to be analysed than on behavioural and organisational changes which requires a long term, indicating a gap in capturing the full impact of training programs. While certain studies establish a strong link between training satisfaction and behavioural outcomes, others report weak or insignificant relationships. This inconsistency points the need for stronger and context-based evaluation mechanisms. Overall, the literature emphasised on the need of a holistic, comprehensive and multidimensional approach, while incorporating diverse variables a methodology to measure training effectiveness.

Table: 4

| Author | Year | Context | Key Focus |
|--|------|--|--|
| Kunjan, Seethalakshmi, Arulanantham, and Nagalakshmi | 2026 | To adopt the Kirkpatrick model to evaluate the effectiveness of the Simulation Based Education given to undergraduates nursing students. | The satisfaction with current methods, learning materials and activities, instructors and teaching methods. Learning was evaluated with a direct measure of learning outcomes achieved; behaviour was assessed with the measures of change in the clinical reasoning skills. |
| Mawaddah, Rasyid, and Mania | 2025 | Evaluate the Teacher Service Training Program using Kirkpatrick Model. | The Reaction and learning level were assessed using variables such as the delivery method, facilitator perception the cognitive skills, the affective domain skills and the psychomotor domain skills. |

| | | | |
|---|------|---|--|
| <u>Cordon, et al.</u> | 2025 | Evaluation of the TIPS Program Using the Kirkpatrick Model. | Evaluation was based on the Kirkpatrick's Model assessing participant satisfaction, learning outcomes, behaviour changes and retention. |
| Miranda, Santos, Kristman, and Mininel (2025) | 2025 | Employing Kirkpatrick's framework to evaluate nurse training: an integrative review. | Majority of the training was evaluated by the four-level proposed in the model. The fourth level the result level, the difficulties to achieve, in the review reported the exclusion. |
| Yang, M., Zhang, X., Han, R. <i>et al.</i> | 2025 | Kirkpatrick model had been applied in the field of nursing training. | Reaction level could provide reference suggestions for training improvement, Teaching methods, training format, time arrangement were the variables involved to measure reactions. Learning involved trainees' knowledge, attitude and skills. |
| Paul, Burman, and Singh | 2024 | Advanced Composite Training Evaluation of Rural Training Programmes Organized by the Farmers Training Centres (Ftcs) Of India Based on Kirkpatrick's Model. | Trainees' reaction significantly influences learning. Training outcomes may be linked with the trainees post-training changes in behaviour. |
| Suresh, Lakshmi, & Priyanka, (2024) | 2024 | Evaluation of ROI Through Employee Training Program. | Metrics such as employee performance, increased productivity, reduce turnover and enhanced skills by evaluating ROI in mind training functions can be perceived in more credible light. |
| Cheung VK | 2023 | Overall training effectiveness using four level of Kirkpatrick's Model. | To evaluate potential impacts on monetary and organisation change following implementation. |
| Giday and Elantheraiyan | 2023 | Explored the impact of Training on Employee Performance. | The study highlighted the importance of Structures Training Programme which led to organisational success. |
| Golfiroozi et al. | 2023 | Measured training using a structural framework. | Kirkpatrick model provides a comprehensive framework for evaluating training effectiveness. |
| Habibullayeva | 2023 | The application of Kirkpatrick four- level model in evaluating training. | Kirkpatrick four-level model provides a structured and comprehensive approach, highly relevant for organisational development. |
| Rasouli et al. | 2023 | Evaluated the virtual training courses based on the Kirkpatrick Model. | Highlighted evaluation across the four levels and that training had an impact on learner satisfaction, knowledge acquisition and practical application. |

5 REPORT:

In the report phase the systematic literature review presents the methodology and findings in a clear and structured manner. The selection of articles was described systematically, indicating the number of studies identified, screened, and included following the PRISMA framework. The extracted data were categorised and presented, focusing on variables influencing training effectiveness and the evaluation models used in the literature.

6 CONCLUSION:

Literature reviews are subjective to the interpretive perspective of the researcher. Every review is written within the standard point or the mindset of the reviewer. This study addressed the research

questions of identifying variables influencing training effectiveness and examining the commonly used evaluation tools. The findings indicated that training effectiveness is determined by factors such as training content, delivery methods, and organisational context (ROI), including knowledge acquisition, skill development, and behavioural change. The review highlighted the widespread use of Kirkpatrick model, along with other model such as CIRO, CIPP and ROI approaches, its limitation in capturing long-term outcomes highlight the need for more holistic approaches. Therefore, future studies can focus on the need to develop a holistic and integrated approach to evaluate training, which will support sustainable development and continuous improvement in an organisation.

REFERENCE

1. Alsalamah A, Callinan C. (2022), The Kirkpatrick model for training evaluation: bibliometric analysis after 60 years (1959–2020), *Industrial and Commercial training*, 54 (1), pp. 36–63.
2. Anitha Bose, S. (2025). Influence by design: How content format affects consumer perception and behavior on Indian social media. *International Journal of Research in Commerce and Management Studies (IJRCMS)*, 7(3), 401–413.
3. Anitha Bose, S. (2025). Organisational agility as an HR competitive advantage in the age of AI: A systematic literature review with insights from ChatGPT. *Asian Journal of Management and Commerce*, 6(1), 1320–1333.
4. Bahl, K., Kiran, R., & Sharma, A. (2024). Evaluating the effectiveness of training of managerial and non-managerial bank employees using Kirkpatrick's model for evaluation of training. *Humanities and Social Sciences Communications*, 11(1), 1–14.

5. Bernardino, G., & Curado, C. (2020). Training evaluation: A configurational analysis of success and failure of trainers and trainees. *European Journal of Training and Development*. <https://doi.org/10.1108/EJTD-10-2019-0177>
6. Booth, A., Sutton, A., & Papaioannou, D. (2016). *Systematic Approaches to a Successful Literature Review* (2nd ed.). London: Sage.
7. Campbell, C. P. (1984). Procedures for developing and evaluating vocational training programs. *Journal of Industrial Teacher Education*, 21(4), 31-42.
8. Cordon, C., Dlugosz, D., Lopez, L., Gelacio, R., Smith-Eivemark, K., Maier, S., Irwin, T. (2025). Supporting Novice Nurses' Transition to Independent Practice: Evaluation of the TIPS Program Using the Kirkpatrick Model. *Nursing Reports*, 15(2).<https://doi.org/10.3390/nursrep15020050>
9. Counsell, C. (1997). Formulating questions and locating primary studies for inclusion in systematic reviews. *Annals of Internal Medicine*, 127(5), 380.
10. Cheung VK, C. N. (2023). Expanding scope of Kirkpatrick model from training effectiveness review to evidence-informed prioritization management for cricothyroidotomy simulation. *Heliyon*, 9(8). <https://doi: 10.1016/j.heliyon.2023.e18268>
11. Dooley, C. R. (1945). *The Training Within Industry Report 1940-1945*. Washington, DC: A Record of the Development of Management Techniques for Improvement of Supervision—Their Use and the Results. Washington, DC: War Manpower Commission, Bureau of Training, Training within Industry Service,3(2),127-289.
12. Drydakias, N. (2022). Improving entrepreneurs' digital skills and firms' digital competencies through business apps training: A study of small firms. *Sustainability*, 14(8), 4417. <https://doi.org/10.3390/su14084417>
13. Fink, A. (2005). Reviewing the Literature: Why? For Whom? How? In A. Fink, *Conducting Research Literature Reviews: From the Internet to Paper* (p. 21). United States of America: Sage Publications.
14. Giday, D. G., & Elantheraiyan, P. (2023). A study on the effect of training on employee performance in the case of Mekelle City, Tigray, Ethiopia. *Social Sciences & Humanities Open*, 8, 100655. <https://doi.org/10.1016/j.ssaho.2023.100655>
15. Golfiroozi, S., Hojjati, H., Ranjbar Noei, F., Kabusi, M., Shikhnejad, F., & Latifi, N. (2023). The effectiveness of in-service training course on adult cardiopulmonary resuscitation based on the Kirkpatrick model. *Journal of Health Reports and Technology*, 9(3), e137557. <https://doi.org/10.5812/jhrt-137557>
16. Gowsalya, R. S., & Asma, V. K. M. (2017). A study on training effectiveness. *International Journal for Research Trends and Innovation*, 2(5), 211-217
17. Habibullayeva, I. (2023). Evaluating training effectiveness: The application of Kirkpatrick's four-level model in organizational development. *Annals of the University of Bucharest: Economic and Administrative Series*, 17(1), 95-104.
18. Hussien, F., Ibrahim, Y., & Nasr, H. (2021). The relationship between organizational resilience and human resources practices in the hotel industry. *Journal of Association of Arab Universities for Tourism and Hospitality*, 20(3). <https://doi.org/10.21608/jaauth.2021.63042.1135>
19. Hutchings, E., Loomes, M., Butow, P., & Boyle, F. (2020). A systematic literature review of researchers' and healthcare professionals' attitudes towards the secondary use and sharing of health administrative and clinical trial data. *Systematic Reviews*, 9(1), 240. <https://doi.org/10.1186/s13643-020-01485-5>
20. Ibrahim, R. (2008). Setting up a research question for determining the research methodology. *ALAM CIPTA. International Journal on Sustainable Tropical Design Research and Practice*, 3(1), 99-102.
21. Kirkpatrick, J. D., & Kirkpatrick, W. K. (2016). *Kirkpatrick's four levels of training evaluation*. ATD Press.
22. Kunjan, M. K., Seethalakshmi, A., Arulanantham, Z. J., & Nagalakshmi, S. (2026). Adaptation of Kirkpatrick's model to evaluate simulation-based education in nursing students: A quasi-experimental study. *Clinical Simulation in Nursing*, 114, 101924. <https://doi.org/10.1016/j.ecns.2026.101924>
23. Lei, Y., Wei, Y., Ma, Y., Wu, X., & Zhou, Q. (2025). Impact of pre-service education on the effectiveness of in-service training for inclusive preschool teachers in China: A potential profile analysis. *Humanities and Social Sciences Communications*, 12, 1218. <https://doi.org/10.1057/s41599-025-05576-3>
24. Mawaddah, N., Rasyid, M. N. A., & Mania, S. (2025). An evaluation of the teacher service training program at Islamic boarding school: A study of the Kirkpatrick model. *ETDC: Indonesian Journal of*

- Research and Educational Review, 4(4), 1103–1027. <https://doi.org/10.51574/ijrer.v4i4.3585>
25. Mengist, W. S. (2020). Method for conducting systematic literature review and meta-analysis for environmental science research. *MethodsX*, 7.
 26. Miranda, F. M. de, Santos, B. V. dos, Kristman, V. L., & Mininel, V. A. (2025). Employing Kirkpatrick's framework to evaluate nurse training: An integrative review. *Revista Latino-Americana de Enfermagem*, 33, 1–10.
 27. Okoli, C., & Schabram, K. (2010). *A Guide to Conducting a Systematic Literature Review of Information Systems Research*. Sprouts, 10-26.
 28. Paul, S., Burman, R. R., & Singh, R. (2024). Training effectiveness evaluation: Advancing a Kirkpatrick model based composite framework. *Evaluation and Program Planning*, 107. <https://doi.org/10.1016/j.evalprogplan.2024.102494>
 29. Papaioannou, D. S. (2009, May). Literature searching for social science systematic reviews: consideration of a range of search techniques. *Health Information and Libraries Journal*, 27(2), 114-122. <https://doi:10.1111/j.1471-1842.2009.00863.x>
 30. Petticrew, M., & Roberts, H. (2005). Starting the Review: Refining the Question and Defining the Boundaries. In M. Petticrew, & H. Roberts, *Systematic Reviews in the Social Sciences: A Practical Guide* (pp. 27-56). : Wiley-Blackwell.
 31. Rasouli, D., Ahmady, S., Mohseni Zenozzi, S., & Karimi Rozveh, A. (2023). Effectiveness of nursing virtual training courses based on the Kirkpatrick model. *Journal of Education and Health Promotion*, 12, 203. https://doi.org/10.4103/jehp.jehp_913_22
 32. Selçuk, A.A. (2019). A Guide for Systematic Reviews: PRISMA. *Turkish Archives of Otorhinolaryngology*, 57, 57-58. <https://doi.org/10.5152/tao.2019.4058>
 33. Swanson, R. A., & Torroca, R. J. (1994). Technical training's challenges and goals. *Technical Skills Training*, 5(7), 18-22.
 34. Swartz, M. K. (2011). The PRISMA statement: A guideline for systematic reviews and meta-analyses. *Journal of Pediatric Health Care*, 25(1), 1-2. <https://doi.org/10.1016/j.pedhc.2010.09.006>
 35. Strojny, P., & Misiarczyk, N. (2023). Measuring the effectiveness of virtual training: A systematic review. *Computers & Education: X Reality*, 2.
 36. Suresh, N., Lakshmi, D. V., & Priyanka, S. (2024, June 6). Evaluation of ROI Through Employee Training Programme. *International Research Journal on Advanced Engineering and Management*, 2, 1866-1870. doi: <https://doi.org/10.47392/IRJAEM.2024.0276>
 37. Thaliyan, D. (2023). Effectiveness of training and development: An evaluation. *Russian Law Journal*, 11(8S). <https://doi.org/10.52783/rlj.v11i8s.1359>
 38. Torraco, R. J. (2016). Early history of the fields of practice of training and development and organization development. *Advances in Developing Human Resources*, 18(4), 439–453. <https://doi:10.1177/1523422316659898>
 39. Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a Methodology for Developing Evidence-Informed Management Knowledge by Means of Systematic Review. *British Journal of Management*, 14, 207-222.
 40. Yang, M., Zhang, X., Han, R., et al. (2025). Evaluation of the effectiveness of rehabilitation nursing training for clinical nurses based on the Kirkpatrick model. *BMC Nursing*, 24, 374. <https://doi.org/10.1186/s12912-025-02889-1>
 41. Zalukhu, R. R., Lase, D., & Telaumbanua, A. (2025). The effectiveness of employee training and development: A systematic review from a human resource management perspective. *MKSP (Jurnal Manajemen, Kepemimpinan, dan Supervisi Pendidikan)*, 10(2), 1027–1043.