

<https://doi.org/10.31705/ICBR.2025.1>

## **EFFECT OF TRAINING APPROACHES ON PROJECT PERFORMANCE AND CAREER SUCCESS OF EMPLOYEES IN TECHNOLOGY-DRIVEN SERVICES**

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### **ABSTRACT**

*Training is an important determinant in improving project performance and employee career success in the rapidly changing Technology-Driven Services (TDS) sector. This research investigated the impact of various training approaches on project performance and employees' career success, and the moderating role of organizational support. The Study followed a quantitative methodology and used a survey questionnaire to collect data from professionals attached to the TDS sector. The data was analyzed using SPSS software. The moderation analysis indicated that organizational support notably improves the relationship between training and both project performance and employees' career success. This research contributes to the existing literature by offering empirical evidence and practical insights that can guide organizations in developing more effective training strategies to improve project efficiency and workforce capability. It concludes by recommending targeted training interventions supported by strong mentorship frameworks to ensure sustainable organizational success in a technology-driven landscape.*

**Keywords:** Career Success, Organization Support, Project Performance, Technology-Driven Services, Training Approaches

### **1. Introduction**

Training is essential for enhancing individual and organizational performance in the technology-driven services (TDS) sector. Yet, most TDS organizations experience recurring obstacles, including missed

project deadlines, overinflated costs, and inconsistent quality outcomes when training schedules clash with project outcomes. To overcome these difficulties, a better understanding is required about training and how training translates into tangible project results to ensure increased project performance. Ongoing skill development through structured training programs enables staff to adjust to new technologies, leading to improved project outcomes such as timely delivery, quality adherence, and efficient resource use.

Training has a favorable impact on project metrics by increasing employees' knowledge, capabilities, and collaborative skills; training improves not only technical proficiency, but also decision-making and problem-solving skills (Salas et al. 2012). Further, it promotes job satisfaction and reduces turnover by fostering a skilled and confident workforce (Bell et al., 2017). Organizations that embrace continuous learning are better positioned for sustainable project success and long-term competitiveness in technology-driven environments (Tannenbaum et al., 2024). The empirical literature continues to support the idea that well-structured training programs enhance project performance when these are aligned with strategic goals. This is consistent with Human Capital Theory (Becker, 1964), which argues that employee abilities obtained through learning translate into corporate value.

However, recent studies highlight that many tech-driven organizations struggle to link training costs to measurable performance improvements (Nanayakkara et al., 2015; Tannenbaum & Salas, 2020). Still, previous literature has primarily investigated the training outcomes in manufacturing and generic service contexts, leaving TDS, a sector classified by rapid technological changes and project-based workflows, largely under investigation. Studies that integrate training with project-level performance measures such as delivery timelines, client satisfaction, and innovation are particularly limited. Therefore, empirical research in this area is both timely and necessary.

Although training is an important component of organizational growth, it does not fully capture employees' perceptions of how much their organizations value and support them. Perceived organizational support refers to employees' belief that their organization cares about their well-being and rewards their contributions (Eisenberger et al., 2019). Prior

studies show that such support can enhance the transfer of training into work performance by motivating employees to apply learned skills (Gupta & Sharma, 2023). Hence, this study treats organizational support as a distinct construct that may moderate the training–project performance relationship.

Moreover, career success, both objective (promotion, advancement) and subjective (career satisfaction), is an important outcome that reflects the long-term value of training for individuals (Ng et al., 2022). In project-oriented industries like TDS, employees who perceive their training as contributing to career growth are more motivated to enhance project outcomes (Huang et al., 2023). Therefore, examining the joint influence of training and organizational support on career success provides a more comprehensive understanding of performance dynamics in the sector.

Building on existing knowledge, this study addresses the gap in empirical evidence linking training investments to both project performance and employees' career success in the TDS sector. Despite significant corporate investments in employee training, the actual contributions of these programs to project success and employees' career success remain unclear. This research seeks to fill this gap to offer empirical insights for TDS employees' skill development and project management. Accordingly, the present study questions,

- 1) How do training approaches affect project performance and employees' career success?
- 2) Does organizational support moderate this relationship?

This study provides empirical evidence within the specific context of technology-driven service organizations. While the overall advantages of training are well recognized, the direct implications for TDS remain less understood. Further, the effects of training in TDS are little understood. Therefore, the above research questions help organizations to create better learning strategies that boost employee productivity and overall corporate performance. The findings can be used by TDS organizations to improve their training efforts and ensure that personnel are prepared to meet changing industry expectations. Therefore, this study intends to contribute to theory and practice by

addressing how training efforts impact project performance and employees' career success within technology-driven environments.

### **1.1. Research Objectives**

- 1) To investigate the effects of training approaches on the project performance of TDS organizations.
- 2) To investigate the effects of training approaches on the career success of employees in TDS organizations.
- 3) To investigate the moderating effects of organizational support in the relationships between training approaches and project performance and career success.

## **2. Literature Review**

Previous research has consistently highlighted the importance of training in enhancing organizational and employee outcomes. However, existing literature mainly pertains to traditional industries, neglecting the TDS sector. In the TDS industry- characterized by rapid technological change, digital integration, and project-based work- training effectiveness may differ substantially from other sectors. Although recent studies have focused on general training practices, these have not specifically examined how training influences project performance, which is a key success factor in technology-driven operations (Huang et al., 2023). When project performance is reviewed through three key metrics: completion time, budget management, and quality outcomes, project success is closely tied to training and risk avoidance (Burke & Hutchins, 2007; Weissbein et al., 2010; Wickramasinghe, 2011). Therefore, it is important to address the gap in the literature by investigating the relationships between training and project performance and employees' career success in the TDS industry, particularly considering organizational support as a potential moderating variable.

### **2.1. Training Approaches and Project Performance**

Human capital theory posits that training is a strategic investment that enhances employee knowledge, productivity, and organizational performance. The literature emphasizes the importance of training

programs in technology-driven environments to boost digital adaptability and innovation. Training methodologies are categorized into on-the-job and off-the-job, while contemporary emphasis is on digital and hybrid approaches like e-learning and simulations (Bell et al., 2017; Salas et al., 2012). Despite scalability, concerns about limited interaction in virtual settings persist (Bell et al., 2017).

Training frequency positively correlates with knowledge retention and adaptability. Regularly spaced sessions (e.g., monthly or quarterly) promote better long-term memory and continuous learning (Salas et al., 2012). The relevance of training to job tasks is vital for effective knowledge application. Task-specific training improves knowledge transfer and employee engagement. Training that incorporates real-world scenarios significantly enhances skill retention (Salas et al., 2012; Tannenbaum et al., 2024). Further, employees with proper training are more productive, make fewer errors, and adapt to changes more efficiently, which leads to improved project outcomes (Noe et al., 2014). The proposed hypothesis is:

H1: Training approaches are positively related to project performance.

## **2.2. Training Approaches and Career Success**

Recent literature conceptualizes career success using both objective and subjective dimensions (Ng et al., 2022). Objective measures of career success include salary and promotions, while subjective measures include satisfaction and perceived career growth. Training enhances employability and career adaptability, which are key predictors of success in dynamic industries (Huang et al., 2023). Under the lens of human capital and career construction theories, ongoing training enables employees to make decisions on their career paths while aligning with personal and organizational goals (De Vos et al., 2020; Tansky & Cohen, 2001). Hence, career success is found to be strongly connected to training provided by organizations under the broad term continuous and professional development (Tansky & Cohen, 2001). Further, the literature indicates that employees who experience greater career satisfaction and internal growth opportunities exhibit higher engagement in project work, resulting in improved project outcomes (Wickramasinghe, 2013). Thus, exploring the connection between

career success and project performance enhances the understanding of training effectiveness in TDS environments. However, empirical data on the moderating effects of organizational support on career progression in the TDS sector are limited. The proposed hypothesis is:

H2: Training approaches are positively related to career success.

### **2.3. Moderation Effect of Organizational Support**

Organizational support reflects the extent to which employees perceive that their organization values their contributions and cares about their well-being (Eisenberger et al., 2019). Further, employees who feel supported are more likely to reciprocate with higher commitment, motivation, and engagement in applying learned skills (Eisenberger et al., 2019). Such a supportive climate amplifies the effect of training by encouraging employees to transfer learning into project activities and sustain improved performance outcomes (Gupta & Sharma, 2023).

Organizational support, especially through mentorship, enhances employee engagement, motivation, and learning outcomes (Allen et al., 2004). In technology-driven contexts, organizational support increasingly manifests through digital mentorship, flexible work policies, and knowledge-sharing platforms (Gottlieb et al., 2017). Further, supportive cultures that promote autonomy and recognition have been shown to increase training participation and employee resilience (Seyed Alitabar & Zadhasn, 2023). However, research still lacks clarity on how these new forms of support interact with training to influence project and career outcomes in TDS sectors.

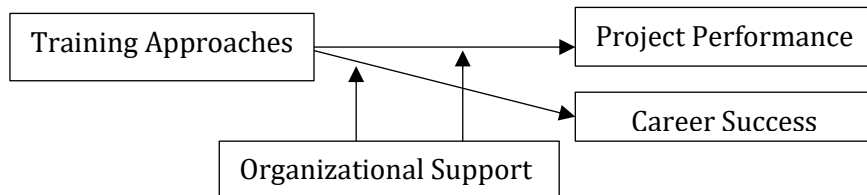
Concerning the moderating effect of organizational support on project performance, organizational support is essential for improving the effectiveness of training on project performance. A supportive work environment empowers employees to successfully apply newly learned skills, which leads to improved project outcomes (Saks & Belcourt, 2006). Further, employees who perceive higher managerial support demonstrate superior project coordination, time management, and problem-solving abilities after training (Huang et al., 2023). Such findings highlight that the effectiveness of training interventions depends not only on program quality but also on organizational support. The proposed hypothesis is:

H3a: Organizational support moderates the relationship between training approaches and project performance

Concerning the moderating effect of organizational support on career success, employees with strong supervisor support and career development opportunities report higher job satisfaction and promotion rates (Ng et al., 2022). Research indicates that both supportive leadership and recognition enhance the impact of training interventions on performance and career outcomes (Huang et al., 2023). Conversely, low support weakens training's positive effects, confirming the moderating role of organizational support in technology-driven environments (Huang et al., 2023). A supportive climate, therefore, acts as a catalyst that translates training efforts into tangible outcomes for both project performance and individual career advancement. However, the existing investigations are insufficient to understand how organizational support influences the effect of training on career success. The proposed hypothesis is:

H3b: Organizational support moderates the relationship between training approaches and career success

Based on the above literature review, the conceptual model developed is shown in Figure 1.



**Figure 1:** Conceptual Framework

### 3. Methodology

#### 3.1. Instrumentation

The research operationalizes variables into measurable elements, divided into sub-components, and assessed via a 5-point Likert scale. Table 1 shows the operationalization of study variables. Therefore, the questionnaire was developed based on Table 1 covering training approaches, project performance, career success, and organizational

support. As mentioned above, the intention was to test the three hypotheses of the study using the data collected from the questionnaire survey.

**Table 1:** Operationalization of Variables

<b>Variable</b>	<b>Dimensions/Indicators</b>	<b>Measurement Source</b>
Training Approaches	Structured, Informal, on-the-job, Frequency, Relevance, Impact	Salas et al. (2012)
Project Performance	Time efficiency, Budget control, and Quality outcomes	Burke & Hutchins (2007), Weissbein et al. (2010)
Career Success	Promotional Opportunities, Career growth	Ng et al. (2022); Huang et al. (2023)
Organization Support	Mentorship Availability, Accessibility	Eisenberger et al. (2019); Gupta & Sharma (2023)

### 3.2. Target Population

The target population consisted of employees working in project-based roles within TDS sectors such as software development, IT services, and BPO. A stratified random sampling technique is used to ensure representation across various job roles, including project managers, team leaders, and technical staff. Approximately 300 participants were targeted to ensure statistical significance and reliability for hypothesis testing.

### 3.3. Data Collection

Data was collected through a structured questionnaire, which is organized into four key domains: training approaches, project performance, career satisfaction, and organizational support. In addition, demographic data such as industry, gender, age, and work experience were captured. The survey was distributed online through platforms such as email, WhatsApp, and LinkedIn, with participation being voluntary and confidential. Weekly reminders and ethical oversight will ensure high response rates and adherence to research standards.

### 3.4. Data Analysis

The study employed a combination of descriptive and inferential statistical techniques for data analysis. Reliability and factor analysis assessed data integrity and construct validity. Correlation and regression analysis with Hayes PROCESS Macro examined direct relationships, while moderation analysis explored how the moderator influenced direct relationships. This methodological approach ensured a comprehensive and rigorous evaluation of how training affects project outcomes and career success in the TDS sector.

## 4. Findings and Discussion

Factor analysis validated the one-dimensionality and construct validity of the training approaches (78.2% variance explained), career success (74.63%), and organizational support (88.56%) as shown in Table 2. However, one item under project performance showed poor factor loading, aligning with the reliability findings and suggesting the need for refinement.

**Table 2:** Explained Variance - Factor Analysis

Variable	Variance Explained (%)
Training Approaches	78.2%
Career Success	74.63%
Organizational Support	88.56%
Project Performance	59.51%

Correlation analysis revealed strong, positive relationships among the study's key variables, which is shown in Table 3. Training approaches were significantly correlated with both project performance ( $r = 0.681$ ) and career success ( $r = 0.680$ ). Organizational support was moderately correlated with project performance ( $r = 0.560$ ) and career success ( $r = 0.570$ ), validating its role as a facilitating factor.

**Table 3:** Pearson Correlation Coefficients

Relationship	Correlation (r)
Training Approaches to Project Performance	0.681
Training Approaches to Career Success	0.680
Organization Support to Project Performance	0.560

Organization Support to Career Success	0.570
Project Performance to Career Success	0.492

Table 4 presents the results of the moderation analysis examining the impact of training approaches on project success, moderated by organizational support. The interaction term ( $T\_A \times O\_S$ ) is statistically significant ( $p < .001$ ), indicating that the effect of training on project success varies depending on the level of organizational support. Conditional effects show that training has a stronger positive impact on project success when organizational support is higher.

**Table 4:** Moderation Analysis for Project Success

Predictor	B	SE	t	p	95% CI
Training Approaches (T_A)	0.015	0.106	0.143	.000	[0.228, 0.198]
Organization Support (O_S)	0.141	0.032	4.375	.000	[0.077, 0.204]
T_A $\times$ O_S	0.439	0.122	3.592	.000	[0.679, 0.198]

*Note: B=Coefficient, SE=Error, t=Statistic, p=Significance, 95%CI = Interval*

Table 5 indicates that training approaches significantly predict career success ( $p < .001$ ), while organizational support and the interaction term ( $T\_A \times O\_S$ ) are not significant predictors. The interaction effect is not statistically significant ( $p = .146$ ), suggesting that organizational support does not moderate the relationship between training and career success.

**Table 5:** Moderation Analysis for Career Success

Predictor	B	SE	t	p	95% CI
Training Approaches (T_A)	0.707	0.161	4.391	.000	[0.390, 1.025]
Organization Support (O_S)	0.039	0.048	0.814	.416	[0.133, 0.055]
T_A $\times$ O_S	0.265	0.182	1.456	.146	[0.623, 0.093]

*Note: B=Coefficient, SE=Error, t=Statistic, p=Significance, 95%CI = Interval*

The findings confirm that training approaches significantly affect both project performance and career success. The presence of strong organizational support further amplifies the impact of training on project outcomes. These results highlight the need for organizations in

the TDS sector to invest not only in structured training programs but also in creating a supportive environment that enables employees to translate training into practical results. The results of the moderation analysis (Table 5) indicate that organizational support does not significantly moderate the relationship between training approaches and career success among employees in the TDS sector. This suggests that while training enhances career outcomes, the level of perceived organizational support does not substantially alter this relationship. One possible explanation lies in the evolving nature of career success in technology-driven environments. Recent studies highlight that employees increasingly perceive career advancement as self-managed, relying on individual competencies and digital learning opportunities rather than traditional organizational support structures (Ng et al., 2022). Furthermore, the widespread adoption of hybrid and remote work models has diminished day-to-day organizational interaction, reducing the visible impact of managerial or peer support on perceived career progress (Gupta & Sharma, 2023). Additionally, in high-skill technology contexts, employees often pursue certifications, upskilling platforms, and networking outside the organization, leading to a more independent path to career development (Huang et al., 2023). That is, organizational support, although beneficial for engagement and retention, may not directly shape the perceived link between training and career success. Therefore, it is important to further investigate whether specific forms of support, such as digital mentorship or recognition-based systems, moderate this relationship more effectively.

## **5. Conclusion and Implications**

### **5.1. Conclusion**

This study examined the impact of training on project performance and career success in the TDS sector; investigated the role of organizational support in moderating these two relationships. The key findings demonstrate that structured, relevant, and frequent training significantly improves project outcomes, including completion time, budget adherence, and deliverable quality positively influences employee career success. The study addressed its objectives using quantitative methods to establish that effective training approaches affect project performance and career success. Moreover, organizational

support was found to significantly improve the relationship with project performance.

## **5.2. Theoretical Implications**

The research reinforces human capital theory, organizational learning theory, and social learning theory by providing evidence that training and mentorship enhance workforce capabilities. It advances the resource-based view by categorizing training-driven knowledge as a strategic asset that fosters competitive advantage in dynamic sectors like TDS. The findings of this study contribute to the growing body of literature on human capital development and project management within technology-driven services (TDS). The significant positive relationship found between training approaches and project performance emphasizes that investment in employee learning directly enhances project-related outcomes. This result aligns with recent studies highlighting the role of skill development in improving performance efficiency in technology-intensive sectors (Tannenbaum et al., 2024). Moreover, the study extends existing theory by integrating career success as an outcome of training, suggesting that continuous learning is vital for individual and organizational success in evolving digital workplaces. Therefore, training not only improves project performance but also contributes to employees' perceived career growth. This reinforces recent arguments that continuous learning drives both organizational and individual success in dynamic digital workplaces (Ng et al., 2022). However, the non-significant moderating role of organizational support on career success challenges the assumption that supportive environments always enhance the link between training and career success. This suggests that in modern TDS settings, self-directed learning and digital development opportunities may play a stronger role than perceived organizational support (Huang et al., 2023). This insight provides a foundation for future theoretical work exploring the changing nature of support in technology-enabled work environments.

## **5.3. Practical Implementations**

From a practical standpoint, the study emphasizes that training should be seen as a strategic investment. Organizations should implement role-

specific training, integrate mentorship programs, regularly assess training effectiveness, leverage digital learning technologies, and align training with career progression. These practices not only enhance employee engagement and performance but also foster a learning culture that is vital for innovation and adaptability. This research establishes that training, when paired with strong organizational support, is a key driver of project performance in the TDS sector. Organizations that prioritize training as a strategic asset, supported by mentorship and continuous learning, are more likely to achieve sustained success in an increasingly competitive and technology-driven environment. For practitioners, the study provides evidence-based insights into how specific training approaches influence project performance. The findings indicate that organizations should prioritize blended and on-the-job training methods, as these approaches promote faster skill application and adaptability to emerging technologies. TDS organizations can use these insights to design training programs that align with project objectives such as timeliness, quality, and cost efficiency. Further, the significant effect of training on career success further implies that well-structured learning programs can enhance employee motivation, satisfaction, and retention. Therefore, managers should integrate training with clear career pathways, mentoring, and progression frameworks. The absence of a moderating effect of organizational support highlights that organizations should consider evolving toward digitally facilitated support systems.

#### **5.4. Limitations of the Study and Future Research**

Despite its contributions, the study acknowledges limitations such as reliance on self-reported data and the cross-sectional design that limits insights into long-term training effects. It recommends future research through longitudinal studies and comparative analyses across industries. Future research should explore additional moderating variables that may affect training outcomes. The moderation analysis established that organizational support strengthens the relationship between training and both project performance and career success. Employees with high organizational support showcase significantly greater improvements in performance and career outcomes compared to those with low support, validating literature findings.

## References

- Allen, T. D., Eby, L. T., Poteet, M. L., Lentz, E., & Lima, L. (2004). Career Benefits Associated with Mentoring for Proteges: A Meta-Analysis. *Journal of Applied Psychology*, 89(1), 127–136. <https://doi.org/10.1037/0021-9010.89.1.127>.
- Becker, S. G. (1964). Human capital: A theoretical and empirical analysis. *Journal of Political Economy*, 70(5), 9-42. <https://doi.org/10.1086/258724>.
- Bell, B. S., Tannenbaum, S. I., Ford, J. K., Noe, R. A., & Kraiger, K. (2017). 100 years of training and development research: What we know and where we should go. *Journal of Applied Psychology*, 102(3), 305–323. <https://doi.org/10.1037/apl0000142>.
- Burke, L. A., & Hutchins, H. M. (2007). Training Transfer: An Integrative Literature Review. *Human Resource Development Review*, 6(3), 263–296. <https://doi.org/10.1177/1534484307303035>.
- De Vos, A., Van der Heijden, B. I. J. M., & Akkermans, J. (2020). Sustainable careers: Towards a conceptual model. *Journal of Vocational Behavior*, 117, 103196. <https://doi.org/10.1016/j.jvb.2018.06.011>.
- Eisenberger, R., Shanock, L. R., & Wen, X. (2019). Perceived organizational support: Why caring about employees counts. *Annual Review of Organizational Psychology and Organizational Behavior*, 7(1), 101–124. <https://doi.org/10.1146/annurev-orgpsych-012119-044917>.
- Gottlieb, M., Fant, A., King, A., et al. (2017). One click away: Digital mentorship in the modern era. *Cureus*, 9(11), e1838. DOI 10.7759/cureus.1838.
- Gupta, A., & Sharma, R. (2023). Perceived organizational support and employee performance: A study of service sector employees. *Asia Pacific Journal of Human Resources*, 61(4), 987–1004. <https://doi.org/10.1111/1744-7941.12345>.
- Huang, H., Chen, X., Li, Y., & Zhang, W. (2023). The impact of training and learning orientation on project performance: Evidence from technology-driven industries. *International Journal of Project Management*, 41(1), 44–59. <https://doi.org/10.1016/j.ijproman.2022.10.003>.

- Nanayakkara, S. M., & Wickramasinghe, V. (2015). Technology Strategy for Driving Learning and Growth: Results of a Pilot Study. *12th International Conference on Business Management (ICBM) 2015*. <http://dx.doi.org/10.2139/ssrn.2699880>.
- Ng, T. W. H., Lam, S. S. K., & Feldman, D. C. (2022). Human resource management review. *Human Resource Management Review*, 32(3), 100870. <https://doi.org/10.1016/j.hrmr.2021.100870>.
- Noe, R. A., Clarke, A. D. M., & Klein, H. J. (2014). Learning in the Twenty-First-Century Workplace. *Annual Review of Organizational Psychology and Organizational Behavior*, 1, 245-275. <https://doi.org/10.1146/annurev-orgpsych-031413-091321>.
- Seyed Alitabar, S.H., & Zadhasn, Z. (2023). Digital Mentorship: Mentor-mentee relationships in virtual spaces. *AI and Tech in Behavioral and Social Sciences*, 1(2), 12-18. <https://doi.org/10.61838/kman.aitech.1.2.3>.
- Salas, E., Tannenbaum, S. I., Kraiger, K., & Smith-Jentsch, K. A. (2012). The science of training and development in organizations. *Gothic.net*, 13(2), 74–101. <https://doi.org/10.1177/1529100612436661>.
- Saks, A. M., & Belcourt, M. (2006). An investigation of training activities and transfer of training in organizations. *Human Resource Management*, 45(4), 629–648. <https://doi.org/10.1002/hrm.20135>.
- Tannenbaum, S. I., Salas, E., & London, M. (2024). The future of training and development in the age of digital transformation. *Annual Review of Organizational Psychology and Organizational Behavior*, 11, 151–175. <https://doi.org/10.1146/annurev-orgpsych-031623-031921>.
- Tannenbaum, S., & Salas, E. (2020). Teamwork myths: What leaders need to know. *Leader to Leader*, 98, 58–64. <https://doi.org/10.1002/ltl.20518>.
- Tansky, J. W., & Cohen, D. J. (2001). The relationship between organizational support, employee development, and organizational commitment: An empirical study. *Human Resource Development Quarterly*, 12(3), 285–300. <https://doi.org/10.1002/hrdq.15>.
- Weissbein, D. A., Huang, J. L., Ford, J. K., & Schmidt, A. M. (2010). Influencing learning states to enhance trainee motivation and improve training transfer. *Journal of Business and Psychology*, 26(4), 423–435. <https://doi.org/10.1007/s10869-010-9198-x>.

- Wickramasinghe, V. (2011). Influence of human dimensions on product quality. *Proceedings of 12<sup>th</sup> Annual Interdisciplinary Research Symposium of the Faculty of Graduate Studies, University of Kelaniya*. <http://repository.kln.ac.lk/handle/123456789/8127>.
- Wickramasinghe, V. (2013). Human resource development in organisations: A review of current practices in Sri Lanka. In S. Ranasinghe and A. Dharmasiri (Eds.) *HR challenge: Dynamics of value creation and competitiveness through people*, 41-67, Colombo, Sri Lanka: Institute of Personnel Management.