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Training and Employee Performance in the Automotive Manufacturing Sector: Evidence from IPOH, Malaysia

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Abstract

Employee performance is a key factor in determining organizational productivity, efficiency, and competitiveness (Armstrong, 2014). In manufacturing industries, particularly the automotive sector, employees must regularly update their skills to keep pace with rapid technological changes and evolving operational requirements (Schuh et al., 2020). This study investigates the relationship between four training—Training Needs Assessment (TNA), Training Design (TD), Training Delivery (TDR), and Training Evaluation (TE)—and employee performance (EP) in automotive manufacturing companies located in Ipoh, Perak, Malaysia. A quantitative research approach was adopted, using survey data collected from 278 non-managerial employees across four firms. The questionnaire measured training and employee performance using a five-point Likert scale. Data were analyzed with SPSS statistical software, including reliability testing, descriptive statistics, correlation analysis, and multiple regression analysis. The findings show that all four training have significant positive relationships with employee performance. Regression results demonstrate strong explanatory power (R^2 = 0.709), indicating that training collectively explain a substantial proportion of variance in employee performance. These results support Human Capital Theory, which emphasizes that investments in employee training improve individual capability and organizational outcomes (Becker, 1993), and align with Kirkpatrick's Four-Level Model of training evaluation (Kirkpatrick & Kirkpatrick, 2016). The study contributes to the literature on human resource development by providing empirical evidence from Malaysia's automotive manufacturing sector. Practical implications suggest that organizations should adopt comprehensive training systems that integrate needs assessment, structured design, effective delivery methods, and systematic evaluation to strengthen workforce capability and organizational performance.

Keywords: Training, Employee Performance, Automotive Manufacturing, Human Resource Development, Malaysia

Introduction

Employee performance is widely recognized as a central factor influencing organizational success. Organizations depend on the skills, knowledge, and competencies of their workforce to achieve operational objectives and maintain competitiveness (Armstrong, 2014). In manufacturing industries such as the automotive sector, employee performance is particularly critical because production processes demand technical expertise, precision, and strict adherence to quality standards (Ahmad & Schroeder, 2017). As global competition intensifies and technologies evolve, organizations must ensure that employees possess the capabilities required to operate advanced equipment and adapt to changing production processes (Schuh et al., 2020).

Training and development initiatives are among the most effective mechanisms for enhancing employee capabilities. Through training programs, employees acquire new knowledge, refine technical skills, and improve their ability to perform job tasks effectively (Noe & Hollenbeck, 2019). Training also contributes to motivation and job satisfaction by signaling organizational commitment to employee development (Jehanzeb & Bashir, 2013).

The automotive industry plays a significant role in Malaysia's economic development. It contributes substantially to national manufacturing output and provides employment opportunities across various regions (Malaysian Automotive Association, 2022). Within the state of Perak, the city of Ipoh has emerged as an industrial hub, hosting several automotive manufacturing companies involved in component production and related activities (PSDC, 2021). Despite this growth, many organizations in smaller industrial regions face challenges in implementing comprehensive training systems due to financial constraints and limited access to training resources (HRD Corp, 2022).

Training systems typically consist of multiple stages designed to ensure that learning interventions address workforce development needs effectively. These stages include Training Needs Assessment (TNA), which identifies competency gaps among employees; Training Design (TD), which develops appropriate learning objectives, content, and instructional methods; Training Delivery (TDR), which concerns the implementation of training activities; and Training Evaluation (TE), which assesses the effectiveness of training initiatives (Goldstein & Ford, 2002; Kirkpatrick & Kirkpatrick, 2016).

While previous research has demonstrated positive relationships between training and employee performance (Salas et al., 2012; Hendri, 2019), limited studies have examined these relationships within the automotive manufacturing sector in emerging industrial regions such as Ipoh. Therefore, this study aims to investigate how training influence employee performance among employees working in automotive manufacturing companies in Ipoh, Malaysia.

Literature Review

Employee performance has long been recognized as a central determinant of organizational success. It refers to the extent to which employees fulfill their job responsibilities and contribute to organizational goals, encompassing both efficiency and effectiveness (Campbell, 1990; Sonnentag & Frese, 2002). In manufacturing industries, performance is often measured through productivity, quality, and adherence to safety standards. Scholars

argue that performance is influenced by individual abilities, motivation, and organizational support systems (Viswesvaran & Ones, 2000). In the automotive sector, where precision and technical expertise are critical, high employee performance ensures product quality, reduces errors, and enhances competitiveness (Ahmad & Schroeder, 2017).

Training is widely acknowledged as one of the most effective mechanisms for improving employee performance. Organizations invest in training initiatives to enhance knowledge, refine technical competencies, and support organizational outcomes (Aguinis & Kraiger, 2009). Effective training programs have been linked to improvements in productivity, job satisfaction, and employee engagement (Salas et al., 2012). The training process is typically structured into four stages: Training Needs Assessment (TNA), Training Design (TD), Training Delivery (TDR), and Training Evaluation (TE). Each stage plays a distinct role in ensuring that training initiatives are relevant, well-structured, effectively implemented, and systematically assessed.

Training Needs Assessment is the foundation of effective training. It involves identifying gaps between employees' current competencies and the skills required to perform tasks effectively (Goldstein & Ford, 2002). Accurate needs assessment ensures that training initiatives address specific development requirements rather than generic objectives. Studies confirm that organizations conducting systematic TNAs achieve better alignment between training content and job requirements, leading to improved employee confidence and performance (Konings & Vanormelingen, 2015; Noe, Clarke, & Klein, 2021). In the automotive industry, where technological advancements are constant, TNAs are particularly important to ensure employees remain capable of operating new machinery and adapting to evolving production processes.

Training Design refers to the planning and structuring of training programs. This stage includes defining learning objectives, selecting instructional methods, and developing training materials. Well-designed programs enhance learning outcomes by presenting information in an organized and engaging manner (Noe & Hollenbeck, 2019). Recent studies emphasize the importance of customizing training design to specific job roles, which improves confidence and skill application (Chen, Li, & Wang, 2024). In manufacturing contexts, training design that integrates practical exercises with theoretical knowledge has been shown to improve both technical proficiency and problem-solving skills.

Training Delivery focuses on the implementation of training programs. Organizations may use instructor-led sessions, workshops, simulations, or on-the-job training. Effective delivery methods increase employee engagement and facilitate knowledge transfer to the workplace (Ford, Baldwin, & Prasad, 2014). Interactive approaches, such as hands-on practice and simulations, have been shown to improve motivation and performance outcomes (Gonzalez & Smith, 2022). In the automotive sector, where employees often work with complex machinery, delivery methods that emphasize experiential learning are particularly effective.

Training Evaluation represents the final stage of the training cycle. Evaluation mechanisms allow organizations to measure training effectiveness and identify areas for improvement. Kirkpatrick's Four-Level Model is widely applied to evaluate training outcomes at the levels of reaction, learning, behavior, and results (Kirkpatrick & Kirkpatrick, 2016). Studies confirm

that organizations investing in robust evaluation processes achieve better employee performance and organizational outcomes (Singh & Ahmed, 2022). In practice, however, many firms limit evaluation to participant feedback, neglecting deeper assessments of behavioral change and organizational impact. This gap reduces the potential benefits of training investments.

The theoretical foundation for understanding the relationship between training and employee performance is provided by Human Capital Theory, which argues that investments in employee education and training increase productivity and contribute to improved organizational outcomes (Becker, 1993). This perspective has been supported by empirical studies in manufacturing contexts, which show that structured training programs lead to measurable gains in efficiency and competitiveness (Saleh & Ainiah, 2024; Surya et al., 2024). Kirkpatrick's model complements Human Capital Theory by offering a practical framework for evaluating training effectiveness, ensuring that investments in training translate into tangible performance improvements.

Recent studies between 2019 and 2025 have reinforced the importance of training in manufacturing and automotive sectors. Saleh and Ainiah (2024) identified critical factors influencing training effectiveness in the automotive industry, including managerial support and workplace culture. Surya et al. (2024) demonstrated that training and development programs significantly improve employee performance in manufacturing firms, particularly when evaluation mechanisms are robust. Singh and Ahmed (2022) highlighted the importance of systematic evaluation, showing that firms with comprehensive evaluation frameworks achieve better productivity and employee satisfaction. These findings confirm the relevance of training in enhancing performance, while also highlighting the need for integrated systems that connect assessment, design, delivery, and evaluation.

Despite these insights, research gaps remain in the Malaysian automotive sector. Most existing studies focus on large corporations or advanced economies, leaving limited understanding of how training function in smaller industrial hubs such as Ipoh. Firms in these regions often face resource constraints, which may affect the implementation and effectiveness of training systems (HRD Corp, 2022). There is also limited research on how cultural and organizational factors moderate the relationship between training and performance in Malaysia. Addressing these gaps is essential to provide localized evidence and practical recommendations for firms operating in emerging industrial hubs.

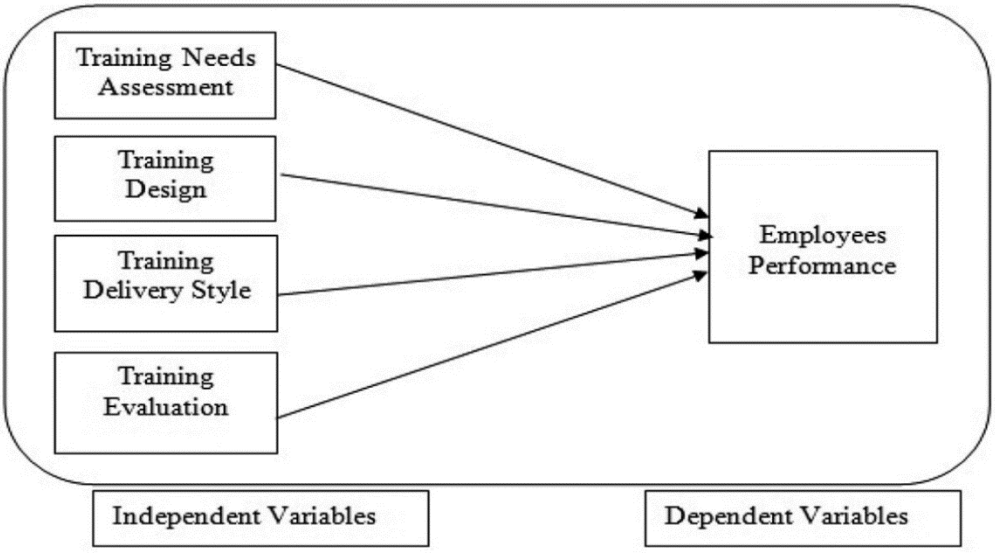
Conceptual Framework and Hypotheses

The conceptual framework for this study is grounded in two well-established theories: Human Capital Theory and Kirkpatrick's Four-Level Model of Training Evaluation. Human Capital Theory emphasizes that investments in employee education and training enhance individual productivity and contribute to improved organizational outcomes (Becker, 1993). This perspective suggests that training are not merely costs but strategic investments that yield measurable returns in the form of higher performance, efficiency, and competitiveness. In parallel, Kirkpatrick's model provides a practical framework for evaluating training effectiveness across four levels—reaction, learning, behavior, and results—ensuring that training initiatives are systematically assessed and linked to organizational performance (Kirkpatrick & Kirkpatrick, 2016).

Within this theoretical foundation, the framework positions Training Needs Assessment (TNA), Training Design (TD), Training Delivery (TDR), and Training Evaluation (TE) as independent variables that influence the dependent variable, Employee Performance (EP). Each training practice plays a distinct role in shaping employee outcomes. TNA ensures that training programs are relevant by identifying competency gaps and aligning learning objectives with organizational requirements (Goldstein & Ford, 2002). TD provides structure by defining objectives, selecting instructional methods, and developing materials that enhance learning outcomes (Noe & Hollenbeck, 2019). TDR focuses on the implementation of training activities, with effective delivery methods facilitating engagement and knowledge transfer (Ford et al., 2014). TE closes the cycle by assessing the effectiveness of training initiatives, enabling organizations to refine programs and ensure continuous improvement (Singh & Ahmed, 2022).

The framework assumes that these four practices collectively contribute to employee performance, but also acknowledges that their relative influence may vary. For example, recent studies suggest that evaluation mechanisms often have the strongest impact because they provide feedback loops that inform future training design and delivery (Saleh & Ainiah, 2024; Surya et al., 2024). Similarly, needs assessment is critical in ensuring that training addresses actual skill gaps rather than generic objectives, thereby maximizing relevance and effectiveness (Konings & Vanormelingen, 2015).

Table 1 The Conceptual Framework



Based on this framework, the study proposes the following hypotheses:

H1: Training Needs Assessment has a significant positive relationship with employee performance.

H2: Training Design has a significant positive relationship with employee performance.

H3: Training Delivery has a significant positive relationship with employee performance.

H4: Training Evaluation has a significant positive relationship with employee performance.

These hypotheses reflect the expectation that each stage of the training process contributes meaningfully to employee performance. By testing these relationships in the context of automotive manufacturing firms in Ipoh, Malaysia, the study aims to provide empirical evidence that supports theoretical claims while addressing research gaps in localized industrial settings. The conceptual framework therefore integrates theory and practice, offering a structured lens through which to examine how training influence workforce capability and organizational outcomes.

Methodology

This study employed a quantitative, cross-sectional survey design to examine the relationship between training and employee performance in automotive manufacturing firms in Ipoh, Malaysia. A quantitative approach was selected because it allows for statistical testing of hypotheses and provides generalizable findings across a large population (Bryman & Bell, 2011). The cross-sectional design was appropriate as data were collected at a single point in time, offering a snapshot of how training influence performance.

The population consisted of approximately 1,000 non-managerial employees across four automotive manufacturing companies. Using Krejcie and Morgan's (1970) sample size determination table, a minimum of 278 respondents was required to achieve a 95% confidence level with a 5% margin of error. To ensure representativeness, 400 questionnaires were distributed, yielding 278 usable responses after data cleaning. This sample size aligns with recommendations for organizational studies (Sekaran & Bougie, 2019).

Data were collected using a self-administered questionnaire, which is efficient and minimizes researcher bias (Oppenheim, 2003). The instrument was divided into three sections: demographic information, training (TNA, TD, TDR, TE), and employee performance. Items were adapted from validated scales in prior studies (Ludwikowska, 2018; Rahman, 2024; Ahmad & Shah, 2025). Responses were recorded on a five-point Likert scale ranging from "strongly disagree" to "strongly agree," a format widely used in organizational research (Likert, 1932).

Reliability and validity were carefully assessed. Cronbach's alpha values for all constructs exceeded 0.88, confirming high internal consistency (Nunnally & Bernstein, 1994). Construct validity was tested using factor analysis, with Kaiser-Meyer-Olkin (KMO) values above 0.70 and Bartlett's test of sphericity significant at $p < 0.001$, indicating suitability for factor analysis (Tabachnick & Fidell, 2007). Content validity was established through expert review and pilot testing with 20 employees, ensuring that items reflected the intended constructs.

Data analysis was conducted using SPSS Version 27.0. Descriptive statistics summarized demographic profiles, while correlation analysis using Pearson's r examined relationships between training and employee performance. Multiple regression analysis was then performed to determine the relative influence of each training practice on performance. The regression model explained 70.9% of the variance in employee performance ($R^2 = 0.709$), which is considered strong explanatory power in organizational research (Hair et al., 2010).

Ethical considerations were strictly observed. Respondents were informed about the purpose of the study and assured that participation was voluntary. Informed consent was obtained, and confidentiality was maintained by anonymizing responses. The study complied with Malaysia's Personal Data Protection Act (PDPA, 2010), which governs the collection, use, and storage of personal data. Data were stored securely and used solely for academic purposes.

In summary, the methodology combined a robust sampling strategy, validated measurement instruments, and rigorous statistical analysis to ensure reliability and validity. This approach provides a solid foundation for examining how training influence employee performance in Malaysia's automotive manufacturing sector, particularly in emerging industrial hubs such as Ipoh.

Results

The results of the study are presented in four parts: demographic characteristics of respondents, reliability analysis of the measurement instruments, correlation analysis of the relationships between training and employee performance, and regression analysis to determine the relative influence of each training practice on performance outcomes. Together, these findings provide a comprehensive understanding of how training contribute to employee performance in automotive manufacturing firms in Ipoh, Malaysia.

A total of 278 usable responses were obtained from non-managerial employees across four automotive manufacturing firms. The demographic profile reflects a diverse workforce. Gender distribution was relatively balanced, with 52.5% female and 47.5% male respondents. This balance suggests that both men and women are actively engaged in operational roles within the automotive sector.

In terms of age, the largest group of respondents fell within the 26–35 years category (29.5%), followed by those aged 36–45 years (25.2%). Younger employees (18–25 years) accounted for 18.3%, while older employees above 45 years represented 27%. This distribution indicates a workforce that is both youthful and experienced, combining fresh perspectives with seasoned expertise.

Educational attainment varied, with 34.5% holding a bachelor's degree, 33.1% a diploma, 21.2% possessing SKM certification, and 11.2% completing high school. This diversity reflects the technical and administrative demands of the automotive industry, which requires both skilled technicians and employees with higher education backgrounds.

Job roles were distributed across production (35.3%), maintenance (19.1%), administrative support (18.0%), and quality control (16.9%). This spread highlights the multifaceted nature of automotive manufacturing, where performance depends on coordination across different functions. Tenure data showed that most employees had between 1–6 years of experience, suggesting moderate familiarity with organizational processes. Income levels varied, with nearly half earning RM 2,501–3,500 monthly, consistent with industry norms for non-managerial positions.

Overall, the demographic profile demonstrates a balanced workforce in terms of gender, age, education, and job roles, providing a representative sample for examining training and performance.

Reliability Analysis

Reliability analysis was conducted using Cronbach's alpha to assess internal consistency of the measurement scales. All constructs exceeded the recommended threshold of 0.70 (Nunnally & Bernstein, 1994), with values ranging from 0.883 to 0.934. Employee Performance had the highest reliability (α = 0.934), while Training Delivery had α = 0.883. These results confirm that the items used to measure training and performance were consistent and reliable.

Table 2
Reliability Analysis

Variable	Items	Cronbach's Alpha
Training Needs Assessment	6	0.915
Training Design	5	0.887
Training Delivery	6	0.883
Training Evaluation	6	0.892
Employee Performance	10	0.934

The high reliability values strengthen confidence in the measurement instruments and ensure that subsequent analyses are based on robust data.

Correlation Analysis

Pearson's correlation analysis was conducted to examine the relationships between training and employee performance. Results revealed strong positive correlations, with coefficients ranging from r = 0.826 to r = 0.859 ($p < 0.01$). The highest correlation was observed between Training Evaluation and Employee Performance (r = 0.859), followed closely by Training Needs Assessment (r = 0.842), Training Delivery (r = 0.840), and Training Design (r = 0.826).

Table 3
Correlation Matrix

Variables	TNA	TD	TDR	TE	EP
TNA	1	.801	.815	.823	.842
TD	.801	1	.782	.795	.826
TDR	.815	.782	1	.807	.840
TE	.823	.795	.807	1	.859
EP	.842	.826	.840	.859	1

These findings suggest that all four training are strongly associated with employee performance. The particularly high correlation between Training Evaluation and performance underscores the importance of systematic assessment mechanisms in driving workforce outcomes.

Regression Analysis

Multiple regression analysis was conducted to determine the relative influence of each training practice on employee performance. Results indicated that all four practices significantly predicted performance ($p < 0.001$). Training Evaluation emerged as the strongest predictor (β = 0.329), followed by Training Needs Assessment (β = 0.312), Training Delivery (β = 0.301), and Training Design (β = 0.276).

Table 4
Regression Results

Variable	Beta	t	Sig.
Training Needs Assessment	.312	5.21	.000
Training Design	.276	4.88	.000
Training Delivery	.301	5.02	.000
Training Evaluation	.329	5.60	.000
Model Summary			R^2=0.709

The regression model explained 70.9% of the variance in employee performance (R^2 = 0.709), which is considered strong explanatory power in organizational research (Hair et al., 2010). This indicates that training collectively account for a substantial proportion of performance outcomes.

The finding that Training Evaluation is the strongest predictor highlights the critical role of systematic assessment in ensuring training effectiveness. Evaluation not only measures outcomes but also provides feedback loops that inform future training design and delivery, thereby enhancing overall impact. Training Needs Assessment also demonstrated a strong effect, reinforcing the importance of identifying skill gaps before designing programs. Training Delivery and Training Design, while slightly weaker predictors, remain significant contributors, emphasizing that well-structured and effectively implemented programs are essential for improving performance.

The results confirm that demographic diversity exists within the workforce, with balanced representation across gender, age, education, and job roles. Reliability analysis validated the measurement instruments, ensuring consistency. Correlation analysis demonstrated strong positive relationships between training and employee performance, while regression analysis identified Training Evaluation as the most influential predictor. Collectively, these findings provide robust evidence that training significantly enhance employee performance in automotive manufacturing firms in Ipoh, Malaysia.

Discussion

The findings of this study confirm that all four training—Training Needs Assessment (TNA), Training Design (TD), Training Delivery (TDR), and Training Evaluation (TE)—have significant positive relationships with employee performance. The regression model explained 70.9% of the variance in performance, which is considered strong explanatory power in organizational research (Hair et al., 2010). Among the predictors, Training Evaluation emerged as the strongest factor, followed by Training Needs Assessment, Training Delivery, and Training Design. These results provide valuable insights into how training influence workforce capability in Malaysia's automotive manufacturing sector.

Overview of Findings

The results demonstrate that training collectively play a critical role in shaping employee performance. Each stage of the training cycle contributes meaningfully, but their relative influence varies. Training Evaluation was found to be the strongest predictor, highlighting the importance of systematic assessment mechanisms. Training Needs Assessment also showed a strong effect, reinforcing the necessity of identifying skill gaps before designing programs.

Training Delivery and Training Design, while slightly weaker predictors, remain significant contributors, emphasizing that well-structured and effectively implemented programs are essential for improving performance.

Training Needs Assessment

The significant relationship between TNA and employee performance highlights the importance of identifying skill gaps before designing training programs. Accurate needs assessment ensures that training initiatives are relevant and aligned with organizational objectives (Goldstein & Ford, 2002). Noe, Clarke, and Klein (2021) argue that organizations conducting systematic TNAs achieve better alignment between training content and job requirements, leading to improved employee confidence and performance. In the Ipoh context, employees reported that training was most effective when it directly addressed their daily tasks. This suggests that firms should invest in systematic needs assessments to ensure relevance and maximize impact.

Training Design

Training Design also demonstrated a positive effect on performance. Well-structured programs with clear objectives and practical activities enhance learning outcomes by presenting information in an organized and engaging manner (Noe & Hollenbeck, 2019). Recent studies emphasize the importance of customizing training design to specific job roles, which improves confidence and skill application (Chen, Li, & Wang, 2024). However, qualitative insights revealed that some training programs in Ipoh were generic and lacked customization. This mismatch reduced effectiveness, echoing findings from Lim et al. (2023), who noted that budget constraints often lead firms to adopt one-size-fits-all designs. To improve outcomes, firms should tailor training design to specific job roles and integrate blended learning approaches.

Training Delivery

Training Delivery was another significant predictor of performance. Interactive methods such as hands-on training and simulations were valued by employees, consistent with Ford, Baldwin, and Prasad (2014). Effective delivery enhances engagement, motivation, and knowledge transfer. Gonzalez and Smith (2022) found that interactive delivery methods improve employee motivation and performance outcomes. In Ipoh, resource limitations in smaller firms sometimes led to inconsistent delivery. This finding supports Edmondson (2019), who emphasized the role of psychological safety and supportive environments in effective learning. Firms in Ipoh should therefore prioritize interactive delivery methods and invest in trainer development.

Training Evaluation

Training Evaluation emerged as the strongest predictor of performance. This underscores the importance of systematic evaluation mechanisms that go beyond reaction surveys. Kirkpatrick's Four-Level Model evaluates outcomes at four levels: reaction, learning, behavior, and results (Kirkpatrick & Kirkpatrick, 2016). Singh and Ahmed (2022) found that organizations using comprehensive evaluation frameworks achieve better productivity and job satisfaction. In Ipoh, employees reported that evaluation was often limited to feedback forms, with little follow-through. This gap reduces effectiveness, as evaluation results must be used constructively to refine future programs. APQC (2025) emphasizes that evaluation

should be integrated into organizational learning systems to ensure continuous improvement. Firms should adopt Kirkpatrick's model to evaluate outcomes at multiple levels, ensuring that training investments translate into tangible performance improvements.

Integration with Theory

The findings reinforce Human Capital Theory (Becker, 1993) by demonstrating that structured training investments yield measurable performance gains. Training enhance employee capabilities, which in turn improve organizational outcomes. The results also extend Kirkpatrick's Four-Level Model by showing that evaluation is not just the final stage but a critical driver of performance. Together, these frameworks provide a robust theoretical basis for understanding training effectiveness in manufacturing contexts.

Practical Implications

For practitioners, the study suggests several actionable steps:

- Conduct systematic Training Needs Assessments to align training with competency gaps.
- Customize Training Design to job roles and integrate blended learning approaches.
- Prioritize Training Delivery methods that are interactive and experiential.
- Implement comprehensive Training Evaluation frameworks to ensure continuous improvement.

These practices can help firms in Ipoh overcome resource constraints and enhance workforce capability. By adopting integrated training systems, organizations can strengthen employee performance and maintain competitiveness in the automotive sector.

Conclusion

Summary of Findings

This study examined the relationship between four training—Training Needs Assessment (TNA), Training Design (TD), Training Delivery (TDR), and Training Evaluation (TE)—and employee performance (EP) in automotive manufacturing firms in Ipoh, Malaysia. The results confirmed that all four practices significantly enhance employee performance, with the regression model explaining 70.9% of the variance. Among the predictors, Training Evaluation emerged as the strongest factor (β = 0.329), followed by Training Needs Assessment (β = 0.312), Training Delivery (β = 0.301), and Training Design (β = 0.276). These findings highlight that while each stage of the training cycle contributes meaningfully to performance, systematic evaluation mechanisms are particularly critical in ensuring training effectiveness.

The results support Human Capital Theory (Becker, 1993), which posits that investments in employee training improve individual capabilities and organizational outcomes. They also extend Kirkpatrick's Four-Level Model (Kirkpatrick & Kirkpatrick, 2016) by demonstrating that evaluation is not merely the final stage of training but a key driver of performance improvement. Together, these frameworks provide a strong theoretical foundation for understanding training effectiveness in manufacturing contexts.

Contributions to Knowledge

This study contributes to the literature on human resource development in several ways. First, it provides empirical evidence from Ipoh, an emerging industrial hub in Malaysia that has received limited scholarly attention. Most prior studies have focused on large

corporations or advanced economies, leaving a gap in understanding training effectiveness in resource-constrained contexts. By focusing on non-managerial employees in automotive manufacturing firms, the study enriches knowledge of how training function in smaller hubs.

Second, the study highlights the relative importance of different training. While all four practices are significant, Training Evaluation emerged as the strongest predictor of performance. This finding underscores the need for organizations to move beyond superficial evaluation methods and adopt comprehensive frameworks that assess outcomes at multiple levels.

Third, the study integrates theory and practice by demonstrating how Human Capital Theory and Kirkpatrick's model can be applied in real-world contexts. This integration strengthens the theoretical basis for future research and provides practical insights for managers and policymakers.

Practical Recommendations

Based on the findings, several recommendations can be made for organizations in the automotive manufacturing sector:

Systematic Training Needs Assessment Organizations should conduct thorough TNAs to identify competency gaps and align training initiatives with actual job requirements. This ensures relevance and maximizes the impact of training investments.

Customized Training Design Training programs should be tailored to specific job roles and incorporate blended learning approaches that combine theoretical instruction with practical exercises. Customization improves confidence, skill application, and overall effectiveness.

Interactive Training Delivery Delivery methods should prioritize interactive approaches such as simulations, workshops, and hands-on practice. These methods enhance engagement, motivation, and knowledge transfer, particularly in technical industries like automotive manufacturing.

Comprehensive Training Evaluation Organizations should adopt systematic evaluation frameworks, such as Kirkpatrick's Four-Level Model, to assess outcomes at multiple levels. Evaluation results should be used constructively to refine future programs and ensure continuous improvement.

Managerial Support and Organizational Culture Training effectiveness is enhanced when managers actively support employee development and when workplace culture encourages skill application. Firms should foster environments that value learning and innovation.

By implementing these recommendations, organizations can strengthen workforce capability, improve performance, and maintain competitiveness in the automotive sector.

Limitations

While the study provides valuable insights, several limitations should be acknowledged. First, the focus was on non-managerial employees in four firms within Ipoh, which may limit

generalizability to other regions or managerial roles. Second, the cross-sectional design captures relationships at a single point in time, restricting causal inference. Longitudinal studies would be better suited to examine how training influence performance over time. Third, the study relied on self-reported data, which may be subject to bias. Future research could incorporate objective performance measures to strengthen validity.

Future Research Directions

Building on these limitations, future studies could explore several avenues:

Longitudinal Studies: Examining training and performance over time would provide deeper insights into causal relationships and long-term effects.

Cross-Industry Comparisons: Comparing automotive manufacturing with other sectors could reveal industry-specific dynamics and broader patterns.

Moderating Factors: Investigating how organizational culture, leadership support, and technology adoption moderate the training–performance relationship would enrich understanding.

Digital Learning Technologies: Exploring the role of e-learning, virtual simulations, and digital platforms in training delivery could provide insights into how technology enhances effectiveness.

Regional Studies: Expanding research to other industrial hubs in Malaysia and Southeast Asia would improve generalizability and provide comparative perspectives.

In conclusion, this study demonstrates that training significantly enhance employee performance in automotive manufacturing firms in Ipoh, Malaysia. Training Evaluation emerged as the strongest predictor, highlighting the importance of systematic assessment mechanisms. The findings contribute to theory by supporting Human Capital Theory and extending Kirkpatrick's model, and to practice by offering actionable recommendations for organizations. While limitations exist, the study provides a foundation for future research and practical improvements in training systems. By adopting integrated training that combine needs assessment, customized design, interactive delivery, and comprehensive evaluation, organizations can strengthen workforce capability and maintain competitiveness in an increasingly dynamic global environment.

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