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Psychological capital of engineering students in relation to their type of engineering stream

M Kavitha and Dr. Nitisha Singh

Abstract

This research focuses on examining the psychological capital of 900 engineering students in relation to their chosen engineering streams. Adopting a descriptive research method, the study utilized a sample drawn from various research institutes within a delimited area. The psychological capital assessment scale developed by R. Rani and M. Choudhary was employed to measure self-efficacy, optimism, hope, and resilience among the participants. Both descriptive and comparative analyses were employed to scrutinize the data. The findings of the study suggest that there is no significant difference in the psychological capital among students from diverse engineering streams. The lack of substantial distinctions implies that the impact of the type of engineering stream on psychological capital is not significant. This conclusion underscores the resilience and psychological well-being of engineering students irrespective of their chosen discipline, highlighting the need for holistic support and interventions that address common psychological factors across various engineering fields. The insights from this research contribute to our understanding of the psychological dynamics within the engineering education landscape and can inform educators, counsellors, and policymakers in developing strategies to enhance the overall well-being of engineering students.

Keywords: Psychological capital, type of engineering, students

1. Introduction

The psychological capital of individuals, encompassing elements such as self-efficacy, optimism, hope, and resilience, plays a pivotal role in shaping one's overall well-being and performance. In the context of engineering students, understanding the psychological capital they possess is crucial, particularly when considering potential variations based on their chosen engineering stream. Engineering disciplines vary significantly in their focus, demands, and challenges, and it is essential to explore how students in different engineering streams may exhibit distinct psychological capital characteristics. This study aims to investigate the psychological capital of engineering students and its relationship to their chosen engineering stream. By examining the interplay between psychological capital and specific engineering disciplines, we seek to uncover potential nuances that could impact students' academic achievements, career aspirations, and overall psychological well-being. Exploring psychological capital in relation to engineering streams can provide valuable insights for educators, counsellors, and policymakers. Recognizing the unique psychological demands and strengths associated with different engineering fields can inform the development of targeted interventions and support systems tailored to meet the specific needs of students within each discipline. Furthermore, understanding how psychological capital influences students' perceptions of their capabilities, levels of optimism, and resilience in the face of challenges can contribute to the enhancement of educational strategies within the engineering education landscape. As we embark on this investigation, our goal is to contribute to the ongoing dialogue surrounding the holistic development of engineering students, acknowledging the role of psychological capital in shaping their academic journey and future professional endeavours within the diverse landscape of engineering disciplines.

Statement of the problem

The statement of the research problem is reported as under:

“Psychological Capital of engineering students in relation to their type of engineering stream”

Objectives: The purpose of this study are as under:

1. To explore the psychological capital of students in relation to their type of engineering stream.

Hypothesis

Based on richness background of the knowledge the investigator speculated the research problem as under:

- 1. There will be no significant difference among engineering students on the basis of their psychological capital.

Delimitation

The study has been delimited as under:

- The present research has been confined to 900 engineering students only.
- The present research will be surrounded to enjoining students of three branches only viz. computer science engineering, electronics and communication engineering and civil engineering students only.
- The present study has delimited to Chengalpattu district of Tamil Nadu

- **Data collection:** The researcher has selected the 900 respondents from the different research institutes of the delimited area.
- **Sampling technique:** In stratified random sampling, a investigator divides the people into strata based on a typical known from preceding investigation or philosophies to be related to the marvel under investigation and then draws a random number of units from each of the smaller homogenous groups within each stratum.
- **Research tool:** The researcher employed the psychological capital assessment scale developed by R. Rani and M. Choudhary.

Methodology and procedure

The methodology and procedure involved in this research study is given as under:

- **Design:** Descriptive research method has been used by the researcher to carry this research process.

Statistical treatment

The collected data was put to suitable statistical treatment by one-way ANNOVA

Analysis and interpretation of the data

The data has been analysed with the help of descriptive and comparative analysis. The detailed analysis and interpretation are reported as under:

Table 1: Indicating the prevalence of the psychological capital among computer engineering, electronics and communication engineering and civil engineering students in consonance to the norms of the scale. (N=450 each).

Ratings	CSE		E&CE		CE	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
EHPC	4.00	1.333	4.00	1.333	4.00	1.3333
HPC	14.00	4.67	14.00	4.68	15.00	5.00
AAPC	24.00	8.00	23.00	7.666	23.00	7.6666
MPC	107.00	35.666	107.00	35.66	106.00	35.334
BAPC	20.00	6.665	20.00	6.665	20.00	6.6661
LPC	123.00	41	124.00	41.33	123.00	41.00
ELPC	8	2.666	8	2.666	9	3
Total	300	100	300	100	300	100

Index:

- CE= Civil engineering Students
- CSE= Computer Science I engineering Students
- E&CE= Electric and communication engineering Students
- EHPC= Extreme high psychological capital
- HPC= High psychological capital
- AAHPC= Above average psychological capital
- MPC= Moderate psychological capital
- BAPC= Below Average psychological capital
- LPC= Low psychological capital
- ELPC= Extreme Low psychological capital

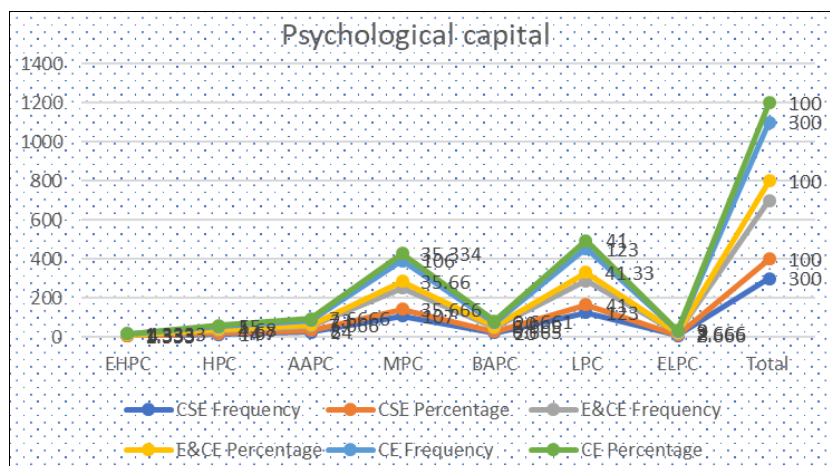


Fig 1.1: Graphical representation indicating the prevalence of the psychological capital among computer engineering, electronics and communication engineering and civil engineering students in consonance to the norms of the scale. (N=450 each)

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In the above itemised table, (Kindly consult Table 1) the researcher has enumerated the descriptive analysis of the trifurcated category of the respondents (computer science engineering students, electric and communication engineering students and civil engineering students) in consonance to the norms of the psychological capital scale. It is highly pertinent to mention here that the composite group of the sample has been trifurcated with regard to their subject stream in their engineering domain. Accordingly, the intention behind This descriptive analysis is to examine the variation showed by the participants on the basis of their psychological capital. The gained results reveal that among male engineering students 1.3333% (Frequency = 4.00) were observed with extreme high psychological capital. Therefore, it can be here generalised that a meagre quantity of the respondents was seen holding the excellent psychological capital in their cognitive profile. In addition to this, in the same treatment, among computer science engineering aspirants 1.33% (frequency = 4.00) were observed high psychological capital in the cognitive behavioural structure. The perusal of the attained results justifies that 4.67% (Frequency=14.00) computer science engineering aspirants were detected with above average psychological capital. However, 8.00% (Frequency= 24.00) computer science engineering aspirants were seen with moderate psychological capital in their behaviour. It is pertinent to note here that on the same rating maximum respondents were seen involved in moderate level of psychological capital. Nonetheless, 35.666 (F=107.00) computer science engineering aspirants engineering aspirants were seen with below average psychological capital. Taking the above attained results under cognisance, it can be stated that 41.00% (Frequency = 123.00) computer science engineering aspirants were found with low prevalence of psychological capital.

On the concluding level. It can be stated that the 2.6666% (Frequency = 8.000) computer science engineering aspirants were found with extreme low psychological capital in their behaviour.

Going toward the electronics and communication engineering students, the gained results reveal that among female engineering students 0.444444% (frequency= 2.00) were observed with extreme high psychological capital. Besides, in the same treatment, among electronics and communication engineering students 0.66666% (frequency= 3.00) were observed high psychological capital. The perusal of the attained results justifies that 4.444444% (Frequency=20.00) were detected with above average psychological capital. However, 2.2222% (Frequency= 10.00) were seen with moderate psychological capital in their behaviour. Though, 8.8888 (F=40.00) electronics and communication engineering aspirants were seen with below average psychological capital. Taking the above attained results under cognisance, it can be stated that 360.00% (Frequency=80.00) electronics and communication engineering aspirants were found with low prevalence of psychological capital. On the concluding level. It can be stated that the 3.333333% (Frequency=15.00) electronics and communication engineering aspirants were found with extreme low psychological capital in their behaviour.

As mentioned earlier, the trifurcated categories have been analysed in the above table on the basis of the descriptive analysis in consonance to norms of the psychological capital scale. Going toward the civil engineering students, the gained results reveal that among civil engineering students 1.3333% (frequency= 4.00) were observed with extreme high psychological capital. Besides, in the same treatment, among civil engineering students 5.000% (Frequency= 15.00) were observed high psychological capital. The examination of the attained results justifies that 7.6666% (Frequency=23.00) were detected with above average psychological capital. However, 35.334% (Frequency= 106.00) were seen with moderate psychological capital in their behaviour. Though, 6.6661 (F=20.00) electronics and communication engineering aspirants were seen with below average psychological capital. Taking the above attained results under cognisance, it can be stated that 41.00% (Frequency=123.00) electronics and communication engineering aspirants were found with low prevalence of psychological capital. On the concluding level, it can be stated that the 3.00% (Frequency=9.00) civil engineering aspirants were found with extreme low psychological capital in their behaviour.

Table 2: Showing the analysis of the variance contributed by the respondents on the basis of type of engineering stream. (BN=900)

Psychological capital	Sum of Squares	DF	Mean Square	F	P-value
Between Groups	208.107	2	104.053	0.122	0.886**
Within Groups	768005.053	897	856.193		
Total	768213.160	899			

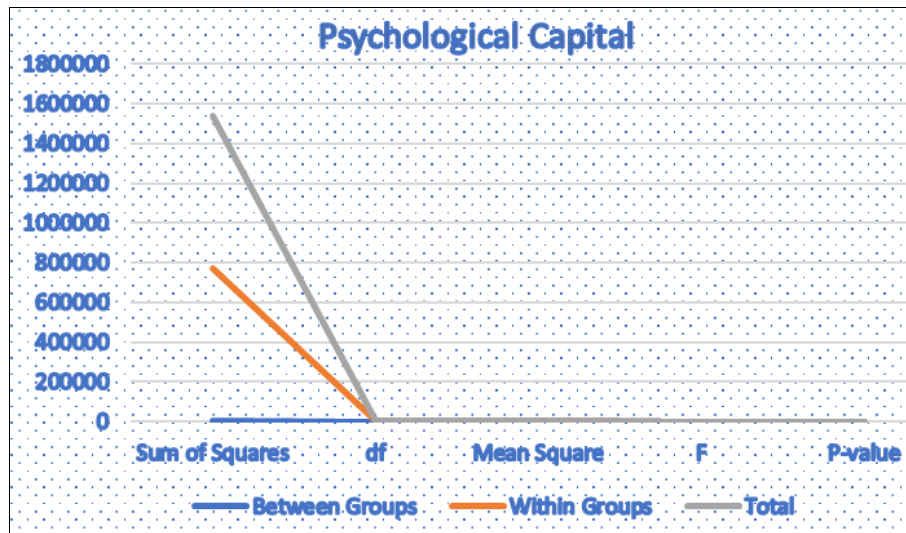


Fig 1.2: Displaying the graphical representation of the trifurcated respondents on the basis of their psychological capital

The results detonated in the above given table (Please see table 8, Fig. 8) provides the detailed analysis about the variance contributed the respondents the basis of the one-way ANOVA. It is relevant to reference here that the perusal of the results indicates that the sum of squares among the groups has been seen 208.107 and the sum of squares within the groups has been seen 768005.053. The 'P' value 0.886 is not important at 0.05 level of the importance. Consequently, it can be stated that the impact of the type of the type stream is not significant on the mental assets of the engineering pupils. In view of the attained results, the rank of the theory is given as under:

Conclusion

The researcher concluded that there exists significant difference between the male and female students on the abasis of their psychological capital. Male students were seen with more psychological capital as compared to female students.

Competing interest

The research declared that no potential if interest with respect to authorship, research and publication of this article.

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