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The Effect of Public Sector Training on Employee Productivity and Service Quality: The Mediating Role of Job Satisfaction

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Abstract

Every organization aims to enhance productivity while maintaining high service quality. This study examines the effect of public sector training on employee productivity and service quality, both directly and indirectly through job satisfaction. This quantitative study collected data from employees of public sector higher educational institutions using a questionnaire through a cross sectional survey. Based on 206 responses, the results from statistical analysis indicate that public sector training positively influences on employee productivity and service quality. Furthermore, job satisfaction mediates the relationship between training, employee productivity and service quality. The findings provide valuable insights for policymakers and planners, encouraging the implementation of more training programs to improve organizational productivity and service quality. Specifically, the study supports the initiation of training programs to enhance employees' capabilities and skills, thereby improving performance, satisfaction, and productivity within higher educational institutions. Furthermore, the study contributes to the existing literature, particularly within the context of developing regions.

Keywords Employee productivity, Service quality, Training, Job satisfaction.

Introduction

Training is essential for human resource management in the public sector, as employee capacity directly impacts the quality of services stipulated. Over the last few years, residents' expectations of the state in terms of service delivery have increased dramatically. These increased expectations, combined with the opening up of media, development of civil society, and information flow across and beyond national boundaries, have generated huge public officials, demanding for performance constraints on greater delivery(Bharthvajan & Kavitha, 2019; Budiyanti et al., 2020). Training and job satisfaction are related to the performance of public sector institutes and the effective delivery of services. Training is regarded as a crucial component in businesses for enhancing employee productivity Allen and Meyer (1991). According to Humphrey (2013), firms should focus on providing workforce training as a result of globalization and technological advancements.

Training in the public sector is a critical strategy for enhancing employee capabilities, aimed at increasing productivity and improving service quality. Public sector organizations put in training programs to train employees with the expertise and knowledge necessary to meet the dynamic demands of public service delivery. Though, the effectiveness of training

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on productivity and service quality is not straight forward; it is significantly influenced by the level of job satisfaction among employees (Zumrah, Boyle, & Fein, 2013). Job satisfaction plays a mediating role, shaping how employees apply the skills acquired during training in their daily tasks. When employees view training as beneficial, it boosts their job satisfaction, making them more likely to utilize their enhanced skills effectively, leading to improved productivity (Iqbal, Hanif, & Khan, 2024).

Moreover, job satisfaction also contributes to better service quality as satisfied employees tend to show greater motivation, engagement, and customer focus. This link suggests that the mediating effect of job satisfaction is crucial for maximizing the positive impact of training on service delivery (Huang & Su, 2016; Soomro & Shah, 2019). As a result, public sector organizations need to design training programs that not only develop skills but also foster a sense of satisfaction among employees. By addressing job satisfaction as a mediating factor, public institutions can enhance both employee performance and service quality, ultimately contributing to better public service outcomes (Muhammad et al., 2020).

To meet the growing needs of higher education stakeholders, public sector universities in the Sukkur district of Sindh, Pakistan, must urgently improve personnel productivity and service quality. Although universities invest in numerous training programs to improve staff competencies, their immediate influence on productivity and service quality is variable. This disparity could be related to insufficient attention to job satisfaction as a mediating factor. Previous research has shown that effective training programs alone do not ensure improved performance or greater service quality unless employees are content with their jobs (Zumrah et al., 2013; Iqbal et al., 2024).

In the context of public sector universities in Sukkur, job satisfaction may play a crucial mediating role, influencing how effectively employees apply the skills acquired through training. Therefore, there is a need to examine the correlation between training, employee productivity, and service quality while considering the mediating effect of job satisfaction in this specific regional and institutional context. Addressing this issue is essential for improving the overall performance of public sector universities in the Sukkur region, thereby contributing to better educational service delivery.

The core purpose of this study to examine the impact of training on employee productivity and Service quality by mediating role of job satisfaction in Pakistan higher institutes of Public sector located in the region of Sukkur Sindh.

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Research Objectives

- 1. To examine the direct effect of public sector training on employee productivity.
- 2. To investigate the direct effect of public sector training on service quality.
- 3. To analyze the mediating role of job satisfaction in the relationship between public sector training and employee productivity.
- 4. To explore the mediating role of job satisfaction in the relationship between public sector training and service quality.

Research Questions

- 1. What is the effect of public sector training on employee productivity?
- 2. How does public sector training influence service quality?
- 3. Does job satisfaction mediate the relationship between public sector training and employee productivity?
- 4. Does job satisfaction mediate the relationship between public sector training and service quality?

Literature Review

Training and Employee Productivity: Training plays a pivotal role in enhancing employee productivity across various sectors, as demonstrated by numerous studies. Mohammed et al. (2022) emphasize that training programs tailored to meet the evolving needs of the modern workforce significantly boost employee skills and knowledge, leading to higher productivity. Similarly, Sabir et al. (2014) report that targeted training in the electricity supply sector of Pakistan resulted in substantial improvements in employee performance, highlighting the importance of skill-based training for technical competencies. Bharthvajan and Kavitha (2019) also found that comprehensive training programs increase job performance, engagement, and efficiency, collectively enhancing productivity.

In the educational sector, Shuibin et al. (2020) observed that consistent training initiatives in the Ghana Education Service improved employee capabilities, underscoring the necessity of regular training for sustained productivity. Similarly, Srinivas and Rao (2018) discovered that training not only improves employees' skills but also increases their motivation and confidence, which contributes to greater job performance. Sharmila and Chinnathambi (2024) discovered that investing in employee training programs is critical for both individual and organizational success, which supports the link between training and productivity. Awoitau et al. (2024) expand on this viewpoint by arguing that training, when

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combined with motivating incentives, has a synergistic effect on employee performance, resulting in increased productivity. Mogaka et al. (2024) show that customized training programs adapted to specific job requirements improve patient care and operational efficiency in the healthcare industry. Similarly, Abubakar (2024) notes that successful training and skill development initiatives in the banking sector immediately enhance service delivery, hence increasing employee productivity. Kumar et al. (2023) contend that organized training programs are critical drivers of organizational performance, whereas Juliadi et al. (2023) underline the significance of digital skills training in boosting employee proficiency in today's technology-driven work environments. Furthermore, Mualuko et al. (2023) found that constant training and growth in private hospitals are vital for maintaining high levels of production. Finally, Rulianti and Nurpribadi (2023) argue that job training, when combined with a favorable work culture, significantly increases employee productivity.

Overall, these research consistently show that training increases employee productivity. Employee skills, work happiness, and motivation are closely linked to enhanced performance, whether through focused, comprehensive, or ongoing training. This synthesis highlights the need for organizations to invest in continuous, tailored training programs to optimize employee efficiency and achieve better organizational outcomes.

H1: training has significant positive effect on employee productivity.

Training and Service Quality: Training plays a vital role in enhancing service quality across various sectors, and this relationship is well-documented in the literature. Surya et al. (2024) highlight that employee competencies and a strong work culture, fostered through training, significantly improve service quality in public agencies. Similarly, Prabowo et al. (2024) emphasize the importance of high-quality training services in ensuring a safe and supportive environment, noting that proper training enhances the overall experience and perceived service quality. In the entrepreneurial sector, Ahli et al. (2024) found that employee service quality acts as a moderating factor, where training directly influences employees' ability to meet customer expectations, thereby boosting satisfaction levels. This effect is consistent with findings by Shen and Tang (2018), who identified job satisfaction as a critical mediator; when training increases employee satisfaction, it enhances motivation and service performance. Rahman and Nasrin (2024) investigated how Total Quality Management (TQM) strategies, such as ongoing training, increase service quality by ensuring workers have necessary skills. Karyono et al. (2024) also highlighted the value of training in increasing

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digital service capabilities, linking higher human resource performance to better digital service delivery and increased customer loyalty.

Furthermore, Gunawan et al. (2024) found that training that emphasizes knowledge and teamwork improves creative performance among civil officials, ultimately improving public service quality. This is consistent with the findings of Budiyanti et al. (2020), who found that high-quality training programs in government HR agencies result in enhanced service outcomes, emphasizing the importance of personalized and continuous employee development.

The summarization of these studies points to a robust correlation between training and service quality, which is influenced by the caliber of employee interactions and mediated by elements like job satisfaction. Implementing thorough training programs designed to improve technical and interpersonal skills will help public universities in the Sukkur district of Sindh, Pakistan, handle important issues such high student expectations and staff capabilities. These organizations can meet stakeholder needs, raise overall satisfaction, and increase service quality by doing this.

H2: training has a significant positive effect on quality service.

Training, Service Quality, Employee Productivity and Job Satisfaction: Job satisfaction is a key mediating factor in the complex interaction between training, employee productivity, and service quality. Effective training improves employee skills, knowledge, and competences, which in turn increases productivity, according to numerous studies. Zumrah, Boyle, and Fein (2013), for example, discovered that training transfer has a major impact on job satisfaction, which in turn improves service quality in the Malaysian public sector.

This suggests that when workers perceive training as helpful, it improves both their performance and satisfaction levels. Similarly, Iqbal, Hanif, and Khan (2024) showed that job satisfaction serves as a crucial mediator between staff training and productivity in universities with ISO 9001 certification. According to their findings, contented workers are more likely to use their newly learned abilities, which boosts organizational efficiency. When job satisfaction acts as a mediator in this relationship, the effect of training on service quality is increased. In their exploration of this idea in the healthcare industry, Yovitasari and Attiq (2024) pointed out that a key factor in converting training results into higher-quality services is job satisfaction. Better service delivery results from motivated and engaged workers who are happy in their positions.

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In a similar vein, Muhammad et al. (2020) found that employee commitment and training are mediated by job satisfaction, which is critical for improving service quality. These results highlight how crucial it is to take job satisfaction into account when analyzing the relationship between training and service quality.

Research on employee retention and productivity further highlights the relevance of mediating work happiness. Employees who are happy with their training are less likely to leave the company and are more likely to make positive contributions to productivity and service quality, according to Huang and Su (2016), who also show that job satisfaction mediates the relationship between training satisfaction and turnover ambitions. Similarly, job happiness mediates the impact of training and rewards on employee productivity, according to Bhatti et al. (2023) and Ariani et al. (2024), emphasizing that intrinsic training-derived satisfaction is critical for improving performance.

Furthermore, training has been found to be a significant predictor of job satisfaction, which in turn influences the quality of services. According to Hossain et al. (2024), training has a major impact on secondary school teachers' job satisfaction, which in turn improves their efficacy as educators. This implies that good training initiatives raise the caliber of services rendered in addition to increasing workers' job happiness. Similar findings were noted by Iskandar et al. (2024) in the tourist sector, where improved service performance and increased job satisfaction are correlated with good training and a nice work environment.

The combined results of these research point to a thorough paradigm in which employee abilities are improved through training, leading to a rise in job satisfaction. The beneficial impacts of training on worker productivity and service quality are subsequently mediated by this pleasure. Job satisfaction has a major impact on employee productivity, particularly when training programs are conducted well, according to Ahmad et al. (2024). Additionally, contented workers are more likely to be engaged, which leads to improved customer satisfaction and service quality (Bhatti et al., 2022; Iqbal et al., 2024; Yovitasari & Attiq, 2024).

Finally, the reviewed literature consistently underscores the critical starring role of job satisfaction as a mediator in the relationship between training, employee productivity, and service quality. Effective training programs not only enhance employees' capabilities but also boost job satisfaction, which is crucial for converting these capabilities into better productivity and superior service outcomes. This relationship suggests that organizations,

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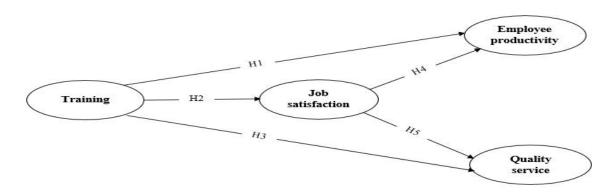
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particularly in public sectors like education and healthcare, should design training programs that not only develop skills but also foster job satisfaction to achieve optimal performance results (Zumrah et al., 2013; Muhammad et al., 2020; Ariani et al., 2024; Hossain et al., 2024). *H3: training has a significant positive impact on job satisfaction.*

H4: job satisfaction mediates the relationship between training and employee productivity.

H5: job satisfaction mediates the relationship between training and service quality.

Research Model



Research Methodology

Research philosophy is the way a researcher advances knowledge development. Generally speaking, philosophy is an expressive understanding of the central hypothesis of a particular discipline that decides to go along a certain path while employing tried-and-true methods. The goal of the research field is to organize a noteworthy fact that can be collected and examined. The literature identifies its contribution in a number of ways (Burke, 2007). Among the many philosophical schools covered by Saunders et al. (2007) are functionalism, subjectivism, and realism (sometimes referred to as objectivism, empiricism, and subjectivism). Interpretivism stresses the qualitative approach, just like positivism does, but positivism emphasizes the quantitative approach. Data collected responses on random basis from the different public universities of Sukkur region Sindh province of Pakistan. The study's respondents are faculty members and admin officers' public universities of Sukkur region Sindh province of Pakistan. The survey questionnaire was applied to collect the data from the required respondents. The items on the questionnaire are drawn from the specialized literature. The researcher used a Likert scale with five possible responses: where 1= strongly disagree; 2=disagree; 3=neutral/ neither disagree nor agree; 4=agree, and 5=strongly agree. The scale's creator's information is provided below in Table 1.

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Table 1: Questionnaire's details

S.No.	Variable	Code	No. of	Scale	Originator/
			items		adopted
					form
1	Training	TR	7	Five-point	Asghar et al.
				Likert scale	(2022)
2	Employee	EP	5	=	Gumasing et al.
	Productivity				(2023)
3	Service Quality	SQ	8	=	Sultan et al.
					(2012)
4	Job Satisfaction	JS	4	=	Gumasing et al.
					(2023)

Data Analysis

Frequency Distribution

The demographic characteristics of the respondent's suggest84.6% of the participants are male (220 out of 260), while 15.4% are female (40 out of 260). Concerning to age, the majority (50.0%) are 46 years and above (130 out of 260), followed by those aged 31 to 40 years (45.4%, or 118 out of 260), and those aged 25 to 35 years (4.6%, or 12 out of 260). Experience indicator suggests32.3% of the respondents have less than 5 years of experience (84 out of 260), 20.0% have 6 to 10 years (52 out of 260), 19.2% have 11 to 15 years (50 out of 260), and 28.5% have 16 years and above (74 out of 260). Regarding position level, 28.1% are faculty members (73 out of 260), and 71.9% are administrative members (187 out of 260). Lastly, education indicator suggests 22.7% respondents hold a Bachelor's degree (59 out of 260), 35.8% have a Master's degree (93 out of 260), and 27.3% have an M.Phil. (71 out of 260), and 14.2% have a Ph.D. (37 out of 260) (Table 2).

Table 2: Demographic Profile of Respondents (260)

Indicator	Category	Frequency	Percent
Gender	Male	220	84.6
	Female	40	15.4
Age	25 -35	12	4.6
	31-40	118	45.4

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	46-above	130	50.0
Experience	< 5 years	84	32.3
	6-10 years	52	20.0
	11 to 15 years	50	19.2
	16 years & above	74	28.5
Position/ level	Faculty member	73	28.1
	Administrative member	187	71.9
Education	Bachelor	59	22.7
	Masters	93	35.8
	M.Phil.	71	27.3
	PhD.	37	14.2

Confirmatory Factor Analysis

We conducted the confirmatory factor analysis to ensure the reliability and validity metrics and the robustness of the constructs measured in the study. Cronbach's alpha values for all constructs—employee productivity (0.897), job satisfaction (0.849), service quality (0.899), and training (0.916)—are above the commonly accepted threshold of 0.7, suggesting high internal consistency for the items in each construct. Composite reliability values (rho_a and rho_c) for all constructs are also strong, with values above 0.85, indicating that the constructs consistently measure what they are intended to across different contexts. For example, the composite reliability (rho_c) for training is 0.933, showcasing its high reliability. The average variance extracted (AVE) values demonstrate the degree to which the constructs capture variance relative to the measurement error. Employee productivity (0.710) and job satisfaction (0.688) show high AVE values, indicating good convergent validity. Service quality (0.586) and training (0.666) also exhibit adequate AVE, exceeding the minimum recommended value of 0.5 (Table 3). As a result, the constructs used in this study show strong reliability and validity, with high internal consistency and good measurement properties across all metrics.

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Table 3: Confirmatory Factor Analysis

Construct	Cronbach's	Composite	Composite reliability	Average variance
	alpha	reliability	(rho_c)	extracted (AVE)
		(rho_a)		
EPr	0.897	0.898	0.924	0.710
JS	0.849	0.850	0.898	0.688
SQ	0.899	0.900	0.919	0.586
TR	0.916	0.918	0.933	0.666

Note(s): EPr=employee productivity; JS=job satisfaction; SQ=service quality; TR=training **Discriminant Validity (DV)**

We ensured DV on the Heterotrait-Monotrait (HTMT) and Fornell-Larcker criterion. Initially, HTMT ratio is used to assess DV, ensuring that the constructs in the study are distinct from each other. Values below the commonly accepted threshold of 0.85 indicate good DV. The HTMT values show that the constructs are well-differentiated. The relationships between employee productivity and job satisfaction (0.707), and between employee productivity and service quality (0.717), are below the threshold, confirming that these constructs are distinct. Similarly, job satisfaction and service quality have a HTMT value of 0.737, indicating a clear distinction between these constructs. Training also demonstrates good DV in its relationships with the other constructs: Employee productivity (0.486), job satisfaction (0.645), and service quality (0.636). These values confirm that training is distinct from the other variables in the study. Overall, the HTMT matrix supports the DV validity of all constructs (Table 4).

Furthermore, by contrasting the square root of the AVE for each construct (displayed on the diagonal) with the correlations between constructs (off-diagonal values), the Fornell-Larcker criterion assesses DV. The diagonal values in the same row or column must be greater than the off-diagonal ones in order for DV to hold. Employee productivity (0.842), job satisfaction (0.830), service quality (0.765), and training (0.816) all have square roots of the AVE that are larger than their corresponding correlations with other categories in this instance. For instance, there is a 0.616 correlation between job satisfaction and employee productivity, which is less than the diagonal value for both constructs. Likewise, the correlation between job satisfaction and training is 0.571, which is less than the square root of AVE for both dimensions (Table 5).

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 Table 4:
 Heterotrait-monotrait ratio (HTMT) - Matrix

Construct	EPr	JS	SQ	TR
EPr				
JS	0.707			
SQ	0.717	0.737		
TR	0.486	0.645	0.636	

Note(s): EPr=employee productivity; JS=job satisfaction; SQ=service quality; TR=training

Table 5: Fornell-Larcker Criterion for DV

Constructs	EPr	JS	SQ	TR
EPr	0.842			
JS	0.616	0.830		
SQ	0.645	0.646	0.765	
TR	0.443	0.571	0.577	0.816

Note(s): EPr=employee productivity; JS=job satisfaction; SQ=service quality; TR=training

Structural Model

The direct effects show the strength of the relationships between the variables in the study. Job Satisfaction has a strong positive impact on employee productivity, with a direct effect of β =0.616, indicating that higher job satisfaction leads to significantly improved productivity. Similarly, Job Satisfaction also positively influences service quality, with a direct effect of β =0.646, suggesting that satisfied employees deliver better service quality. Training has a positive effect on employee productivity, with a direct effect of β =0.352, showing that training contributes to productivity improvement but less strongly compared to job satisfaction. Training has a stronger positive impact on job satisfaction, with a direct effect of β =0.571, indicating that effective training significantly enhances employees' satisfaction. Additionally, training also positively affects service quality, with a direct effect of β =0.369, demonstrating that training helps improve service delivery, though its influence is relatively weaker than job satisfaction's effect on service quality (Table 6 and Figure 2).

Furthermore, the mediation analysis shows job satisfaction acts as a bridge between training and employee productivity (β =0.352.) and service quality (β =0.369 (Table 7).

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Table 6: Path Co-Efficient (Direct Effects)

Effects	Path co-efficient (β)
JS → EPr	0.616
JS→ SQ	0.646
TR→ EPr	0.352
TR→ JS	0.571
TR→ SQ	0.369

Note(s): EPr=employee productivity; JS=job satisfaction; SQ=service quality; TR=training

Table 7: Path Co-Efficient (Indirect/Mediating Effects)

Effects	Path co-efficient (β)
$T R \rightarrow JS \rightarrow EPr$	0.352
$TR \rightarrow JS \rightarrow SQ$	0.369

Note(s): EPr=employee productivity; JS=job satisfaction; SQ=service quality; TR=training

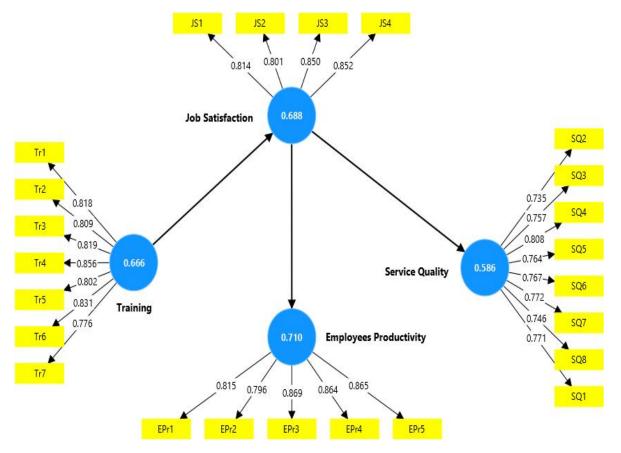


Figure 2: Path Analysis

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Conclusion

In conclusion, this paper addresses the crucial relationship between public sector training, employee productivity and service quality. Moreover the study investigated the empirical and theoretical relationship between public sector training, employee productivity and service the constructs in this model demonstrate high reliability, strong validity, and wellquality defined interrelationships. Training and Job Satisfaction emerge as key drivers of Employee Productivity and Service Quality. This also investigates the vigorous mediating role of Job Satisfaction is particularly noteworthy, as it enhances the influence of training on outcomes. The effect of training on EP and SQ is significant, mainly when job satisfaction assists as a mediating variable. Efficient training sessions provide workers with the important knowledge, competencies and skills, to complete their goals efficiently, most important to increase EP and higher SQ. Hence, companies in the public sector are supposed to not merely participate in widespread training sessions but also make sure that such sessions make straight with job roles, expectations, and career growth. A helpful work atmosphere, opportunities for skill, and appreciation of employee struggles, further strengthen job satisfaction, prominent to improved service quality and productivity. These results provide robust evidence supporting the proposed model, offering valuable insights into the dynamics between training, job satisfaction, and organizational performance. Finally, job satisfaction play vital role between public sector training and organizational performance. In conclusion, job satisfaction serves as a vital link between public sector training and organizational performance. Thus arranging workers well-being and uninterrupted learning, public organizations can enhance their human capitals, increase service delivery, and attain lasting success.

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