(Online) ISSN 2712-0554
Heritage and Sustainable Development *Original Research*
Vol. 8, No.2, 2026, pp.1-20
https://doi.org/10.37868/hsd.v8i2.2006

Enhancing human capital productivity through self-efficacy

Malabika Chakraborty[1*], Sriparna Guha[2]
[1]Dept. of Computer Science, Netaji Nagar Day College, India
[2]Department of Management, Narula Institute of Technology, India

*Corresponding author E-mail: malabika2691@gmail.com

Abstract
Psychological resources of individual worker such as self-efficacy enhance confidence to execute specific tasks effectively. One of the prime constructs of worker productivity in organizations is self-efficacy. Prof. Albert Bandura first coined the concept of self-efficacy in 1977 as belief of individual in their capacity to perform specific actions required for specific outcomes. Self-efficacy governs how people feel, think, and perform and shapes motivation and resilience across professional domains since it is rooted in social cognitive theory. The prime focus of the research is to identify those factors that comprise key determinants of worker productivity and self-efficacy and to further explore the relationship between the two. The cross-sectional analysis is conducted among employees in different sectors of West Bengal, India with special emphasize on manufacturing and service sectors, using a structured twenty item instrument to measure worker productivity and self-efficacy. The outcomes of the study reveal that worker productivity is strongly and positively influenced by self-efficacy. The study concludes that supportive work environment, structured training and feedback enhances self-efficacy and thereby also improve worker productivity, establishing actionable approach towards sustainable organizational development.

Keywords: Self-efficacy, Worker productivity, Spearman's rank correlation, Principal component analysis, OLS regression

1. Introduction

1.1. Research problem

The overall performance of organization primarily depends in the effectiveness and efficiency of its human resources. Organizational goals are hard to achieve without the committed contribution of individual workers, thereby making individual and organizational performance closely interconnected. However, there is no single universal formula that guarantees optimal workforce performance, since worker productivity is a multifaceted construct. Factors like motivation, individual capabilities, leadership style, emotional stability, interpersonal relationships and workplace environment deeply influence worker performance. Among these factors, self-efficacy, defined as individual's belief in their capability to execute specific tasks successfully, is a crucial psychological determinant of workplace productivity that has remained relatively underexplored.

Conceptually, this study amalgamates two interrelated strata of literature. The first literature views Self efficacy as a multidimensional construct which is influenced by factors like mastery experiences, affective states, social persuasion, goal orientation, task complexity, feedback mechanisms, cultural context and domain specific skills. The second literature analyzes worker productivity as a multifactor outcome shaped by organizational design, technology adoption, leadership, skills and workplace culture. The theoretical foundation of the study is developed by integrating these two concepts for investigating whether self-efficacy can significantly predict worker productivity in different work environments and varied sectors of West Bengal.

1.2. Literature overview

The relationship between worker performance and self-efficacy has increasingly attracted empirical attention in behavioral and organizational research. Earlier studies focused primarily on job satisfaction, workplace relationships, employee engagement and organizational transparency whereas comparatively less emphasis is given to the direct role of self-efficacy in productivity models [1]. However, recent studies have confirmed positive relation among productivity, job performance and self-efficacy identifying those workers with higher confidence in their abilities tend to perform more effectively attain organizational objectives [2], [3]. Studies have shown that higher self-efficacy among employees improves their performance by enhancing confidence in them [4]. Some researchers have further demonstrated that self-efficacy, motivation and performance are closely interrelated and positions self-belief as a prime predictor of workplace productivity [5], [6].

Frederick Herzberg's two factor theory of motivation is one of the building blocks of the study which separates motivators such as recognition, achievement and personal growth from hygiene factors such as supervision, salary, workplace policies and working conditions [7]. Motivators foster confidence, intrinsic motivation and strong sense of self efficacy whereas hygiene factors prevent dissatisfaction among workers to ensure sustained productivity. This theoretical perspective proposes that to attain long term sustained improvement in productivity organizations need to focus on cultivating self-confidence, autonomy and opportunities along with development of external working conditions

1.3. Literature deficiencies

There are significant research gaps in spite of all these empirical findings. In the existing studies there are very limited systematic investigation into the inter relationship between worker productivity and self-efficacy in the industrial and socio-economic environment of West Bengal, India. Additionally, previous research works examine either organizational factors or motivational factors exclusively and doesn't integrate the two. These limitations generated the need for an analytical investigation which is empirically grounded and capable of explaining how self-efficacy influences worker productivity diverse occupational environments.

1.4. Purpose

In this theoretical and empirical backdrop, the study tries to inspect the inter relationship between self-efficacy and worker productivity across varied sectors in West Bengal. The research aims at developing a regression based statistical framework that can explain how improvements in self efficacy enhance worker productivity. The study empirically models this relationship and intends to generate meaningful policy level and managerial insights for organizational leaders, educators and policymakers aiming to optimize workforce performance. Finally, the study strives to bridge the gap between measurable organizational outcomes and individual psychological capital and emphasizes that sustainable productivity begins with confident, empowered, and self-efficacious workers.

1.5. Significance of the research

The present research has many important add-ons to the extant studies. Primarily, it adds to the existing research on workplace psychology and organizational behavior by empirically examining the relationship between worker productivity and self-efficacy across different sectors. Furthermore, the present investigation

contextualizes the analysis within the industrial and socio-economic environment of West Bengal, India, which has received comparatively limited empirical attention in earlier self-efficacy and productivity research. Moreover, the study integrates organizational productivity frameworks with psychological constructs using a regression based conceptual model to explain systematically how self-efficacy influences workplace productivity. The research bridges the gap between measurable organizational outcomes and individual psychological capital.

2. Literature review and conceptual framework

2.1. Concept of self-efficacy

Prof Albert Bandura in his seminal work 'Toward a unifying theory of behavioral change' published in the journal Psychological Review defined self-efficacy as ones' assessments of his or her abilities to conquer expected outcomes. Self-efficacy is task and environment specific, often exceeding actual ability, which fosters persistence in adversity [8]. Ten determinants are identified as key influencers of self-efficacy. Guha and Chakraborty in the article 'Relationship between Self efficacy and Work Performance: An Analytical Study' tried to find the major areas where self-efficacy has been worked upon and the major determinants of self-efficacy [9].

2.2. Identification of determinants of self-efficacy

Self-efficacy is defined by interrelated social, psychological, cognitive and environmental determinants. Psychologically, mastery experiences are its strongest source, as successful performance builds confidence while repeated failure weakens it [8], [10]. Affective states such as stress and anxiety reduce efficacy, whereas positive emotions and self-regulation strengthen it [11]. Progressive achievement and goal clarity further enhance self-efficacy beliefs [12], [13]. Self-belief is reinforced by factors like social support within collaborative environments, vicarious experiences from observing capable peers and verbal persuasion through encouragement [14], [15]. A meta-analysis conducted concluded that higher confidence in one's abilities tend to perform better across various tasks and industries. [16]. Manageable task difficulty, accurate feedback and domain specific knowledge are some factors that refine workforce competence [17], [18]. Studies have also shown that persistence, learning and academic achievement is emphasized with higher self-efficacy [19]. Lastly, environmental and cultural factors like acceptable effort levels and expectations influence self-efficacy [20], [21]. Collectively, these factors represent self-efficacy as a malleable system of trust that constantly changes through personally know how, emotional regulation, contextual learning and social interaction.

2.3. Worker productivity

Worker productivity is shaped by multiple factors like motivation, individual skills and organizational practices. Supportive working environments promote job satisfaction and enhance performance of skilled workers. Hackman and Oldham confirmed that challenging and autonomous jobs increase productivity and engagement among workers [22]. Llopis stated that empowering and collaborative organizational culture and leadership style encourage innovation and commitment among workers [23]. Goleman in his study highlighted that effective leadership ensures clear communication, vision alignment and employee recognition through which high performance can be attained [24]. Moreover, Brynjolfsson and McAfee exhibited that workplace automation and technological advancements significantly enhance productivity for trained workers [25]. These findings confirm that productivity is a multi-faceted measure outlined by workplace design, culture, human capability and technology integration and leadership that requires continuous adaptation in evolving work environments.

2.4. Key determinants influencing worker productivity

Multiple interrelated determinants in environmental, individual and organizational dimensions shape worker productivity. Locke identified that Job satisfaction enhances discretionary effort and engagement [26]. Adams

proposed in his ‘equity theory’ that incentives and fair compensation are drivers of motivation through perceived sense of equity among worker [27]. Becker identified constant training and skill development as factors improving adaptability and innovation [28]. Chandrasekar stated that a well-lit, ergonomic, and supportive workplace environment boosts output by reducing fatigue [29]. Bass proposed that transformational leadership fosters motivation and trust and enhances performance [30]. Chiaburu and Harrison further proved that strong peer relationships reduce stress and promote collaboration [31]. Brynjolfsson and Hitt in their study proved that access to modern technology can increase efficiency and minimize time wastage [32]. Greenhaus & Beutell also emphasized on maintaining work life balance to enhance long term productivity and reduce burnout [33].

Bandura preached that self-efficacy and high motivation significantly strengthen performance and persistence [8]. Denison proved that positive organizational culture featured by fairness, trust and innovation nurtures collective success and commitment [34]. Collectively, these factors demonstrate that worker productivity is the result of synergistic influences between organizational systems, personal capabilities and supportive work conditions.

2.5. Empirical studies linking self-efficacy and productivity

Self-efficacy has been accepted and validated as a construct for determinants of organizational psychology like performance, motivation and behavior [35]. Empirical studies conformed those psychological features like problem-solving abilities and facing challenges grow with high self-efficacy and these factors contribute positively to worker productivity [16]. Judge and Bono performed a meta-analysis that confirmed that self-efficacy is strongly correlated with worker performance [36]. They also recognized self-efficacy as a core identifier of workplace output. Bandura and Locke also underscored that higher self-efficacy promotes ambitious and challenging goal setting and persistence to achieve them among individuals [37].

Chen et al. explores the effect of self-efficacy on team-based work environment [38]. Their observation revealed that both individual and team self-efficacy have impact on productivity and introduced concept of micro and macro self-efficacy. Studies conducted in the recent past propose inclusion of self-efficacy in psychological framework. Luthans et al. coined the term ‘Psycap’ i.e., psychological capital, which is a combination of self-efficacy and positive psychological traits like resilience and optimism [39]. They adopted regression analysis to prove that self-efficacy is the main building block of ‘psycap’. They also observed that ‘psycap’ increases both individual and organizational productivity.

These empirical studies have employed a vast range of statistical tools which include correlation analysis, multivariate regressions and structural equation modeling to reinforce the predictive power of self-efficacy in productivity-related outcomes. Jointly, the findings support self-efficacy use in productivity and justify the incorporation of self-efficacy into models of workplace behavior. This study further extends the prevailing body of knowledge by quantifying the relationship between self-efficacy and worker productivity within the context of selected Indian manufacturing sectors.

2.6. Objectives

- To spot the key determinants of worker productivity and self-efficacy among workers in different sectors of West Bengal.
- To test the predictive relationship between self-efficacy and worker productivity, quantifying the strength and significance of this pathway.
- To construct a regression-based analytical framework that explains how improvements in self efficacy can foster higher productivity.

2.7. Hypothesis declaration

Self-efficacy theory by Albert Bandura proposes that individuals possessing higher confidence in their abilities are more likely to sustain effort during difficulties, undertake challenging tasks and achieve improved

performance outcomes [35]. Frederick Herzberg's two factor theory of motivation separates hygiene factors such as supervision, salary, workplace policies and working conditions from motivators such as recognition, achievement and personal growth [7]. The present study, based on these theoretical foundations proposes that high self-efficacy positively influences worker productivity across varied sectors in West Bengal. Accordingly, the following hypothesis is formulated:

H: Self efficacy → Worker Productivity

H_0: There is no significant relationship between self-efficacy and worker productivity.

H_1: Higher self-efficacy is significantly associated with higher worker productivity.

2.8. Conceptual framework

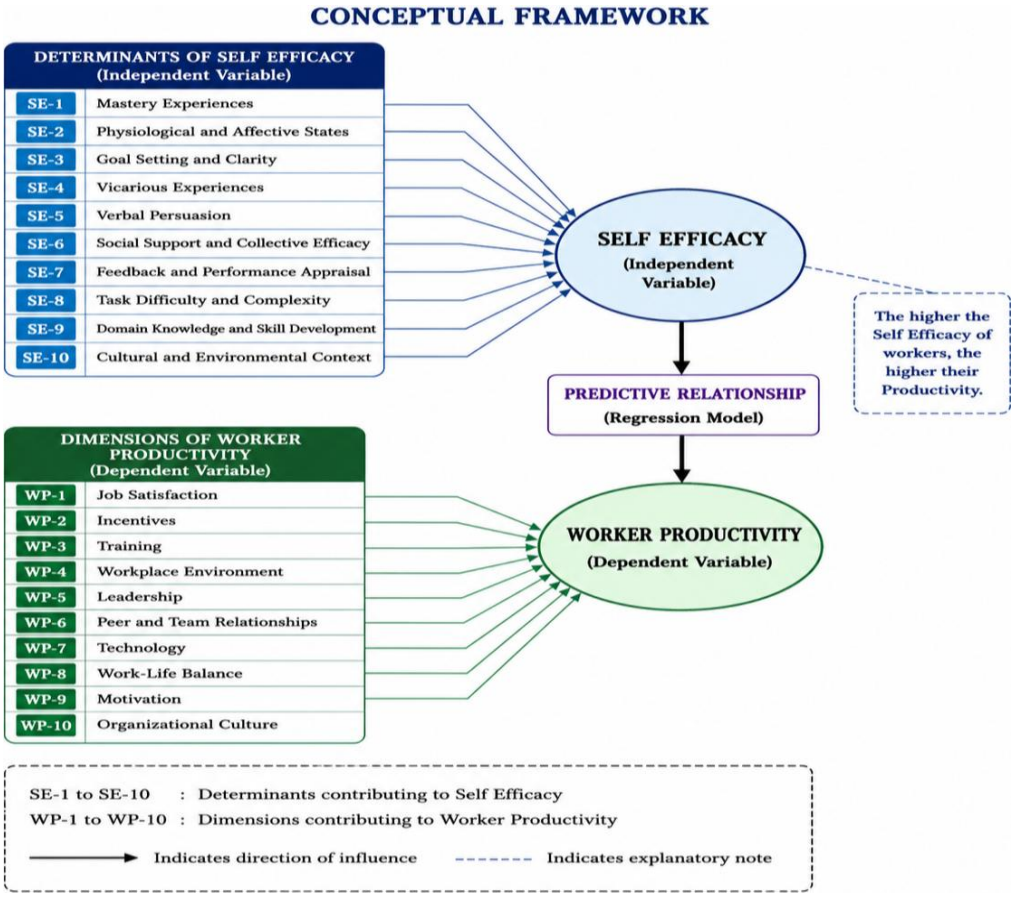

Figure 1. Conceptual framework of the study

3. Methods

3.1. Methodological framework

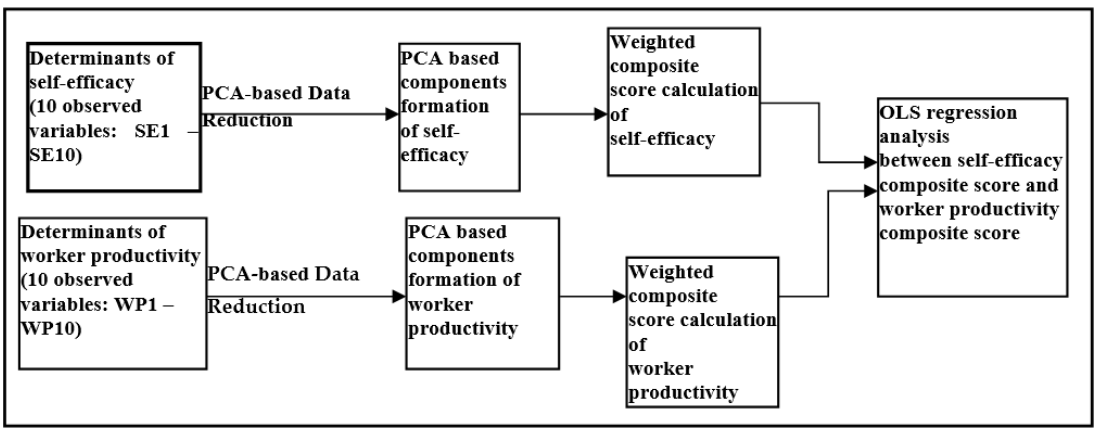

Figure 2. Methodological framework diagram of the study

3.2. Research design

This study adopts a cross-sectional and quantitative design to analyze the impact of self-efficacy on worker productivity. Rooted in organizational psychology, the research aims to quantify the relation between workplace performance and psychological self-belief using structured statistical modeling. This study employs a regression model instead of adopting an empirical framework, and treats productivity as the independent outcome of various organizational determinants. Here, worker productivity serves as the dependent variable and self-efficacy is the predictor.

The study targets workers in different sectors of West Bengal, utilizing survey responses from 400 workers across various organizations with special emphasize on manufacturing and service sector. The survey uses ten productivity-influencing and ten self-efficacy influencing determinants. The modeling adopted is motivated by the growing significance of psychological factors in worker productivity and to quantify the predictive strength of self-efficacy. The model aligns with previous confirmations suggesting a direct impact of self-efficacy on motivation and worker performance [8], [40].

3.3. Variable identification

Table 1. Variable identification

Variable Type	Variable	Determinants / Dimensions
Independent Variable (IV)	Self-efficacy (SE)	1. Mastery Experiences (SE-1) 2. Physiological and Affective States (SE-2) 3. Goal Setting and Clarity (SE-3) 4. Vicarious Experiences (SE-4) 5. Verbal Persuasion (SE-5) 6. Social Support and Collective Efficacy (SE-6) 7. Feedback and Performance Appraisal (SE-7) 8. Task Difficulty and Complexity (SE-8) 9. Domain Knowledge and Skill Development (SE-9) 10. Cultural and Environmental Context (SE-10)
Dependent Variable (DV)	Worker Productivity (WP)	1. Job Satisfaction (WP-1) 2. Incentives (WP-2) 3. Training (WP-3) 4. Workplace Environment (WP-4) 5. Leadership (WP-5) 6. Peer and Team Relationships (WP-6) 7. Technology (WP-7) 8. Work-Life Balance (WP-8) 9. Motivation (WP-9) 10. Organizational Culture (WP-10)

3.4. Survey instrument design

The questionnaire adopted in the study is prepared to evaluate ten key factors believed to influence self-efficacy and worker productivity each [Appendix 1]. A 20-item structured questionnaire is employed comprising the demographic profile, ten worker productivity related dimensions and ten self-efficacy dimensions which are self-rated by employees. Responses are collected on a 5-point Likert scale, where ‘1’ indicates strong disagreement and ‘5’ indicated strong agreement or satisfaction. Data obtained from question no. 1 to 20 of the questionnaires is used in the study. Each of these questions is adapted to the local organizational context and is converted into measurable items based on prior literature. All of these items captured the respondent’s belief in their ability to perform efficiently in the organizations work environment.

3.5. Sample size determination

The population size of the study is very large and the population is not homogeneous in nature. Hence, Cochran's formula is applied at a 95 % confidence level and ±5 % precision by using the following formula.

$$n_0 = \frac{(Z^2 \cdot p \cdot (1-p))}{E^2} \quad (1)$$

Where Z = 1.96, E = 0.05, p = 0.5. The formula generated in (1) n_0 = 384.16 i.e., 385, thus a sample of 400 is selected to ensure representativeness and reliability of the population.

3.6. Participants and data collection

In total 500 questionnaire are distributed in various sectors of West Bengal, India with importance to manufacturing and service sectors, out of which 432 responses are obtained resulting in an 86% response rate. Participants are chosen from different roles, departments and experience levels to capture a wide spectrum of productivity related perceptions. This selection is done for standardized productivity indicators and operational structure, making it idyllic for assessing organizational and psychological correlations with performance [41].

3.7. Data preprocessing and cleaning

The dataset went thorough pre-processing so that the data are consistent and valid. Missing values are deleted handled list wise, since the proportion of incomplete responses are very few and imputation can generate bias in factor-based analysis [42]. In addition, outliers are detected using Z-score thresholds beyond ±3, to eliminate extreme cases that could misrepresent correlation and PCA results [43]. In total 32 responses are eliminated resulting into a sample size of 400.

3.8. Spearman's rank correlation

The survey adopted non-parametric technique and the survey responses are of ordinal nature, which are based on a 5-point Likert scale. Pearson's correlation is not chosen and Spearman's rank correlation coefficient (ρ) is used as this method does not assume normal distribution and is best for assessing monotonic relationships in ranked data [44]. This method is especially suitable for psychological and behavioral research, as responses may deviate from strict interval scaling [45]. In this study, Spearman's correlation is applied to analyze the relationship between determinants of worker productivity and self-efficacy as well as their underlying dimensions.

3.9. Two step PCA based component score construction

To calculate objective measure of worker productivity and self-efficacy, Principal Component Analysis (PCA) based approach is implemented. PCA is a deep-rooted statistical technique used for latent factor discovery in multivariate datasets and dimensionality reduction [46]. A set of inter related variables are clubbed into a smaller number of uncorrelated variables as principal components. PCA is ideal for composite index construction as these components capture the maximum variance present in the original dataset [47]. Principal Component Analysis is carried out separately for the determinants of worker productivity and self-efficacy to identify the key components underlying each construct and to reduce dimensionality. In this study the components are assigned determinants that have absolute value of factor loading greater than 0.40. This is done because a loading of 0.4 or higher suggests that the variable has at least $(0.4)^2$=0.16, i.e., 16% of its variance with the component. This is considered a practically meaningful and moderate contribution in social science research. The components with considerable contributions based on eigen values >1 are retained [48]. In this study self-efficacy is identified with two principal components and worker productivity with three principal components. The components are computed using Thurstone's regression method by combining the weighted linear combination of the determinants included in the component. The weights are calculated from the inverse of the correlation matrix and factor loadings.

The Principal Component score is calculated as in (2)

$$PC_j = Z_{row} \cdot B_j \quad (2)$$

The Z_{row} score in (3) which is row vector of standardized variables is calculated for j^{th} observation as

$$z_j = \left(x_j - \overline{x_j}\right) \Big/ s_j \quad (3)$$

Where $\overline{x_j}$ = entire dataset's mean, s_j = entire dataset's standard deviation

Bj, the column vector of factor loadings for the j^{th} principal component is calculated as in (4)

$$B = R^{-1}L(L^{\top}R^{-1}L)^{-1} \quad (4)$$

Where, R^{-1} = the inverse correlation matrix, $L^{\top}$ = transpose of the loading matrix, $(L^{\top}R^{-1}L)^{-1}$ = inverse of the adjusted loadings cross-product matrix. In the second step the weighted average of the principal components are computed to generate one single composite score for self-efficacy and worker productivity. The weighted average of the factor loadings is taken as the weights of the calculation as in (5).

$$\sum_{i=1}^{n} W_i * PC_i \quad (5)$$

Where, value of W_i is calculated as (6)

$$W_i = \frac{\lambda_i}{\sum_{i=1}^{n} \lambda_i} \quad (6)$$

And in (7)

$$\sum_{i=1}^{n} \lambda_i = \sum_{i=1}^{n} RL_i^2 \quad (7)$$

This method ensures that the most influential patterns across all the considered determinants are combined into a single index [49]. These composite scores are used in regression models to evaluate the impact of self-efficacy on worker productivity thereby avoiding multi-co-linearity issues that are present in direct variable-based regression models [50]. Determinants that contribute less to the construct are identified and excluded, so that weak or irrelevant indicators are prevented from distorting the construct measurement.

The study adopts a two-step aggregation approach as against one step direct composite scoring as it tries to avoid several critical limitations inherent in direct aggregation approach. Direct composite scoring is done by averaging the determinants with the implicit assumption that all of them contribute equally to the construct. Organizational and behavioral research rarely comply with such assumptions as constructs like worker productivity and self-efficacy are multidimensional and are composed of factors with varying explanatory strength.

3.10. Regression modeling

In organizational and behavioral studies Ordinary Least Squares (OLS) regression model is a widely used approach [51]. This model is used in the study to find the correlation between worker productivity and self-efficacy. Composite productivity score is the dependent variable and composite self-efficacy score is the independent variable in the model.

4. Results and outcomes

4.1. Descriptive analysis of the total dataset

The dataset comprises of data for worker productivity and self-efficacy, each being represented by ten determinants. Data are collected using Likert scale with response ranging between 'Strongly Disagree' to 'Strongly Agree'. These ordinal responses are converted to numerical values like 1 for 'strongly disagree' to 5 for 'strongly agree' to perform quantitative analysis.

Table 2. Descriptive Analysis

Variable	Number of Samples (N)	Value Range	Value (Min)	Value (Max)	Avg	Std Dev
Mastery Experiences	400	4	1	5	2.91	1.460216
Physiological and Affective States	400	4	1	5	3.0625	1.441801
Goal Setting and Clarity	400	4	1	5	2.965	1.508132
Vicarious Experiences	400	4	1	5	2.935	1.444296
Verbal Persuasion	400	4	1	5	2.8	1.445761
Social Support and Collective Efficacy	400	4	1	5	2.9175	1.468361
Feedback and Performance Appraisal	400	4	1	5	2.9475	1.466328
Task Difficulty and Complexity	400	4	1	5	2.9925	1.434429
Domain Knowledge and Skill Development	400	4	1	5	3.0775	1.42709
Cultural and Environmental Context	400	4	1	5	2.96	1.465869
Job Satisfaction	400	4	1	5	3.5275	0.886684
Compensation and Incentives	400	4	1	5	3.46	0.854532
Training and Skill Development	400	4	1	5	3.475	0.88958
Workplace Environment	400	4	1	5	3.5225	0.849292
Leadership Style and Supervision	400	4	1	5	3.4275	0.866962
Peer and Team Relationships	400	4	1	5	3.4725	0.846188
Technology and Tools	400	4	1	5	3.495	0.855456
Work–Life Balance	400	4	1	5	3.515	0.852403
Motivation and Self efficacy	400	4	1	5	3.5175	0.898171
Organizational Culture and Policies	400	4	1	5	3.5	0.92582

Source: Author's own data

4.1.1. Outcome -1

The descriptive statistics given in Table 2 of the factors of self-efficacy shows that the lowest mean is recorded for 'Verbal Persuasion' is 2.80 and highest mean is observed for 'Domain Knowledge and Skill' which is 3.08. The moderate dispersion in responses is registered with values ranging between 1.43 to 1.51. Among worker productivity determinants the mean values range from 3.43 to 3.53. The highest mean is observed for 'Job Satisfaction' and the lowest for 'Leadership Style and Supervision'. The standard deviations range from 0.85 to 0.93 for ten worker productivity determinants indicating relatively low variability in productivity perceptions compared to self-efficacy indicators.

4.2. Reliability test of the questionnaire

Table 3. Scale reliability statistic

	Cronbach's α	No. of Items
Scale	0.782	20
Item Reliability Statistics	Cronbach's Alpha 'if Item Deleted'	
Mastery Experiences	0.7655	
Physiological and Affective States	0.75	
Goal Setting and Clarity	0.764	
Vicarious Experiences	0.77	
Verbal Persuasion	0.7724	
Social Support and Collective Efficacy	0.7859	
Feedback and Performance Appraisal	0.7654	
Task Difficulty and Complexity	0.79	
Domain Knowledge and Skill Development	0.7706	
Cultural and Environmental Context	0.7777	
Job Satisfaction	0.7722	
Compensation and Incentives	0.7744	
Training and Skill Development	0.7851	

	Cronbach's α	No. of Items
Workplace Environment	0.7772	
Leadership Style and Supervision	0.7793	
Peer and Team Relationships	0.7702	
Technology and Tools	0.7703	
Work–Life Balance	0.7701	
Motivation and Self efficacy	0.7798	
Organizational Culture and Policies	0.7668	

Source: Author's own data

4.2.1. Outcome -2

The Cronbach's alpha of the 20-item scale in Table 3 is calculated as 0.782. This is higher than the threshold value of 0.70 which suggests satisfactory internal consistency justifying further statistical analysis on the data to measure a coherent and stable latent construct. The result further confirms that the selected determinants adequately capture the multidimensional nature of productivity and self-efficacy. The item-based Cronbach's alpha value when item is deleted ranges from 0.75 to 0.79. The highest alpha if deleted is observed for 'task difficulty and complexity' determinant and the lowest value for determinant 'physiological and affective states. As none of the 'item deleted' alpha values exceeded the overall alpha by a wide margin, all the items are used in further statistical analysis. Since deletion of any item does not improve the overall reliability, contribution of each item to the construct measurement is established. The theoretical breadth of the constructs is preserved ensuring content validity.

4.3. Factor analysis - spearman's rho

For self-efficacy and worker productivity determinants Spearman's rho correlation analysis is performed separately to analyze the contribution of each determinant to the formation of the constructs. The items are systematically coded as WP-1 to WP-10 for worker productivity and SE-1 to SE-10 for self-efficacy. Since the data collected are of ordinal structure, Spearman's rho is selected as the appropriate statistical technique to assess the monotonic relationships among the determinants, providing construct validity under investigation.

Table 4. Self-efficacy Determinants Spearman Correlations (N = 400)

Determinants	Strongest Correlation (ρ)	Other Notable Correlations
SE-1	SE-3 (.452)	SE-2 (.340), SE-5 (.317), SE-6 (.289)
SE-2	SE-3 (.444)	SE-4 (.330), SE-7 (.265), SE-10 (.265)
SE-3	SE-1 (.452)	SE-2 (.444), SE-7 (.301), SE-6 (.272)
SE-4	SE-5 (.441)	SE-2 (.330), SE-6 (.380)
SE-5	SE-4 (.441)	SE-6 (.394), SE-1 (.317)
SE-6	SE-5 (.394)	SE-7 (.309), SE-4 (.380)
SE-7	SE-8 (.344)	SE-9 (.358), SE-3 (.301), SE-6 (.309)
SE-8	SE-9 (.363)	SE-7 (.344), SE-3 (.198)
SE-9	SE-8 (.363)	SE-7 (.358), SE-6 (.262)
SE-10	SE-2 (.265)	SE-9 (.240), SE-5 (.237)

Correlation (2 tailed) significant at 0.01 level

4.3.1. Outcome - 3

All the correlations Table 4 are found to be statistically significant and positive at the $p < .01$ level, strongly supporting the presence of a coherent relation among self-efficacy determinants. Several noteworthy patterns are revealed in this correlation analysis of self-efficacy determinants. The strongest associations are observed between SE-2 and SE-3 ($\rho = 0.444$), SE-1 and SE-3 ($\rho = 0.452$) and SE-4 and SE-5 ($\rho = 0.441$). SE-5, SE-6, and SE-4 also forms a moderate cluster showing correlations in the range of approximately 0.38-0.39. SE-8 and SE-10 demonstrate weaker still positive relationships ($\rho = 0.15$- 0.24). The strong association between SE-3 and SE-1 reflects the close linkage between perceived problem-solving ability and confidence in task

execution. Likewise, the consistent correlation involving SE-6 and SE-5 indicates that adaptability and persistence are interdependent traits within self-efficacy construct. These inter relationships justify the principal component analysis of the determinants to cut down the observed variables into smaller set of latent components representing self-efficacy.

Table 5. Worker productivity determinants Spearman correlations (N = 400)

Variable	Strongest link (ρ)	Other notable significant links
WP-1	WP-6 (.151) **	WP-9 (.115*), WP-5 (.109*)
WP-2	WP-4 (.137) **	WP-6 (.130**), WP-5 (.102*)
WP-3	WP-8 (.160) **	WP-5 (.123*), WP-4 (.114*), WP-10 (.109*), WP-7 (.104*), WP-6 (.103*)
WP-4	WP-2 (.137) ** / WP-6 (.136) **	WP-7 (.110*), WP-3 (.114*)
WP-5	WP-3 (.123) *	WP-7 (.122*), WP-1 (.109*), WP-8 (.108*)
WP-6	WP-7 (.196) **	WP-1 (.151**), WP-4 (.136**), WP-2 (.130**), WP-9 (.118*), WP-3 (.103*)
WP-7	WP-6 (.196) **	WP-5 (.122*), WP-4 (.110*), WP-3 (.104*)
WP-8	WP-10 (.167) **	WP-3 (.160**), WP-5 (.108*)
WP-9	WP-6 (.118) *	WP-1 (.115*)
WP-10	WP-8 (.167) **	WP-3 (.109*)

*. Correlation significant at 0.05 level (2-tailed)

**. Correlation significant at 0.01 level (2-tailed)

4.3.2. Outcome - 4

The correlation structure of the worker productivity factors in Table 5 displayed predominantly small yet positive associations, generally in the range of ρ = 0.10 - 0.16, with a few modest peaks. The strongest pair-wise relationship is observed between WP-6 and WP-7 (ρ = 0.196) followed by WP-8 and WP-10 (ρ = 0.17) and WP-3 and WP-8 (ρ = .16). Two loose mini clusters emerge within the data, one comprising WP-6, WP-7, WP-4, WP-2, WP-1, and WP-9 which reflects a performance or effortful control orientation and another linking WP-8, WP-10, WP-3, and WP-5 suggestive of a monitoring orientation or planning. Although many correlations just reached statistical significance, they indicated related but non-redundant items, with no evidence of redundancy or instability in the matrix. Only one negligible negative association is noted (WP-7 - WP-10, ρ =-0.015), further confirming the coherence of the set. Stronger inter factor links like ρ = 0.20 explain approximately 4% of variance while comparatively weaker effects like ρ = 0.10 achieved only about 1% of variance. This pattern collectively provides meaningful representation of the worker productivity construct.

4.4. Dimensionality reduction and composite scores (PCA) generation

Table 6. Principal Component Analysis for the determinants of Self efficacy

Component	Initial Eigenvalues (Total)	% of Variance	Cumulative %	Extraction Sums of Squared Loadings (Total)	% Of Variance	Cumulative %	Rotation Sums of Squared Loadings (Total)	% Of Variance	Cumulative %
1	3.459	34.585	34.585	3.459	34.585	34.585	2.679	26.789	26.789
2	1.162	11.615	46.201	1.162	11.615	46.201	1.941	19.411	46.201
3	0.979	9.787	55.988						
4	0.864	8.638	64.626						
5	0.7	6.995	71.621						

Component	Initial Eigenvalues (Total)	% of Variance	Cumulative %	Extraction Sums of Squared Loadings (Total)	% Of Variance	Cumulative %	Rotation Sums of Squared Loadings (Total)	% Of Variance	Cumulative %
6	0.679	6.787	78.408						
7	0.631	6.314	84.722						
8	0.564	5.641	90.364						
9	0.493	4.929	95.293						
10	0.471	4.707	100.0						

Extract method: principal component analysis

4.4.1. Outcome – 5

The PCA results in Table 6 identifies two distinct component structures. Two components compositely explain 46.20% of the total variance by the Kaiser criterion and have eigen values ≥1 (3.459 and 1.162). After rotation, component -1 explains 26.79% and component- 2 explains 19.41% of the variance which is more evenly distributed. The third component is borderline (eigen value = 0.979) and all subsequent components fall well below 1 (≤0.864), suggesting diminishing returns beyond two factors. The rotated solution therefore supports a parsimonious, interpretable two-component model which is consistent with a multidimensional but compact underlying structure.

Table 7. Rotated Component Matrix[a]

	Component	
	1	2
SE-1	.664	.103
SE-2	.601	.268
SE-3	.609	.254
SE-4	.666	.112
SE-5	.696	.099
SE-6	.634	.203
SE-7	.241	.671
SE-8	.029	.776
SE-9	.185	.727
SE-10	.290	.388

Extraction Technique: PCA
Rotation Method: Varimax, Kaiser Normalization
a. Rotation converged in 3 iterations

4.4.2. Outcome – 6

The rotated loadings of the factor in Table 7 revealed two distinct components underlying the self-efficacy construct. Component 1 (PC-SE-1) comprised six items, SE-1 through SE-6, with strong loadings ranging from 0.601 to 0.696, while Component 2 (PC-SE-2) included SE-7 through SE-9, with loadings between 0.671 and 0.776. SE-10 displayed a loading of .290 on PC1 and 0.388 on PC2, which is less than the threshold value of 0.4. So, SE-10 is excluded from further analysis. The value of weights is calculated as:

$W_{PC\text{-}SE\text{-}1} = 0.613$ and $W_{PC\text{-}SE\text{-}2} = 0.387$.

Table 8. Principal Component Analysis for the determinants of Worker productivity

Total Variance			
Component	Eigen values (Initial)	Sums of Squared Loadings Extraction	Sums of Squared Loadings Rotation

Total Variance									
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative%	Total	% of Variance	Cumulative %
1	1.876	18.756	18.756	1.876	18.756	18.756	1.402	14.019	14.019
2	1.104	11.039	29.795	1.104	11.039	29.795	1.365	13.651	27.670
3	1.051	10.514	40.309	1.051	10.514	40.309	1.264	12.639	40.309
4	.989	9.888	50.198						
5	.898	8.975	59.173						
6	.879	8.791	67.964						
7	.845	8.454	76.418						
8	.839	8.393	84.811						
9	.793	7.928	92.739						
10	.726	7.261	100.000						
Extraction Technique: PCA									

4.4.3. Outcome – 7

The PCA results in Table 8 support a three-component solution by the Kaiser criterion, with initial eigen values of 1.876, 1.104 and 1.051 explaining 18.76%, 11.04%, and 10.51% of variance respectively (cumulative variance = 40.31%). The fourth component is borderline (eigen value = 0.989), and subsequent components fall below 1. After extraction, the same variance is retained, while Varimax rotation redistributes it more evenly across the first three components (14.02%, 13.65%, and 12.64%), preserving the cumulative 40.31%. This pattern indicates a parsimonious but multidimensional structure with no strong evidence for additional component more than three.

Table 9. Rotated Component Matrix[a]

	Component		
	1	2	3
WP-1	.048	.580	.123
WP-2	.043	.500	.210
WP-3	.498	-.116	.429
WP-4	.356	.213	.152
WP-5	.540	.025	.189
WP-6	.401	.526	-.100
WP-7	.727	.062	-.250
WP-8	.191	.079	.642
WP-9	-.018	.642	-.055
WP-10	-.073	.141	.688

Extraction Technique: PCA

Rotation Method: Varimax, Kaiser Normalization

a. Rotation converged in 5 iterations

4.4.4. Outcome – 8

The rotated component matrix in Table 9 demonstrates a clear three component structure for worker productivity. PC-WP-1 is defined by WP-3 (0.498), WP-5 (0.540), and WP-7 (0.727), suggesting a performance/monitoring emphasis. PC-WP-2 loads on WP-1 (0.580), WP-2 (0.500), WP-6 (0.526), and WP-9 (0.642), indicative of effortful control and task execution. PC-WP-3 is composed of WP-8 (0.642) and WP-10 (0.688) which is consistent with planning. All of the determinant's items show dominant cross-loadings under the |0.40| rule. Determinant WP-4 is excluded from further analysis due to sub-threshold loadings (max |0.356|) across all components. Three related but distinct components of worker productivity are identified with subsequent reliability and adequate simple structure. The values of weights are calculated as:

$W_{PC\text{-}WP\text{-}1}$=0.330806, $W_{PC\text{-}WP\text{-}2}$=0.394948 and $W_{PC\text{-}WP\text{-}3}$=0.274246.

4.5. Development of the predictive models (OLS regression)

To inspect the structural relationships between composite score of worker productivity and self-efficacy Ordinary Least Squares (OLS) regression is applied. Primarily, regression analysis is performed with self-efficacy composite score as independent variable and worker productivity composite score as dependent variable. Regression Results:

$$(WP\_composite) = -0.0014 + 0.8657 \times SE\_composite \quad (8)$$

Ordinary Least Squares Regression Predicting Worker Productivity Composite from Self efficacy Composite (N = 400). Model Fit: $R^2 = .749$, adjusted $R^2 = .748$, $F(1, 398) = 912.6$, $p < .001$.

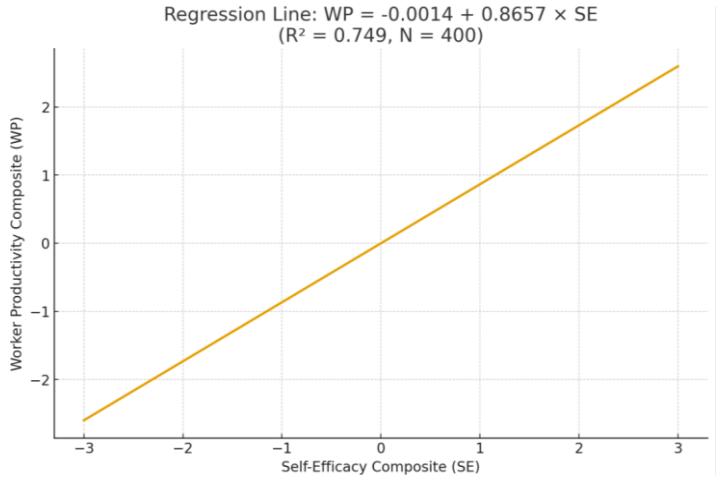

Figure 3. Correlation between self-efficacy and worker productivity

4.5.1. Outcome – 9

The regression analysis in (1) clearly demonstrates strong predictive power of self-efficacy on worker productivity. The model $R^2 = 0.749$, indicating that self-efficacy alone explains approximately 75% of the variance in worker productivity. The slope coefficient of $\beta=0.8657$ which suggests that a standard deviation increase in self efficacy predicts nearly a 0.87 standard deviation increase in worker productivity. The model test yield $F(1,398) = 912.6, p < .001$, which is indicator of statistically significant and robust relationship.

5. Discussion

5.1. Interpretation of outcomes

The pivotal role of self-efficacy as predictor of worker productivity is established in diverse work environments of West Bengal, India through this study. The regression analysis with slope coefficient of 0.8657 and R^2 value of 0.749 explains a statistically robust positive correlation between the PCA derived score of productivity and self-efficacy. This outcome proposes that nearly 75% of the variation in productivity scores is due to self-belief of workers in their competence.

Notably, the factor named ‘cultural and environmental context’ is eliminated from the final PCA based self-efficacy component identification as the factor loading is below 0.40 across all components. Hence, though this determinant may influence emotional well-being of individual, it does not exhibit any direct relationship with self-efficacy perceptions. It can be summarized from the statistical outputs that self-efficacy is a core psychological mechanism through which organizational factors translate into enhanced individual output.

5.2. Association with previous literature

The outcomes of the study align closely with established empirical evidence and theoretical frameworks in human resource management and organizational psychology. Bandura’s foundational work propose that self-efficacy influences perseverance, motivation and goal setting mechanisms that are strongly showcased in this

study's regression analysis [35]. Self-efficacy is identified by Judge and Bono in their meta-analysis as significant, consistent and durable predictor of job performance while holding confounding personality traits as constant, which is supported by this study findings [36]. The current study underscores the construct's cross cultural and cross sectoral validity and further extends these insights in different sectors in West Bengal, India.

This study also supports the Psychological Capital framework (PsyCap), where optimism, resilience and hope are identified as central pillars of self-efficacy [39]. The outcome supports inclusion of self-efficacy in comprehensive psychological models of workplace behavior. Luthans et al.'s empirical findings also indicate that PsyCap contributes meaningfully to both extra role and in role behaviors, justifying this study's observation that self-efficacy is essential to overall worker productivity [52]. Joliffe in his work methodologically explained and emphasized on PCA to construct the components from inter related factors [53]. The model developed thus conforms to the accepted benchmarks for dimensionality reduction and model parsimony. Thus, theoretically and methodologically the findings of this study contribute significantly to the literature on self-efficacy and workplace productivity.

5.3. Inferences

The study outcomes are noteworthy for organizational policy making and future academic inquiry. Practically, unambiguous association between worker productivity and self-efficacy suggests that measures aimed to strengthen self-belief among employees can generate quantifiable improvements in output. Manufacturing firms operate in resource constrained and competitive environments can improve their traditional HR strategies through such low-cost psychological interventions.

The study has major implication in the domain of managerial behavior also. The strong influence of supervisor relationships on self-efficacy implies that leadership style can form and shape roles of employees by enhancing belief in their abilities. As a result, training programs implemented to transform leadership skills like constructive feedback, mentorship and empathetic communication can indirectly improve productivity through the self-efficacy development. Especially in manufacturing and service sectors managers should be trained to instruct and more importantly inspire subordinates in situations where work can physically demand or monotonous.

A valuable framework to measure worker productivity and self-efficacy in a limited resource environment is provided in this research. The PCA-derived self-efficacy and productivity index is an interpretable method which is statistically sound and consolidates multiple worker productivity and self-efficacy factors into a single metric. Organizational psychologists and HR managers don't need to rely on oversimplified single dimensional metrics and can track productivity more holistically. Prominently, the research promotes a dialogue between the cultural determinants of worker productivity. Unlike the past studies who have focused on western contexts, this investigation offers insights which are globally relevant and locally grounded within Indian industrial settings. The pervasiveness of self-efficacy is thereby strengthened as a construct across economic and cultural contexts.

6. Conclusion

6.1. General conclusion

Two components emerged for self-efficacy (≈46% variance), with SE-1…SE-6 loading one component and SE-7…SE-9 another, SE-10 remained under-performed. This supports multidimensionality of self-efficacy construct. Worker Productivity with three components forms two clusters and two distinct factors i.e., WP-8 and WP-10 which are not overlapping indicating their complementary nature. The correlation topology supports multi-component composites without any redundancy. Spearman patterns are positive and clustered with few near-zero negatives show internal consistency without degenerating into a single giant factor. Absence of very high intra cluster redundancies suggests the analysis is capturing distinct and useful outcome rather than duplicated items.

A strong, theory-consistent predictive chain of Self efficacy to Worker Productivity emerges from the study. Self-efficacy has very large effect ($R^2 \approx .749$; $\beta \approx .866$) on Worker Productivity which is quite strong. A portable, reproducible scoring pipeline is found feasible through the model developed. Locking training means and standard deviations and PCA weights enables a consistent z-scoring and computation of weighted composites across cohorts. It also allows to present accuracy expectations by use case.

The present study proposes distinct and novel approach from existing literature by integrating worker productivity dimensions with self-efficacy determinants to develop a multidimensional framework across varied sectors. This research adopts a two-step PCA based composite modeling framework to quantify worker productivity and self-efficacy unlike simple scoring approaches or generalized organizational settings adopted by previous studies. The study also explored socio economic context of West Bengal, India thereby extending the existing literature on workplace productivity and organizational psychology.

6.2. Limitations

This cross-sectional study relies on single-source self-reports, which limits causal inference and introduces the possibility of common method variance. Future work should incorporate external replication and cross validation as components predictive coefficients and weights are calculated on the present sample and may differ in other datasets. Additional procedures like ordinal appropriate estimators and parallel analysis will further optimize the factor solution even though dimensionality decisions follow standard criteria. For making any comparative claims validity and measurement reliability of the components needs to be confirmed and across subgroups measurement invariance be established.

6.3. Practical inferences from the study

The outcomes of the study clearly show that worker productivity is substantially influenced by self-efficacy along with technical skills and organizational resources. The research suggests that confidence building measures like training programs, supportive leadership and skill development initiatives can enhance worker productivity Human resource managers can implement the outcomes of the study to design worker engagement and motivation strategies that strengthen self-belief in capabilities among workers. Additionally, the policymakers and organizational planners can utilize the outcomes in preparing workforce development policies to improve overall workplace performance across varied sectors.

6.4. Future research endeavors

Studies in the related fields in future can test measurement invariance across demographic profile like gender, industry and education. They can also establish reliability at component level and refine the measurement model. The effect of self-efficacy on career development through the mediated pathway of worker productivity can also be evaluated using structural equation modeling. Future studies can aim at increasing explained variance in worker productivity and test moderated and nonlinear effects by adding contextual determinants like opportunity structures and organizational support in the model. Organizations can run controlled pilot programs based on the study to enhance self-efficacy and worker productivity and can compare fairness and cost effectiveness across subgroups.

Overall, the study proposes a framework which is empirically established and joins self-efficacy and productivity thereby explaining how enhancement in efficacy mechanisms can generate measurable gains in worker productivity. This can be a predictive model for workforce development and policy making through structural equation modeling and cross validation.

Declaration of competing interest

The authors declare that they have no known financial or non-financial competing interests in any material discussed in this paper.

Funding information

No funding was received from any financial organization to conduct this research.

Author contribution

Conceptualization, M.C. and S.G.; methodology, M.C.; software, M.C.; data validation, M.C. and S.G.; formal analysis, M.C.; investigation, M.C.; resources, M.C.; original draft preparation, M.C.; review and editing of draft, M.C. and S.G.; visualization, M.C.; supervision, S.G.; project administration, S.G. Both the authors have read and agreed to the published version of the manuscript.

Ethical approval statement

Our institution does not require research ethics approval for reporting individual cases or case series.

Informed consent

Informed consent for the publication of personal data in this article was not obtained because no personal data were obtained during the survey".

References

[1] D. Abun, F. B. Ranay, T. Magallanes, M. J. Encarnacion, and F. Alkalde, "Employee treatment and work engagement: The Philippines context," Proteus J., vol. 11, no. 10, pp. 153–175, Oct. 2020. [Online]. Available: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3780567.

[2] F. Çetin and D. Aşkun, "The effect of occupational self-efficacy on work performance through intrinsic work motivation," Manag. Res. Rev., vol. 41, no. 2, pp. 186–201, Mar. 2018, https://doi.org/10.1108/MRR-03-2017-0062.

[3] W. Parimita, D. Purwana, N. Fadillah, and S. Z. Fatimah, "The effect of self-efficacy and communication skills on employee performance and work engagement at online transportation companies," Int. J. Innovation, Creativity and Change, vol. 13, no. 1, pp. 1376–1388, 2020. [Online]. Available: http://jurnal.unsyiah.ac.id/AGC-BEST/article/view/16845.

[4] G. Randhawa, "Self-efficacy and work performance: An empirical study," Indian J. Ind. Relat., vol. 39, no. 3, pp. 336–346, Jan. 2004. [Online] Available: https://www.ijicc.net/index.php/volume-13-2020/180-vol-13-iss-1.

[5] J. Cherian and J. Jacob, "Impact of self-efficacy on motivation and performance of employees," Int. J. Bus. Manag., vol. 8, no. 14, pp. 80–88, Jul. 2013, https://doi.org/10.5539/ijbm.v8n14p80.

[6] F. Tojjari, M. R. Esmaeilli, and R. Bawandpour, "The effect of self-efficacy on job satisfaction of sports referees," Eur. J. Exp. Biol., vol. 3, no. 2, pp. 219–225, 2013.

[7] F. Herzberg, B. Mausner, and B. B. Snyderman, The Motivation to Work. New York, NY, USA: John Wiley & Sons, 1959.

[8] A. Bandura, Self-Efficacy: The Exercise of Control. New York, NY, USA: W. H. Freeman, 1997.

[9] S. Guha and M. Chakraborty, "Relationship between self-efficacy and work performance: An analytical study," Int. J. Creat. Res. Thoughts, vol. 9, no. 1, pp. 2110–2117, 2021. [Online]. Available: https://www.ijcrt.org/papers/IJCRT2101260.pdf.

[10] D. H. Schunk, "Self-efficacy and achievement behaviors," Educ. Psychol. Rev., vol. 1, no. 3, pp. 173–208, 1989, https://doi.org/10.1007/BF01320134.

[11] R. Pekrun, "The control-value theory of achievement emotions: Assumptions, corollaries, and implications for educational research and practice," Educ. Psychol. Rev., vol. 18, no. 4, pp. 315–341, Dec. 2006, https://doi.org/10.1007/s10648-006-9029-9.

[12] E. A. Locke and G. P. Latham, "Building a practically useful theory of goal setting and task motivation: A 35-year odyssey," American Psychologist, vol. 57, no. 9, pp. 705–717, Sep. 2002, https://doi.org/10.1037/0003-066X.57.9.705.

[13] D. H. Schunk, "Goal setting and self-efficacy during self-regulated learning," Educational Psychologist,

vol. 25, no. 1, pp. 71–86, 1990, https://doi.org/10.1207/s15326985ep2501_6.

[14] F. Pajares and D. H. Schunk, “Self-beliefs and school success: Self-efficacy, self-concept, and school achievement,” in Development of Achievement Motivation, A. Wigfield and J. S. Eccles, Eds. San Diego, CA, USA: Academic Press, 2002, pp. 239–266. https://doi.org/10.1016/B978-0-12-750053-9.X5000-5.

[15] M. E. Gist, “Self-efficacy: Implications for organizational behavior and human resource management,” Academy of Management Review, vol. 12, no. 3, pp. 472–485, Jul. 1987, https://doi.org/10.5465/AMR.1987.4306562.

[16] A. D. Stajkovic and F. Luthans, “Self-efficacy and work-related performance: A meta-analysis,” Psychological Bulletin, vol. 124, no. 2, pp. 240–261, Sep. 1998, https://doi.org/10.1037/0033-2909.124.2.240.

[17] D. R. Ilgen, C. D. Fisher, and M. S. Taylor, “Consequences of individual feedback on behavior in organizations,” J. Appl. Psychol., vol. 64, no. 4, pp. 349–371, Aug. 1979, https://doi.org/10.1037/0021-9010.64.4.349.

[18] R. E. Wood and A. Bandura, “Social cognitive theory of organizational management,” Academy of Management Review, vol. 14, no. 3, pp. 361–384, Jul. 1989, https://doi.org/10.5465/AMR.1989.4279067.

[19] B. J. Zimmerman, “Self-efficacy: An essential motive to learn,” Contemporary Educational Psychology, vol. 25, no. 1, pp. 82–91, Jan. 2000, https://doi.org/10.1006/ceps.1999.1016.

[20] R. M. Klassen, “Optimism and realism: A review of self-efficacy from a cross-cultural perspective,” International Journal of Psychology, vol. 39, no. 3, pp. 205–230, 2004, https://doi.org/10.1080/00207590344000330.

[21] P. C. Earley, “Self or group? Cultural effects of training on self-efficacy and performance,” Admin. Sci. Q., vol. 39, no. 1, pp. 89–117, Mar. 1994, https://doi.org/10.2307/2393495.

[22] J. R. Hackman and G. R. Oldham, “Motivation through the design of work: Test of a theory,” Organizational Behavior and Human Performance, vol. 16, no. 2, pp. 250–279, Aug. 1976, https://doi.org/10.1016/0030-5073(76)90016-7.

[23] G. Llopis, “Why every organization needs a meaningful culture,” Forbes, Oct. 1, 2012. [Online]. Available: https://www.forbes.com/sites/glennllopis/2012/10/01/why-every-organization-needs-a-meaningful-culture/

[24] [24] D. Goleman, Emotional Intelligence: Why It Can Matter More Than IQ. New York, NY, USA: Bantam Books, 1995.

[25] E. Brynjolfsson and A. McAfee, The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies. New York, NY, USA: W. W. Norton, 2014.

[26] E. A. Locke, “The nature and causes of job satisfaction,” in Handbook of Industrial and Organizational Psychology, M. D. Dunnette, Ed. Chicago, IL, USA: Rand McNally, 1976, pp. 1297–1349.

[27] J. S. Adams, “Inequity in social exchange,” in Advances in Experimental Social Psychology, vol. 2, L. Berkowitz, Ed. New York, NY, USA: Academic Press, 1965, pp. 267–299, https://doi.org/10.1016/S0065-2601(08)60108-2.

[28] G. S. Becker, Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education. Chicago, IL, USA: Univ. Chicago Press, 1993, ISBN 978-0-226-04119-3.

[29] K. Chandrasekar, “Workplace environment and its impact on organisational performance,” Int. J. Enterp. Comput. Bus. Syst., vol. 1, no. 1, 2011, https://doi.org/10.1109/icwes.2006.18.

[30] B. M. Bass, “From transactional to transformational leadership: Learning to share the vision,” Organizational Dynamics, vol. 18, no. 3, pp. 19–31, Winter 1990, https://doi.org/10.1016/0090-2616(90)90061-S.

[31] D. S. Chiaburu and D. A. Harrison, “Do peers make the place? Conceptual synthesis and meta-analysis of coworker effects on perceptions, attitudes, OCBs, and performance,” J. Appl. Psychol., vol. 93, no. 5, pp. 1082–1103, Sep. 2008, https://doi.org/10.1037/0021-9010.93.5.1082.

[32] E. Brynjolfsson and L. M. Hitt, “Beyond computation: Information technology, organizational transformation and business performance,” Journal of Economic Perspectives, vol. 14, no. 4, pp. 23–48, 2000, https://doi.org/10.1257/jep.14.4.23.

[33] J. H. Greenhaus and N. J. Beutell, “Sources of conflict between work and family roles,” Academy of Management Review, vol. 10, no. 1, pp. 76–88, Jan. 1985, https://doi.org/10.5465/AMR.1985.4277352.

[34] D. R. Denison, Corporate Culture and Organizational Effectiveness. New York, NY, USA: John Wiley & Sons, 1990, ISBN 978-0-471-62800-0.

[35] A. Bandura, “Self-efficacy: Toward a unifying theory of behavioral change,” Psychological Review, vol. 84, no. 2, pp. 191–215, 1977, https://doi.org/10.1037/0033-295X.84.2.191.

[36] T. A. Judge and J. E. Bono, “Relationship of core self-evaluations traits—self-esteem, generalized self-efficacy, locus of control, and emotional stability—with job satisfaction and job performance: A meta-analysis,” J. Appl. Psychol., vol. 86, no. 1, pp. 80–92, Feb. 2001, https://doi.org/10.1037/0021-9010.86.1.80.

[37] A. Bandura and E. A. Locke, “Negative self-efficacy and goal effects revisited,” J. Appl. Psychol., vol. 88, no. 1, pp. 87–99, 2003, https://doi.org/10.1037/0021-9010.88.1.87.

[38] G. Chen, S. M. Gully, and D. Eden, “Validation of a New General Self-Efficacy Scale,” Organ. Res. Methods, vol. 4, no. 1, pp. 62–83, Jan. 2001, https://doi.org/10.1177/109442810141004.

[39] F. Luthans, B. J. Avolio, J. B. Avey, and S. M. Norman, “Positive Psychological Capital: Measurement and Relationship with Performance and Satisfaction,” Personnel Psychol., vol. 60, no. 3, pp. 541–572, Sep. 2007, https://doi.org/10.1111/j.1744-6570.2007.00083.x.

[40] F. Pajares, “Self-efficacy beliefs in academic settings,” Rev. Educ. Res., vol. 66, no. 4, pp. 543–578, 1996, https://doi.org/10.3102/00346543066004543.

[41] L. Rhoades and R. Eisenberger, “Perceived organizational support: A review of the literature,” J. Appl. Psychol., vol. 87, no. 4, pp. 698–714, Aug. 2002, https://doi.org/10.1037/0021-9010.87.4.698.

[42] P. D. Allison, Missing Data, vol. 136. Thousand Oaks, CA, USA: Sage Publications, 2001, https://doi.org/10.4135/9781412985079.

[43] J. Osborne and A. Overbay, “The power of outliers (and why researchers should always check for them),” Pract. Assess. Res. Eval., vol. 9, no. 1, pp. 1–12, 2004, https://doi.org/10.7275/qf69-7k43.

[44] J. H. Zar, Biostatistical Analysis, 4th ed. Upper Saddle River, NJ, USA: Prentice-Hall, 1999.

[45] C. Dancey and J. Reidy, Statistics Without Maths for Psychology, 7th ed. Harlow, U.K.: Pearson, 2017.

[46] E. L. Deci, R. Koestner, and R. M. Ryan, “A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation,” Psychological Bulletin, vol. 125, no. 6, pp. 627–668, Nov. 1999, https://doi.org/10.1037/0033-2909.125.6.627.

[47] S. Kerr, “On the folly of rewarding A, while hoping for B,” Acad. Manag. Exec., vol. 9, no. 1, pp. 7–14, Feb. 1995, https://doi.org/10.5465/ame.1995.9503143160.

[48] R. M. Ryan and E. L. Deci, “Intrinsic and extrinsic motivations: Classic definitions and new directions,” Contemporary Educational Psychology, vol. 25, no. 1, pp. 54–67, Jan. 2000, https://doi.org/10.1006/ceps.1999.1020.

[49] R. M. Yerkes and J. D. Dodson, “The relation of strength of stimulus to rapidity of habit-formation,” Journal of Comparative Neurology and Psychology, vol. 18, no. 5, pp. 459–482, 1908, https://doi.org/10.1002/cne.920180503.

[50] E. S. Bernstein and S. Turban, “The impact of the ‘open’ workspace on human collaboration,” Philosophical Transactions of the Royal Society B: Biological Sciences, vol. 373, no. 1753, Art. no. 20170239, 2018, https://doi.org/10.1098/rstb.2017.0239.

[51] A. Field, Discovering Statistics Using SPSS, 5th ed. London, U.K.: Sage, 2017, ISBN 978-1-5264-1952-1.

[52] F. Luthans, C. M. Youssef, and B. J. Avolio, Psychological Capital: Developing the Human Competitive Edge. Oxford, U.K.: Oxford Univ. Press, 2008, https://doi.org/10.1093/acprof:oso/9780195187526.001.0001.

[53] I. T. Jolliffe, Principal Component Analysis, 2nd ed. New York, NY, USA: Springer, 2002, https://doi.org/10.1007/b98835.

Appendix

An analytical survey of employee
Section A

1. Age: _____
2. Gender: Male / Female / Other
3. Education Level: _____
4. Profession/Occupation: _____
5. Tenure of service (if applicable): _____
6. Income - 20000- 50000 / 51000 – 80000 / 81000 – 100000 / 101000 and above

Section B

Please read each of the following statements carefully. These statements relate to your beliefs about your own abilities and confidence. Indicate how much you agree or disagree with each statement by selecting the option that best reflects your opinion.

For each statement in Section –B, indicate the extent to which you agree or disagree using the following scale.
1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree.
Statements

1. I feel confident in tasks where I have succeeded before.
2. Feeling calm and focused helps me believe in my capabilities.
3. I believe I can reach my goals when they are realistic and well-defined.
4. Observing role models motivates me to try harder.
5. Constructive feedback from peers or mentors improves my confidence.
6. Support from family, friends, or colleagues strengthens my belief in my abilities.
7. I feel more confident when I receive constructive performance appraisals.
8. I feel capable when the tasks I face are challenging but manageable.
9. The more I know about a subject, the more capable I feel in that area.
10. My work environment encourages me to believe in my abilities.

Section C

The following statements relate to your work practices and environment in the workplace. Please indicate the extent to which you agree or disagree with each statement based on your personal experience at work.

For each statement in Section – C, indicate the extent to which you agree or disagree using the following scale.
1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree.

Statements

11. I feel proud to work for my organization.
12. Even when faced with difficulties, I am confident in my ability to perform well.
13. Leadership in my organization encourages open communication.
14. I feel respected and valued by my peers.
15. Innovation and new ideas are encouraged here.
16. Training programs in my organization are effective and relevant.
17. I have access to the technology and tools needed to perform my job effectively.
18. My salary and benefits are equitable compared to similar jobs.
19. My physical work environment (lighting, ventilation, ergonomics) is comfortable.
20. My job rarely interferes with personal or family responsibilities.