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MODELING THE INFLUENCE OF PSYCHOLOGICAL EMPOWERMENT AND PSYCHOLOGICAL CAPITAL ON EMPLOYEE ENGAGEMENT IN AUTOMOTIVE SECTOR USING SMART PLS

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Abstract

This study investigates the impact of psychological empowerment and psychological capital on employee engagement within India's automotive manufacturing sector. A cross-sectional survey design was adopted, and data were collected from 432 employees working in various managerial positions across Mysuru and Bengaluru. Using Exploratory Factor Analysis (EFA) and Structural Equation Modeling (SEM) through SmartPLS, the study assessed the relationships among psychological constructs. The measurement model exhibited satisfactory validity and reliability with composite reliability values above 0.8 and average variance extracted (AVE) exceeding 0.5. Model fitness indices indicated an acceptable fit (SRMR = 0.0731, NFI = 0.915). The results confirmed that both psychological capital and psychological empowerment significantly and positively influence employee engagement ($p < 0.05$). These findings underscore the importance of fostering optimism, resilience, autonomy, and meaning at the workplace to enhance employee involvement and organizational effectiveness. The study provides actionable insights for practitioners to design development interventions that strengthen employees' psychological resources and engagement levels.

Keywords— Psychological Capital, Psychological Empowerment, Employee Engagement, Structural Equation Modeling, SmartPLS, Automotive Industry.

I. INTRODUCTION

Business environment currently is so coercive for the enterprise managers to focus on employees at a greater extent. Since novel approaches and challenges have become essential for the success of an organization, it is a challenging fact for the business enterprises to manage and engage their workforce. According to (Ariani, 2015), psychological perspectives have an impact on individual level of engagement, in turn to their roles and duties. There is a growing importance of psychological involvement of the workforce towards business (Dajani, 2015). (Kahn, 1990), and (Christina Maslach, 2001), models make it evident that psychological perspectives perceived by employees are essential for the engagement of workforce (Sonal Pandey, 2013).

(Kahn, 1990), opined that the employees' psychological presence is associated with self in-role behaviours; sense of security or perception of safety an individual feel for expressing themselves; exhibit courage; and with the help of all these behaviours inculcates a high degree of involvement in the assigned roles. It is noted from prior research works, there is a positive attitude of the employees who are engaged towards the organizations' overall performance (Katou, 2017) (Hansen, 2014), financial implications of the business (Demerouti, 2010), return on invested capital (Macey, 2011) and productive work of employees (Bakker, 2010). Therefore, it is imperative for the business enterprises to concentrate on the advancement of skills among the workforce; make them to be committed and engaged for a sustained performance of the business and to be competitive (Rai, 2017). More creativeness in the assigned tasks is witnessed among the engaged workforce (Mishra, 2012), always in line with performance and sometimes exceeds the expectations (Whitman DS, 2010) and has a positive focus on attaining the objectives of the organization and leading towards competitive advantage. (Bruce Louis Rich, 2010). It is evident that positive psychology has a predominant association towards the required degree of development of psychological capital in employees, that positively results in changed attitudes and behaviours of the workforce. Psychological capital of individuals is not stable but is an element that continuously develops and changes over time (Qi, 2020). As reported by (Qi, 2020), strengthening the psychological capital effectively improves individual performance and the organizational level performance.

The attributes of psychological capital: optimism, hope, resilience and efficacy together enable employees to have a positive self-image, and that influences the way in which employees view their work environment (Lim, 2019). As reported

by (Guido Alessandri and Chiara Consiglio, 2018), enormous past research works have focused on role of individual resources to predict work engagement, and there are confined works on psychological capital and engagement. Hence, the research work is an attempt to develop a new model to measure employee engagement where psychological capital is regarded to be one of the prominent enabler of employee engagement. Psychological capital is crucial in enhancing employee engagement, since employee engagement cannot be developed overnight. Employee engagement is totally influenced by the internal capability of individuals to make use of the existing resources, which helps to be engaged in work roles (Kenneth R. Thompson, 2015).

The value of psychological empowerment encourages employees to excel in their work roles and to be accountable to the assigned tasks. Psychologically empowered workforce exhibits a sense of self-efficacy, perform outstandingly and adhere to responsibilities at workplace. These attributes of an empowered employee make them engaged towards their work roles (Wahab, 2020). As reported by (Qian Meng, 2019), psychological empowerment is found to create positive mind-set among employees, enable them to be more innovative and help them to focus on contextual outcomes. A strong focus on psychological empowerment initiatives was found to improve the engagement levels among the employees (Qian Meng, 2019).

As reported by (Nguyen, 2020), although research work is limited, studies infer psychological empowerment is a potential predictor of engagement of employees. As reported by (Geetha Jose, 2014), there is limited work in the research literature to ascertain the significance of psychological empowerment on employee engagement in Indian context, which is supported and reported by (Naman Sharma, 2018). Therefore, the present research explores more about the role of empowerment on work related behaviours of the employees, psychological empowerment is considered as probable predictor of employee engagement. As inferred by (Ononye Uzoma Heman, 2024), the perceived psychological states of the workforce reflect in their immediate response and actions and are highly directed towards their engagement levels. Thus, an empirical investigation on psychological capital; psychological empowerment and their impact on employee engagement becomes essential.

1.1. Theoretical Foundation of the study

The research considers proven theories of employee engagement to assess the role of psychological conditions perceived by employees on engagement level. The variable Psychological Capital adopted in the research is based on the model developed by (Fred Luthans, 2007) built based on the theories developed by (C R Snyder 1, 1991); (Stajkovic, 1998); (Avey, 2010). The variable Psychological Empowerment is considered from the theory developed by (Thomas, 1990). Employee Engagement is considered based on theory developed by (Bruce Louis Rich, 2010) built on the theory of Employee Engagement by (Kahn, 1990). The researchers have considered the above theories and frameworks for selecting the variables; to construct the model and the instrument.

The research gaps addressed are:

a) What are the Psychological Perspectives displayed by the employees at workplace?
b) How Psychological factors perceived by employees at workplace has an association with Employee Engagement?

The research undertaken currently, is a pursuit to understand the impact of Psychological Perspectives at Workplace (Psychological Capital, Psychological Empowerment) on Employee Engagement.

Gathering the inferences through the review of prominent research works the below hypothesis were formulated.

H$_1$: Psychological Capital predominantly influences Employee Engagement.
H$_2$: Psychological Empowerment predominantly influences Employee Engagement.

RESEARCH DESIGN AND METHODOLOGY

To attain the research objectives, survey method was incorporated since it enables to gather the required information and examine the set hypothesis. The workforce employed in automobile manufacturing industries were considered as sample for the study. Responses for the survey instrument were obtained from the workforce in Mysore and Bengaluru region. Google forms was used as a media through online survey method to gather the data. In total 432 responses were gathered and employed for data analysis.

2.1 Research Scope

The study is constricted to automobile manufacturing industries in Mysore and Bengaluru region. Employees working in various managerial positions were considered to elucidate the responses of the study.

2.2 Measures

Self-administered survey was developed for the variables identified from literature review. Psychological Perspectives at the workplace were considered in the present study were: Psychological Capital; Psychological Empowerment. Constructs of Psychological Capital (Optimism, Self-Efficacy, Hope, Resilience) with total of 24 items and constructs of Psychological Empowerment (Self-Determination, Meaning, Confidence, Impact) with 12 items were incorporated through review of literature. Employee Engagement was assessed using a 16 items scale including statements for Physical, Emotional and Cognitive Engagement. The informants were conveyed to express their viewpoints through Likert scale with values between 1 to 5, which represents strongly agree to strongly disagree. The sample items of the measurement scale are represented in Table no.

Table 1: Measurement Scale Sample Items

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Variable	Construct	Statements	Source
Psychological Capital	Hope	There are many ways to get out of the complex situations faced at workplace.	(C. R. Snyder, 1996)
		Individual work goals are pursued energetically.	
	Efficacy	Organizational members are given opportunity to represent the work area in meetings with senior management.	(Parker, 1998)
		Management supports the suggestions provided about the ways to improve the working of a particular task or activity.	
		Contributing to discussions about the organizations strategy is part of employees work.	
	Resilience	Persistence is seen among employees towards reaching organization goals.	(Gail M Wagnild, 1993)
		Accomplishment of things in career gives a proud feeling	
		Sudden changes are handled with competent behaviour.	
	Optimism	Being optimistic about the future results in positive outcomes.	(Michael F. Scheier, 1985)
		Individual efforts to complete the tasks is recognized by the organization.	
Psychological Empowerment	Meaning	The learning environment present in the organization makes the job more meaningful.	(Spreitzer, 1995)
		The job activities carried out are personally meaningful.	
	Competence	Individual's Confidence helps in better achievement of results.	
		There is self-assurance about the capabilities to perform work activities.	
	Self - Determination	Autonomy at workplace is provided to determine the ways job is been carried out.	
		The systems and processes are supportive to carry out the work effectively.	
	Impact	Individual work activities has an influence on the departmental goals.	
		Unique visioning abilities of the individuals makes a difference at the workplace.	
Employee Engagement	Cognitive Engagement	Mind will be completely focused on job at workplace	(Bruce Louis Rich, 2010); (May, 2004)
		Attention is devoted to the job activities at workplace	
	Emotional Engagement	There exists positive feeling about the job carried out.	
		There is Proud Feeling about the job performed.	
	Physical Engagement	Required efforts are put in to complete the job.	
		Various alternatives are adopted to perform well on the job assigned.	

2.3 Statistical Analysis

SPSS was incorporated to process the data gathered through the respondents. For checking the sufficiency of the responses considered KMO test was incorporated; for reducing the factor structure exploratory factor analysis was incorporated. Structural associations were evaluated using SmartPLS.

RESULTS AND DISCUSSIONS

3.1 KMO Test

Kaiser-Meyer-Olkin test checks the sufficiency of the data. The whole model's adequacy as well as individual variables can be significantly measured using KMO. For examining the collected data's adequacy separate KMO tests were performed for Psychological Capital; Psychological Empowerment and Employee Engagement.
The KMO value for Psychological Capital; Psychological Empowerment and Employee Engagement were: 0.833; 0.629 and 0.862 respectively. As opined by (Kaiser, 1974), the sample is evident to be sufficient when the KMO value is higher than 0.6, to perform factor analysis; which is also endorsed through the research studies of (Kavyashree MB, 2022). The obtained KMO values indicate the data is sufficient to perform factor analysis.

3.2 Exploratory Factor Analysis (EFA) – Psychological Capital

Varimax with Kaiser normalisation rotation and EFA were included through Principal Component Analysis (PCA) to discover the factor structure and reduction of items. The exploration for Psychological Capital derived four factors through 24 items indicating factor loadings above 0.533. The derived constructs of Psychological Capital were: Optimism, Self – Efficacy, Hope and Resilience. To determine the retrieved elements practical value, the overall variance was estimated. The total variance amounted to 62.502 % which is deemed to be accepted as per the inferences drawn from (Joseph F Hair Jr, 2010).

The exploration for Psychological Empowerment derived four factors through 12 items indicating factor loadings above 0.658%. The derived elements of Psychological Empowerment were: Self-Determination, Meaning, Confidence and Impact. The total variance amounted to 75.693% which is deemed to be accepted as per the inferences drawn from (Joseph F Hair Jr, 2010).

The exploration for Employee Engagement derived three elements through 16 items indicating factor loadings above 0.512. The elements derived were: Physical Engagement, Emotional Engagement and Cognitive Engagement. The total variance amounted to 60.848% which is deemed to be accepted as per the inferences drawn from (Joseph F Hair Jr, 2010).

3.3 Structural Equation Modelling using SmartPLS

SmartPLS is used when the data is formative, while the model of the research is elaborate and has multiple elements or model associations (Hair J.F. Risher J.J, 2019).

Construct reliability and validity were examined. When AVE (average variance extracted) exceeds 0.50, convergence validity is established. (Henseler, 2015), (Sarstedt, 2021). Cronbach's Alpha and Composite Reliability (CR) are employed to examine internal consistency (Katie Adamson, 2013). As opined by (Fornell & Larcker, 1981), Composite Reliability is known as a reliable predictor of internal consistency than Cronbach's Alpha, since it keeps the observed variables' standardised loadings. The variable's convergent validity is represented in the below table no.2.

Table 2: Reliability and Validity Statistics

Factors	Loadings	Indicator reliability	Cronbach's Alpha	rho_A	Composite Reliability	AVE
Psychological Capital						
Hope			0.691	0.691	0.866	0.764
PC_H_3	0.874	0.764				
PC_H_4	0.874	0.763				
Optimism			0.829	0.846	0.879	0.594
PC_O_3	0.841	0.707				
PC_O_4	0.715	0.511				
PC_O_6	0.796	0.633				
PC_O_7	0.719	0.516				
PC_O_9	0.774	0.6				
Resilience			0.845	0.852	0.89	0.617
PC_RE_1	0.69	0.476				
PC_RE_10	0.826	0.682				
PC_RE_11	0.768	0.59				
PC_RE_6	0.805	0.648				
PC_RE_7	0.747	0.558				
PC_RE_8	0.78	0.609				
Self-Efficacy			0.806	0.81	0.866	0.564
PC_SE_10	0.746	0.557				
PC_SE_6	0.799	0.638				
PC_SE_7	0.71	0.504				
PC_SE_8	0.802	0.643				
Psychological Empowerment						
Confidence			0.647	0.679	0.848	0.736
PE_C_1	0.816	0.665				
PE_C_4	0.898	0.807				
Impact			0.692	0.694	0.83	0.619

PE_I_1	0.781	0.611					
PE_I_2	0.811	0.657					
PE_I_4	0.767	0.589					
Meaning			0.805	0.806	0.911		0.837
PE_M_1	0.911	0.83					
PE_M_3	0.918	0.843					
Self -Determination			0.794	0.801	0.867		0.62
PE_SD_1	0.837	0.7					
PE_SD_2	0.766	0.587					
PE_SD_3	0.721	0.52					
Employee Engagement							
Cognitive engagement			0.759	0.772	0.86		0.672
EE_CE_3	0.786	0.618					
EE_CE_4	0.843	0.711					
EE_CE_5	0.829	0.688					
Emotional engagement			0.742	0.742	0.853		0.659
EE_EE_1	0.817	0.668					
EE_EE_2	0.814	0.663					
EE_EE_4	0.804	0.646					
Physical engagement			0.732	0.794	0.84		0.64
EE_PE_4	0.663	0.44					
EE_PE_5	0.873	0.761					
EE_PE_6	0.848	0.719					

From the examination it is noted that, composite reliability of the variables was above 0.8, thus crossing the minimum threshold value of 0.7 and for all the extracted variables the values of Average Variance Extracted exceeded 0.5. Therefore, convergent validity of the variables was found to be acceptable for an assessment.

3.4 Assessment of Construct Discrimination

Construct discrimination is considered to ascertain the distinctiveness of the constructs in the research. Fornell-Larcker Criterion of Smart PLS was considered to anlayse the construct discrimination of the variables. The findings are represented in the below table no. 3.

Table 3: Fornell-Larcker Test

Hypothesized Path	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Cognitive engagement (1)	0.82										
Confidence (2)	0.307	0.858									
Emotional engagement (3)	0.352	0.395	0.812								
Hope (4)	0.162	0.366	0.484	0.874							
Impact (5)	0.314	0.778	0.419	0.442	0.787						
Meaning (6)	0.031	0.377	0.328	0.364	0.403	0.915					
Optimism (7)	0.274	0.361	0.576	0.615	0.382	0.351	0.77				

Physical engagement (8)	0.696	0.292	0.328	0.18	0.293	0.14	0.247	0.8		
Resilience (9)	0.311	0.493	0.454	0.479	0.512	0.223	0.647	0.266	0.786	
Self-Efficacy (10)	0.239	0.506	0.579	0.598	0.565	0.436	0.687	0.156	0.763	0.751
Self-determination(11)	0.304	0.487	0.562	0.412	0.587	0.484	0.584	0.266	0.476	0.648

Assessment of Convergent as well as Discriminant Validity infers the suggested conceptual model was determined to be suitable.

3.5 Evaluation of Model Fitness
Evaluation of model fitness was ascertained through the predictive capability of the model and the relatedness amongst the elements, Coefficient of determination (R^2), Path Coefficient values, T-statistic value, predictive capability of the model and Goodness of Fit Index.

3.6 Coefficient of Determination
The coefficient of determination quantifies both the effect size and the variance explained. Predictive capability of the research model can be assessed through coefficient of determination (Shahid Hussain, 2018).

R^2 value of 0.75 is regarded to be substantial as per the inferences drawn from (Hair, Ringle, & Sarstedt, 2013). The analysis resulted in R^2 values of 0.939 for Employee Engagement; 0.992 for Psychological Capital and 0.995 for Psychological Empowerment, respectively.

Therefore, the R^2 values obtained in the current study were substantial.

3.7 Predictive Relevance of the First Order Model
When Q^2 estimation is higher than zero, it infers, the construct has predictive accuracy to the model (Hair J. H., 2017). From the below figure no. 1 on predictive accuracy of the research model we can observe the Q^2 estimation is 0.467, 0.434 and 0.392 respectively which is above zero, thus proving the predictive accuracy of the research model.
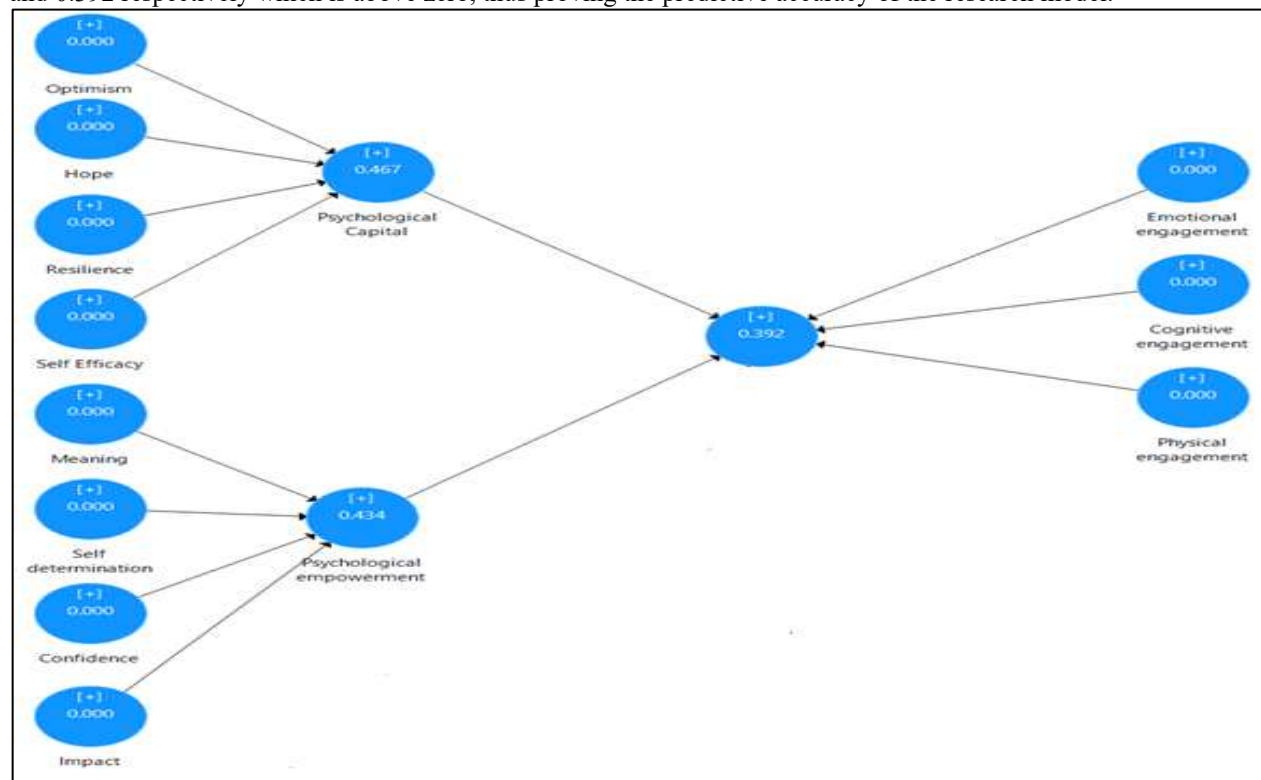

Figure 1: Predictive Accuracy - First Order Model

3.8 Predictive Relevance of Second Order Model
When the Q^2 estimation is higher than zero, it infers, the construct has predictive accuracy to the model (Hair J. H., 2017). From the below figure no. 2 on predictive relevance of the second order model we can observe the Q^2 estimation is 0.331 which is above zero, thus proving the predictive accuracy of the model.
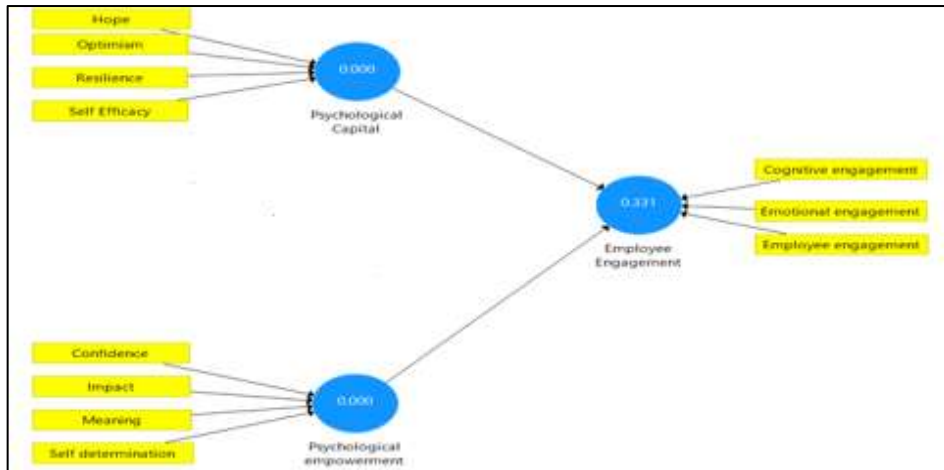
Figure 2: Predictive Accuracy of Second Order Model

3.9 Model Fit Assessment Statistics

The standardised residuals between the covariance matrices that were observed and those that were hypothesised are measured by an index called Standardized Root Mean Square (SRMR) (Chen, 2007). As per the reports of (Hu & Bentler, 1998), when SRMR is less than 0.08 it infers a better model fit. In the current examination, the SRMR value obtained was 0.07, thus inferring a good model fit. Chi Square value obtained was 1695.326 and Normed Fit Index[NFI]obtained was 0.915 respectively.

Table 4: Model Fit Metrics

Fit Index	Saturated Model	Estimated Model	Acceptable Threshold	Interpretation
Standardized Root Mean Square Residual (SRMR)	0.060	0.0731	< 0.08	Acceptable model fit
d_ULS (Unweighted Least Squares Discrepancy)	0.892	0.983	—	Within acceptable range
d_G (Geodesic Discrepancy)	0.545	0.468	—	Within acceptable range
Chi-Square (χ^2)	1586.325	1695.326	—	Adequate model correspondence
Normed Fit Index (NFI)	0.986	0.915	≥ 0.90	Good model fit

3.10 Structural Model of Second Order Model

The associations between latent variables are represented by the structural model. The structural model represented below implies the factors employed in the study have a significant association.
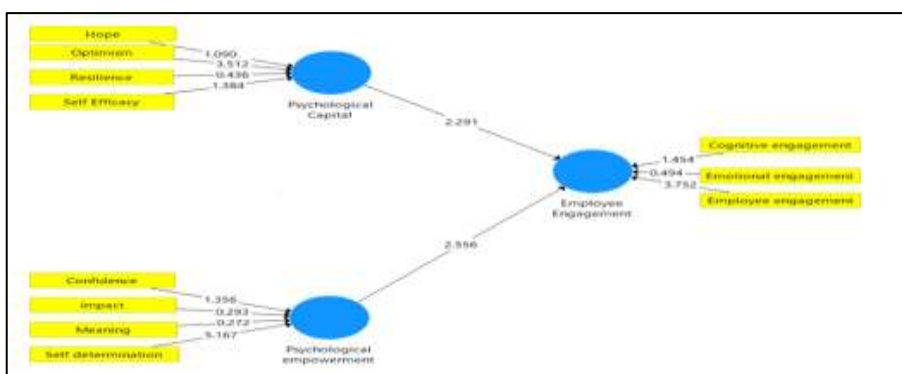

Figure 3: Structural Model of Second Order Model

The P values in the path coefficient analysis should be less than 0.05, for the hypothesis to be accepted (Kock, 2016). The below table no. 5 indicates that the 'p' estimation obtained are 0.022 and 0.011 respectively. Therefore, the alternate hypotheses of the present research:

Hypothesis 1: Psychological Capital predominantly influences Employee Engagement, and

Hypothesis 2: Psychological Empowerment predominantly influences Employee Engagement, are accepted

Table 5: Structural Model Path Coefficients

Hypothesized Path	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T-Statistic	P-Value
Psychological Capital → Employee Engagement	0.243	0.267	0.106	2.291	0.022
Psychological Empowerment → Employee Engagement	0.277	0.293	0.108	2.556	0.011

For the purpose of assessing the survey instruments validity, EFA was performed to minimize the factors. Psychological Capital derived four factors from 24 factors with loadings above 0.533. The extracted constructs of Psychological Capital were: Optimism, Self – Efficacy, Hope and Resilience. Psychological empowerment resulted in 12 factors with loadings above 0.658. The extracted elements of Psychological Empowerment were: Self-Determination, Meaning, Confidence and Impact. PLS – SEM was incorporated to confirm the research model. The fit indices values were in the estimated threshold and the instrument was to be valid as per the inferences of (Hair J. H., 2017). For assessing the impact of Psychological Perspectives on Employee Engagement, PLS - SEM and Path Analysis Statistics were incorporated. The results of the research confirm that Psychological Capital and Psychological Empowerment exert a predominant impact on Employee Engagement.

CONCLUSION

The current research assessed the impact of Psychological Perspectives at workplace: Psychological Capital and Psychological Empowerment on Employee Engagement. The research findings were reliable to know the Psychological Capital; Psychological Empowerment were predominantly related to Employee Engagement. The research results are in support with the works of (Bongani Ngwenya, 2020), (Ang Magdalene Chooi, 2018), (Daniel Moura, 2014), (Geetha Jose, 2014) (Aakanksha Kataria, 2013), (Bhatnagar, 2012) and (Avey, 2010), that Psychological Capital and Psychological Empowerment have predominant impact on Employee Engagement. The focal point of the research is on the significance of Psychological Perspectives of Employee Engagement.

a. Practical Implications

The research has implications for theory and practice. Firstly, the research provides a enhanced understanding of the psychological factors promoting employee engagement at workplace. Employee's psychological capital and perceived psychological empowerment at workplace has profound implications on organization success and enhanced employee engagement. Secondly, the research infers insights to the design of interventions promoting employee engagement. The research provides implications to the business managers to foster a culture of psychological empowerment and psychological capital at workplace, thus creating a positive work environment. Further, the research results assist business managers in developing interventions to enhance employee engagement through psychological capital of employees and fostering psychological empowerment at workplace.

b. Study Constraints and Scope for Further Investigation

The results of the present work cannot be generalized to other regions as well as business sectors. Future prominent works can give attention to other relevant Psychological Perspectives which are highly important at workplace like Psychological Wellbeing, Psychological Contract, Psychological Agreement which are not focused as a part of the present research. Future research works in the area can work towards developing a viable model of employee engagement considering psychological factors at workplace.

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