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UNLOCKING ORGANIZATIONAL EXCELLENCE: THE IMPACT OF TRAINING, TECHNOLOGY ADOPTION, EMPLOYEE ENGAGEMENT, AND LEADERSHIP SUPPORT ON PERFORMANCE

Annotation. This study aims at investigating the effects of the put-in-place employee training programs on the acceptance of technology with employee engagement as the mediator and leadership support as the moderator that provides the much-needed means for enhancing the organization's performance. This is a quantitative and cross-sectional research study as questionnaires were administered to 260 participants from various organizations. SEM was used to establish mediation and moderation tests. Therefore, the findings indicate that organization training and the extent of technology usage exercise the impact of engagement on performance. They also found out that the support originating from the leaders also strengthens this link because they enhance both engagement and resultant effectiveness. However, causality cannot be established due to the cross-sectional study design adopted in this paper, and therefore researchers should contemplate the longitudinal studies. In other words, for pragmatic consequences, it has been found that general training is essential with the aid of this complex technology and enhancement of leadership contribution to ensure the employees have the necessary motivation to practice the training. However, this study is based on previous research, and it offers substantive findings on the association of those variables for additional study and practice in the future.

Keywords: Employees Training Programs, Technology Adoption, Employee Engagement, Leadership Support, Organizational Performance

РАСКРЫТИЕ ОРГАНИЗАЦИОННОГО СОВЕРШЕНСТВА: ВЛИЯНИЕ ОБУЧЕНИЯ, ВНЕДРЕНИЯ ТЕХНОЛОГИЙ, ВОВЛЕЧЕННОСТИ СОТРУДНИКОВ И ПОДДЕРЖКИ РУКОВОДСТВА НА ПРОИЗВОДИТЕЛЬНОСТЬ

Annotatsiya. Целью данного исследования является изучение влияния внедренных программ обучения сотрудников на принятие технологий с вовлеченностью сотрудников в

качестве посредника и поддержкой руководства в качестве модератора, что обеспечивает столь необходимые средства для повышения эффективности организации. Это количественное и перекрестное исследование, поскольку опросы проводились среди 260 участников из разных организаций. SEM использовался для установления тестов на посредничество и модерирование. Таким образом, результаты показывают, что обучение в организации и степень использования технологий оказывают влияние на эффективность. Они также обнаружили, что поддержка, исходящая от руководителей, также усиливает эту связь, поскольку они повышают как вовлеченность, так и результирующую эффективность. Однако причинно-следственная связь не может быть установлена из-за перекрестного дизайна исследования, принятого в данной статье, и поэтому исследователи должны рассмотреть продольные исследования. Другими словами, для прагматических последствий было обнаружено, что общее обучение имеет важное значение с помощью этой сложной технологии и повышения вклада руководства, чтобы гарантировать, что у сотрудников есть необходимая мотивация для практики обучения. Однако данное исследование основано на предыдущих исследованиях и предлагает существенные выводы о взаимосвязи этих переменных для дальнейшего изучения и практики в будущем.

Ключевые слова: Программы обучения сотрудников, Внедрение технологий, Вовлеченность сотрудников, Поддержка руководства, Организационная эффективность

TASHKILIY MUKAMMALLIKNI NAMOYON QILISH: O'QITISH, TEXNOLOGIYANI QABUL QILISH, XODIMLARNI JALB QILISH VA ETAKCHILIKNI QO'LLAB-QUVVATLASHNING SAMARADORLIKKA TA'SIRI

Аннотация. Ushbu tadqiqot xodimlarni o'qitish dasturlarining xodimlarni vositachi sifatida jalb qilish va moderator sifatida yetakchilikni qo'llab-quvvatlash bilan texnologiyani qabul qilishga ta'sirini o'rganishga qaratilgan bo'lib, bu tashkilot samaradorligini oshirish uchun juda zarur vositalarni taqdim etadi. Bu miqdoriy va tasavvurlar bo'yicha tadqiqotdir, chunki turli tashkilotlardan 260 ishtirokchi orasida so'rovnomalar o'tkazildi. SEM vositachilik va moderatsiya testlarini o'rnatish uchun ishlatilgan. Shu sababli, natijalar shuni ko'rsatadiki, tashkilotni o'qitish va texnologiyadan foydalanish darajasi ishtirok etishning samaradorlikka ta'sirini amalga oshiradi. Ular, shuningdek, rahbarlar tomonidan qo'llab-quvvatlash ham bu aloqani mustahkamlashini aniqladilar, chunki ular ishtirok etishni va natija samaradorligini oshiradi. Biroq, ushbu maqolada qabul qilingan tasavvurlar bo'yicha tadqiqot dizayni tufayli sababiy bog'liqlikni aniqlash mumkin emas, shuning uchun tadqiqotchilar longityud tadqiqotlar haqida o'ylashlari kerak. Boshqacha qilib aytadigan bo'lsak, pragmatik oqibatlarga ko'ra, ushbu murakkab texnologiya yordamida umumiy trening muhim ahamiyatga ega ekanligi va xodimlarning mashg'ulotlarni o'tkazish uchun zarur motivatsiyaga ega bo'lishini ta'minlash uchun yetakchilik hissasini oshirishi aniqlandi. Biroq, ushbu tadqiqot oldingi tadqiqotlarga asoslangan va kelajakda qo'shimcha o'rganish va amaliyot uchun ushbu o'zgaruvchilarning assotsiatsiyasi bo'yicha muhim topilmalar taklif qiladi.

Калит so'z: Bandlik ta'lim dasturlari, texnologiyani qo'llash, bandlikni jalb qilish, yetakchilikni qo'llab-quvvatlash, tashkilot faoliyati

Introduction

Today in the dynamic and competitive business world, the need for organizational excellence is more fruitful for sustaining success or growth. Agility and performance are of great concern to companies, that are seeking enablers that can help them stay in the market and alive forever (Coulson-Thomas, 2022). The ones that are worth mentioning among the enablers: employee training programs, technology adoption, employee engagement, and leadership support are all pivotal factors that considerably affect organizational success (Reio & Ghosh, 2009).

Training programs and advanced technologies are present in many companies, but their presence does not guarantee an increase in organizational effectiveness. More emphasis has been placed on specifying and measuring the position of employee engagement as a mediator. Organizational commitment refers to the extent, to which the employee is involved and enthusiastic in his work and has been linked to various organizational results (Kahn, 1990; Schaufeli & Bakker, 2004). Thus, there is a causal relationship where engaged employees are likely to contribute to the organizations goal, thus affecting performance directly (Harter et al., 2002).

Leadership support also moderates this relationship in a way that makes it even more complicated. Management is responsible for balancing the engagement toward the execution of training and mentoring strategies and embracing technological solutions (Bass, 1985). Hypothesis 4 proposed the moderation role of leadership support in the relationship between training efficacy and technology adoption on the level of employee engagement and stressed that while this can facilitate the impact of these factors it can also diminish it. Such support from a leader helps to enhance the results of such actions because when people are engaged, they perform better in an organization thus improving organizational performance (Yukl, 2013; Avolio et al., 2009).

The fact that technology is advancing at a faster pace together with the call for continued learning and training requires further research on the relation of these two factors. The COVID-19 crisis has increased organizations digitization and embraced the importance of the leadership in such change (Mishra et al., 2021). From this perspective, understanding the indirect relationship between SHRM and I&T investments via the mediator of employee engagement and the direct interaction between the mediator and leadership support is of strategic significance for organizations seeking to facilitate superior organizational performance through human capital and technology solutions.

The purpose of this research is to examine the multiplism of the factors as the level of trainings provided to the employees, the level of technology implementation, the level of employee's engagement and organizations performance, based on the leadership support as the moderating factor. Consequently, it aims to contribute to the theoretical development of the field and offer valuable recommendations for managers and leaders regarding the improvement of organizational performance.

Literature Review

Employees Training Program

Training programs for employees play a very vital scope in improving employees' competencies, knowledge, and performance in the organization (Nmadu et al., 2021). It is a program meant to help employees gain full knowledge and capabilities to perform their job roles and finally results in the overall organization performance (Ayers, 2015). In most academic research and the business field view, the importance of the employees' training programs is evident, and it has been considered to have cultures of healthy learning and continued professional empowerment (Blackburn & Rosen, 1993).

Employee training programs come in numerous forms such as On-the-Job training, seminars, workshops, e-learning modules, and mentorship programs among others (Varghese et al., 2023). Every training method targets the learning gap area identified and meets the requirements of the employees undergoing the training (Baldwin, 2006). When conducting training for employees, the design and delivery factors are important considerations to reflect on in maintaining the standard and relevance of the training conducted (Arthur et al., 2003).

Technology Adoption

Organizational development may be also associated with technology adoption because the effective application of technologies provides a competitive edge for organizations (Bilgihan & Wang, 2016). Thus, It includes the adopting of computer technology to do records and the owners involvement in the computer reports generation process” (Mohd Yusof & Abd Aziz, 2015). Organizations considering the adoption of new technology might say that it leads to greater efficiency, productivity, and innovation (Thatcher & Oliver, 2001).

The significance of technology adoption as a process that should be dynamic; hence, it includes the overall acceptance, implementation, and assimilation of innovative technologies in the business (Goes, 2016). The adoption of technology is not just a technical decision but a cultural and organizational change that requires understanding and support from all the actors, clear communication, and unceasing support (Awa et al., 2016). Knowledge of the factors that influence technology adoption can protect organizations from the complexities of technological change and ensure that navigating them will facilitate the benefit of new tools and systems (Sträub, 2009).

Employee Engagement

One of the most important aspects of organizational success is employee engagement, which refers to the measure of the level of emotional and psychological commitment of employees to their job and their employing organization as well (Jose & Mampilly, 2014). An engaged employee is a motivated, satisfied, and dedicated individual who puts their best effort into their work leading to high productivity and job satisfaction with low turnover (Yusri, 2020). Given the favorable nature and exponential impacts of employee engagement on the individual and the organization, employee engagement has become increasingly researched and widely talked about in contemporary organizational management and research (Henokh Parmenas, 2022).

Employee engagement is associated with a positive working environment, increased personal well-being, and organizational success (Clack, 2021). This includes but is not limited to employees who choose to go beyond their existing job description in terms of complying with their mission, ventures in problem-solving and creativity, and voluntary effort (From, n.d.).

Leadership Support

Leadership support is an indispensable factor to organizational success, as it embraces two main areas, i.e. engagement with employees and guiding the strategic decisions of the organization (Fullan, 2008). A good leadership support system implies sharing leadership, delegating responsibilities, guiding and mentoring others, and setting a good example; such techniques encourage staff to put forth their best performance and contribute to the organization's overall development (Combs et al., 2006). It is well documented that the influence of leadership styles on employee work performance and organizational results has been recognized in professional practice and research, meaning that leadership remains the crucial factor in the equation for the company's success (Steyrer et al., 2008).

There is a high chance that the organization will end up with an environment that is favorable for teamwork in which the employees feel appreciated, accepted, and motivated to work to the best of

their abilities when the management support is there (Yusri, 2020). The most notable among transformational leaders is that they can motivate and change the perspective of their followers which leads to the shaping of a common vision if this is done always, the work culture gets better off having collaboration and innovation as the values (Kao, 2017). Proving a caring attitude towards staff health and development leaders may encourage reliability, loyalty, and a sense of belonging to the organization (Hassan et al., 2014).

Employee Training Programs and Employee Engagement

Employee training programs and employee engagement share a common ground in the realm of organization development and performance; the two parties are an essential part of workforce improvement within the concerned organization. This relationship is characterized by a dynamic interaction and reinforcing mechanism since the effectiveness of the workforce training programs can lead to boosting employee engagement levels, while those who are highly engaged in their tasks or job roles are likely to engage in and demonstrate their participation in any training initiative (Shuck & Herd, 2012).

The fact that useful training programs can take the engagement level of employees higher, by the means of providing them employees with the knowledge, skills, and resources such as needed for job performance or success (Sendawula et al., 2018). An environment that has engaged employees whose work, workplace, and organization are a source of the same feelings prevents them from missing training opportunities as they will see these opportunities as very essential and also perceive them as relevant which leads to an increase in willingness to participate and enthusiasm for learning and developing activities (Attridge, 2009).

H1: Employee training program is positively associated with employee engagement.

Technology Adoption and Employee Engagement

Technology adoption alongside Employee Engagement can be seen as critical drivers of organization success, which in many cases develop and influence each other, technology adoption and employee engagement are more closely connected than it is most commonly believed as the technological developments could be pivotal to the way that employees engage with their work environs and could become an important aspect of their levels of motivation, job satisfaction, and productivity (Knox & Marin-Cadavid, 2023).

The technological research indicates the innovation between employees and the organization through which employees get tools that help the accomplishment of certain tasks or the creation of a platform for smooth collaboration and communication (Griffin & Hauser, 1996). When workers can use technologies, which are designed for ease and simplification of work procedures as well as enable workers to produce more and to have more certainty in their work they are more likely to enjoy and feel like personal workers. Technology adoption equips individuals with a sense of empowerment and autonomy, inspiring them to be more attentive and to achieve the ultimate joy (Hon & Rensvold, 2006).

H2: Technology adoption is positively associated with employee engagement.

Employee Engagement and Organizational Performance

Motivation and commitment of employees can be measured through employee engagement which will affect the organizational outcomes on indicators like productivity, earnings, consumer satisfaction, and most importantly staff retention. Emotional investment, higher levels of engagement, motivation, and commitment are the key features of engaged employees, which are

likely to provide better organizational performance and lead to the organizations overall success (Shahid & Azhar, 2013). Companies with a high level of engagement of employees commonly have better results in financial performance, maintaining talented colleagues, and satisfied customers than their competitors in the market (Gonring, 2008).

Engaged individuals will do things way far from the common assumption, spark proactive minds, and come up with some smart solutions for the company. At the level of the enterprise operating like that, productivity could be increased, better quality, and overall performance is also enhanced. Also, employee engagement provides more flexibility and ability to overcome difficulties and adhere to change which improves their colleagues' collaboration and support towards each other positively and therefore, the context of organizational performance where the output will be higher (Rock, 2009).

H3: *Employee engagement is positively associated with organizational performance.*

Employee Engagement as a Mediator between the Relationship of Employee Training Programs and Organizational Performance

Human capital engagement is that it goes through the relationship between employee training programs and organizational performance (Anosa, 2021). The Employee Training Programs play a significant role in the accumulation of expertise and improvement of professional skills of workers (Imran et al., 2014). They provide workers with the necessary tools, which are required for earning success in the workplace and therefore the implementation of organizational objectives. The research indicated that engaged employees will derive value from training units and are more likely to engage in training opportunities, so effectively they can perform their jobs very well and the effectiveness of the total organization also improves (Renwick et al., 2013).

Employee engagement not merely accentuates the efficacy of the training programs, but also very much contributes to the improvement of the organization's performance (Hoon Song et al., 2012). Animations characters who are involved have the qualities of being motivated, dedicated to the job, and emotionally attached to their work, which ultimately leads to higher production of goods, job satisfaction, and retention. Through the establishment of an involvement culture, organizations can create a work environment that fosters support, and employees who are more willing to engage with training, utilize their new skills correctly, and increase the efficiency of their performance overall (Memon et al., 2020).

H4: *Employee engagement plays a mediating role between the Employees Training Programs and Organizational Performance*

Employee Engagement as a Mediator between the Relationship of Technology Adoption and Organizational Performance

Technology adoption mediates it via employees' engagement; employees' engagement in turn is a key factor of organizational performance. Technology adoption, which consists of the development of new instruments and mechanisms and their integration into the processes of the organization, can increase the level of efficiency, productivity, and innovation within the organization. The investigation has revealed that employee involvement can be very useful in driving the process of technology introduction, as it inspires the employees to give the acceptance to such changes, find a way to cope with the new systems, and reach the highest return for such an investment (Johnson et al., 2018).

Employees, who are engaged with their work, are bright, fervent, and passionate about what they do. In addition, such staff members are more receptive to novel technologies and they can use the technology in their everyday tasks (Selwyn et al., 2017). An enhanced level of commitment resulting

from such high involvement is bound to impact the outcomes of technology implementation positively, bringing increased adoption rates, increased user satisfaction, and better performance (Student et al., 2021).

The linkage between technology adoption, employee participation, and organizational effectiveness is multilevel and firsthand. Organizations that emphasize employee engagement programs where engaging technology along with the culture of the organization is the main priority creates a culture of workers where they are motivated to learn, adapt to, and use technology to enhance their productivity. The involved employees act as the promoters of technology in the organization that enhances the buying capacity, and improvement and finally contributes to more productivity, effectiveness, and competitiveness of the undertaking (Wu et al., 2003).

H5: *Employee engagement plays a mediating role between Technology Adoption and Organizational Performance.*

Moderating Effect of Leadership Support

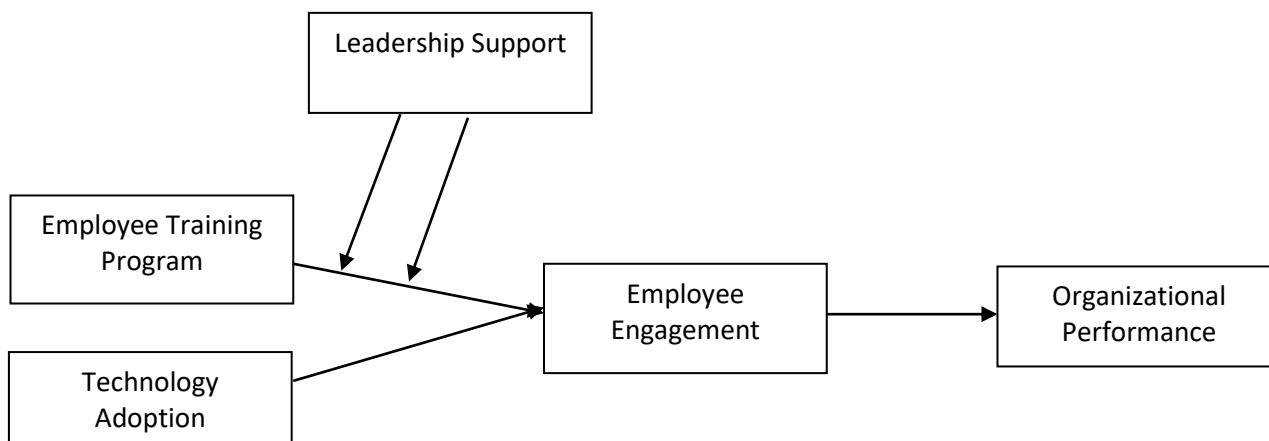
Employee involvement is the primary [Technology adoption – performance] interaction that is contemplated. The adoption of technology, the process comprising the integration of newly introduced tools and systems into business processes, is meant to lead to increased efficiency, production, and innovation within organizations (Fullerton & Wempe, 2009). Engaged employees are more proactive about new systems and most relevant of all about the maximum benefits of the adoption.

Organizational achievement has proved equal to the survival or success of a company. The better its performance the more chance the company has for prosperity. The contemporary business environment has created an environment of competition, and companies are looking for ways to increase their effectiveness in the pursuit of competitiveness and meet the complex desires and expectations of the various critical stakeholders. It implies the importance of complete cognizance of the main pillars that encourage organizations to perform better (Aina & Atan, 2020).

H6: *Leadership support moderates the relationship between the employee's training program and employee engagement.*

H7: *Leadership support moderates the relationship between technology adoption and employee engagement.*

Figure 0-1: Research Framework



Methodology

Sample and data collection

To test the above hypotheses and the whole model, this study collected empirical data by issuing questionnaires. The data sources for the questionnaire were mainly from the employees of the Public Sector University of Punjab. We created 321 questionnaires in total, and 260 questionnaires remain valid after excluding the ones with incomplete information or false behaviors. Table 1 provides the demographic profile of the respondents. As shown in Table 1, the number of men is almost twice the number of women. The sample is generally well distributed in position, years of work, and education.

Table 0-1: Demographic Analysis

Category	Options	Frequency	Percentage
Gender	Male	177	90.0
	Female	83	10.0
Age	18 to 25 Years	80	15.7
	26 to 33 years	108	54.5
	34 to 42 years	42	22.5
	43 and above	30	7.3
	Education	Bachelors	102
	Master	76	11.4
	MS/MPHIL	54	42.3
	PhD	28	6.6
Experience	Less than 5 years	73	16.6
	6-10 Years	56	53.6
	11-15 years	85	19.3

16-20 years	32	7.3
Above 20 years	14	3.2

Note: Table 3.1 shows the demographic analysis of respondents.

Measures

The questionnaire was mainly composed of four parts. The first part was the basic information of the respondents, the second part was the employee training programs, the third part was the technology adoption, the fourth part was the employee engagement, the fifth part was the organizational performance survey, and the sixth part was the leadership support survey.

After the prior work, the final version of the questionnaire contains 3 items on employee training programs, 6 items on technology adoption, 6 items on employee engagement, 4 items on organizational performance, and 3 items on leadership support. In this study, a five-point Likert scale was used in the questionnaire.

Statistical procedure

SAS software is used to analyze the demographic information that is gathered. SmartPLS 4.0 software is what is used to handle data. PLS-SEM is a nonparametric as well as multivariate method for path model estimation in the presence of latent variables. This study undertook a deep investigation of the link between employee training programs, technology adoption, employee engagement, leadership support, and organizational performance, which has not been a popular area of discussion in published information. On the other hand, the level of complexity is demonstrated as a result of adding moderating variables to the relationships.

Results

Assessment of measurement model

We determine internal consistency reliability, convergent validity, and discriminant validity by setting up the measurement model. CR scores are used to analyze and measure internal consistency reliability. As in the Table, CR scores are higher than the criteria 0.7 which is recommended. All constructs got a Cronbach's alpha of the range higher than 0.7, meaning high internal consistency. Additionally, we undergo the convergent validity by calculating factor loadings and average variance extracted (AVE). Exhibiting the loadings of all constructs greater than 0.7 as appears in Table. Furthermore, the AVE scores are also higher than the obtainable threshold of 0.5 ranges. The convergent validity of this study should be rated as quite good. The kind of validity that takes into account the degree to which factors that make up the constructs only relate to that construct is called discriminate validity. This is determined by looking at the AVE square root of the constructs and comparing it with the absolute value of the correlation coefficients between constructs. We find the defrayed square root values, which are presented in Table above to illustrate that all the constructs in the diagonal row exceed the correlation factors among constructs. The weight of each factor occurs only among the other factors whereas the cross-loadings do not occur. In this research, the discriminating aspect can be constituted by that result.

Table 0-1: Factor Loadings, Reliability, and Validity

	Items	Factor Loadings	Cronbach's alpha	Composite reliability (rho_c)	Average variance extracted (AVE)
EE	EE1	0.773	0.780	0.858	0.603
	EE2	0.762			
	EE3	0.791			
	EE4	0.778			
ETP	ETP1	0.712	0.841	0.893	0.677
	ETP2	0.855			
	ETP3	0.860			
	ETP4	0.854			
LS	LS1	0.870	0.851	0.909	0.770
	LS2	0.908			
	LS3	0.853			
OP	OP1	0.848	0.802	0.870	0.627
	OP2	0.823			
	OP3	0.746			
	OP4	0.746			
TA	TA1	0.857	0.861	0.906	0.708
	TA3	0.872			
	TA4	0.859			
	TA5	0.774			

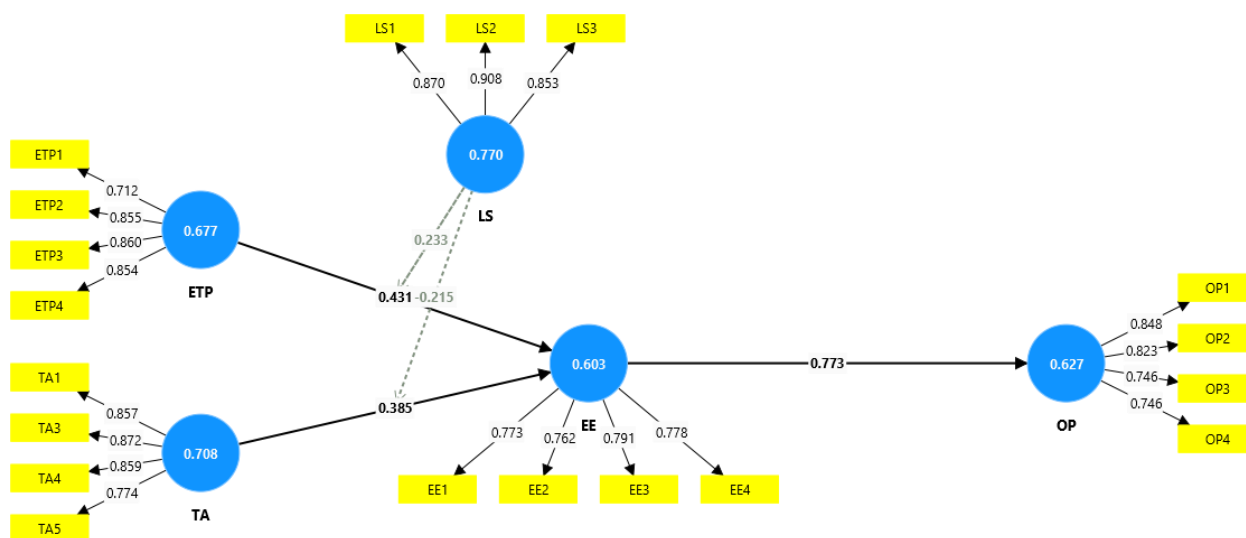
Note: Table 4.1 shows the variables and their indicators, factor loadings, Cronbach's alpha, composite reliability, and average variance extracted.

Table 0-2: Discriminant Validity (Fornell Larcker Criterion)

	EE	ETP	LS	OP	TA
EE	0.776				
ETP	0.765	0.823			
LS	0.741	0.811	0.878		
OP	0.773	0.744	0.728	0.792	
TA	0.760	0.759	0.807	0.770	0.841

Note: The most often used method for assessing discriminant validity is the Fornell-Larcker criterion (Nawaz, Iqbal et al.). So here above Table 4.2 shows the discriminant validity, the diagonal values are greater than their corresponding values.

Figure 0-1: Structure Model



Assessment of structure model

Firstly, we test the interrelationships among the dimensions of employee training programs, technology adoption, employee engagement, leadership support, and organizational performance by assessing the structure model. We carry out the Bootstrap algorithm ($N= 5000$) to attain the path coefficients and test the significance results of them. As shown in Table 6, the all hypotheses we proposed are supported.

Table 0-3: Direct Effects

Hypotheses	Beta	Standard deviation	T statistics	P values	Decision
EE -> OP	0.773	0.024	32.064	0.000	Supported
ETP -> EE	0.431	0.058	7.448	0.000	Supported
TA -> EE	0.385	0.077	4.979	0.000	Supported

Note: Table 4.3 shows the direct effects and study results.

Table 0-4: Specific Indirect Effects

Hypotheses	Beta	Standard deviation	T statistics	P values	Decision
ETP -> EE -> OP	0.333	0.049	6.844	0.000	Partial Mediation
TA -> EE -> OP	0.297	0.060	4.983	0.000	Partial Mediation

Note: Table 4.4 shows the mediating effects and study results.

Next, we test the moderating effects of leadership support on the relationships between the employee training program and employee engagement, technology adoption, and employee engagement by using the Bootstrap algorithm ($N= 5000$) of Smart PLS 4.

Table 0-5: Total Indirect Effects

Hypotheses	Beta	Standard deviation	T statistics	P values	Decision
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LS x ETP -> OP	0.180	0.041	4.338	0.000	Supported
LS x TA -> OP	-0.166	0.038	4.383	0.000	Supported

Note: Table 6 shows the moderating dating effects and study results.

Discussion and Conclusion

Conclusion

By employing SmartPLS, the result indicates that both dependent variables namely employee training and technology adoption have positive impact on the organizational performance. Staff training programs increase competency and knowledge of staff, which is crucial for organizational success on the other hand other technological implementations increase the efficiency of operations within an organization. People engagement is as considered a key moderator; it helps in explaining the relationship between training, technology acceptance and firm performance. Employees who work with passion produce results and are loyal to the company and the organization they are working for. Support from management is also emphasized as critical because it enhances employee participation as well as the sustainability of training and technological enhancement programs. Thus, the research outcomes can be useful in indicating that organizations should pay more attention to the improvement of training processes, information technologies, as well as the encouragement of effective leadership and active employees' engagement. Thus, oriented investments in these areas will ensure sustainable development of organizations and the strengthening of a competitive position in the market.

Theoretical implications

Virtually, this study offers theoretical contributions to subsidiary relationships within the organizational behavior, talent management, and leadership fields. It aligns with a combination of the practices of training and development, employees and technology acceptance, employee's engagement, leadership support, and organizational effectiveness model from the human resource development, organizational behavior, and leadership perspectives. It is noteworthy that the paper focuses on the engagement of employees as the navigator between the intervention programs, technology acceptance, and organizational outcomes underlining the significance of employee-related variables and their attitudes in shaping the individuals' behaviors in the process of solving the organizational problems. *Hypothesis 4*, therefore, surfaces as a moderating factor, revealing that leadership support is central to adopting change and enhancing employee's engagement. It also examines the relationship between the human resource development activities and technological advancements and show that they are two strands that relate in an organization in the achievement of better performance. This calls for the consideration of environmental factors comprising organizational climate as well as industry characteristics in capturing these relationships. Further research should note that the impact of the training program is relative to the contextual factors that either enhance or lessen the correlation between the information acquisition, technology acceptance, reported levels of employee engagement, the organizations leadership support and organizational performance.

Practical implications

Studies reveal that for those who intend to harness organizational enhancement and strategic aims, the leaders and staffs need to pay concentrations on the effective training programs for the uptake of the available technologies. Such programs give a better outcome and clearly show that the issue of

this work consists in the allocation of resources for its financing. Employers should order quality and relevant training courses that can help solve the existing challenges among the employees. Further, the promotion of a culture that supports the growing aspects of technology in an organization encourages efficiency in the execution of work, thus improving the quality of products and services delivered. Management should decentralize engagement because it acts as a robust moderator of success. This entails encouraging the employees to speak and share ideas, provide incentives for the same, and make them autonomous. Thus, engaged employees should be valued as they are the key to the organization's success, increased productivity, and performance.

Another important moderator is the management support which indicates the necessity of the managers actions in the process of organizations changes and employee's involvement in innovations. It is recommended that leaders show interest in career development of the employees as well as technological interests, thus they have to get more involved in these activities. In practical terms, organizations should target strategic promotional schemes, staff training, use of innovations and leadership support to improve on performance. By putting in place such measures, it makes it possible to fully actualize organizational change since it creates room that allows for consistent adjustments, hence ensuring sustainable viability of the business in the future.

Limitations and suggestions for future research

The research discusses the relationship between the management's employee training programs, technology adoption, employee participation and engagement, leaders support and organizational effectiveness. Though, it employs a cross-sectional method that cannot establish causality though it may establish a relation. Subsequent research should look at the dynamic process from a time-evolving perspective and also determine other factors such as the organizational culture, the type of industry or environment. Self-rating makes bias hence it is recommended that there should be a variety of operational procedures in data accumulation so as to have better results. External validity is restricted by variances in the sample; therefore, the study should be carried out in different contexts. Also using multiple methods of analytical techniques that include covariance-based SEM or Hierarchical Linear Modeling can afford different perceptions. Thus, the usage of this type of research is important to describe the temporal patterns of these associations and open offerings with key moments of influence. Understanding the relations is enriched by use of multilevel analysis and the inclusion of mixed method research models to enhance understanding of the driving factors of organizational performance. Studying modern trends in training and development in the context of strengthening competition through the application of such tools as artificial intelligence, machine learning, and virtual reality is essential for increasing the effectiveness of training and practical activities.

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