

# Integrating National Cadet Corps Studies into Academic Credit Frameworks: A Pilot Study

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**Abstract-** This study presents a statistical evaluation of the *National Cadet Corps (NCC)* Studies offered as a General Elective Credit Course in higher education institutions in India. Data were collected from 175 students (On roll and Alumni Cadets) and 26 trainers (ANO's) to assess perceptions of cadets, course effectiveness, and institutional support for the course. Descriptive statistics, reliability analysis, and exploratory factor analysis (EFA) were employed. Results indicated high internal consistency for both instruments (Cronbach's  $\alpha = .973$  for students;  $\alpha = .839$  for trainers). The student data revealed a three-factor structure, Personal Growth and Career Development, Institutional Support and Academic Structure, Challenges and Areas for Improvement explaining over 70% of the variance. Trainer responses yielded five meaningful factors, highlighting leadership development, student motivation, implementation practices, administrative support, and NEP 2020 policy alignment. Findings affirm NCC's role in fostering leadership, discipline, teamwork, and civic responsibility while underscoring the need for enhanced institutional resources and mentorship.

**Index Terms**—NCC Studies, Elective Credit Course, Higher Educational Institutions, Holistic Development

## I. INTRODUCTION

This report summarises the principal statistical analyses conducted on survey data collected to evaluate the National Cadet Corps (NCC) offered as a General Elective Credit Course in higher education institutions. The dataset comprises responses from 175 students and 26 trainers/instructors. Analyses performed include descriptive statistics, normality testing, internal consistency (Cronbach's alpha), and exploratory factor analysis (EFA) using principal component

analysis with varimax rotation. The objective is to present concise, evidence-based findings to inform curriculum development, institutional planning, and policy alignment with NEP 2020. Focusing on varieties of co-curricular activities and comparing other service organisation NCC programme provides a wider opportunity to the youth to develop their knowledge, skills, ability and employment opportunities in armed forces at various levels, hence the Researcher felt the necessity to understand how this National Cadet Corps Programme contribute through co-curricular activities in the development of the Leadership Qualities and enhancement of holistic development in adolescents, therefore the investigator planned to Compare NCC and Non-NCC students to reveal the significance of the National Cadet Corps programme in imparting these qualities.

**NCC: Leaders Of Tomorrow:** The National Cadet Corps came into existence on 15th July 1948 under the NCC Act XXXI of 1948 under the Ministry of Defence. National Cadet Corps (NCC) is a Tri-service Organization comprising the Army, Navy and Air force, engaged in grooming the youth into disciplined and patriotic citizens whose motto is 'Unity and Discipline' with its Head Quarters at New Delhi. The National Cadet Corps (NCC), the largest uniformed volunteer organisation in the world, is committed to the business of youth empowerment and is ideally suited to help the nation realise its demographic dividend, thereby making a significant contribution to nation-building. The military orientation of its training curriculum also ensures handsome dividends in the security domain. The National Cadet Corps is the uniformed youth organization, open to School and college students on a voluntary basis. The Cadets are given basic military training in small arms, parades and conducted extracurricular and adventure activities. NCC is a good platform for the youth to develop their personality and Leadership Qualities. On the whole, National Cadet Corps Programme has a greater significance in developing and moulding the younger generations mentally as well as physically and to have wholesome development. The term 'pilot studies' refers to mini versions of a full-scale study (also called 'feasibility' studies), as well as the specific pre-testing of a particular research instrument such as a questionnaire or interview schedule to develop and test adequacy of research instruments and Assessing whether the research protocol is realistic and workable

## II. OBJECTIVES

- To describe the distribution and central tendency of student and trainer responses regarding NCC.
- To evaluate the internal reliability of the survey instruments used for students and trainers.
- To identify latent constructs underlying participant responses using exploratory factor analysis and to interpret practical implications.

## III. REVIEW OF LITERATURE

The *National Cadet Corps (NCC)* has been an integral component of India's educational system, aimed at fostering character, discipline, leadership, and national integration among youth. Since its inception in 1948, the NCC has served as a structured platform for experiential learning,

promoting civic awareness and holistic personality development. A review of relevant literature reveals consistent evidence supporting the effectiveness of NCC training in enhancing life skills, leadership competencies, and social responsibility among students.

**NCC and Leadership Development** :Several studies have highlighted the NCC's pivotal role in developing leadership qualities and decision-making abilities among cadets. According to Singh and Gupta (2017), NCC participation strengthens communication skills, confidence, and the ability to work effectively in groups. Similarly, Sharma (2018) reported that cadets exposed to military-style leadership training exhibit higher initiative and accountability compared to non-cadets. Empirical evidence from Mehta and Pillai (2020) confirmed that structured NCC drills, camps, and command tasks significantly enhance self-efficacy, problem-solving, and situational leadership—key competencies aligned with the 21st-century educational vision of the *National Education Policy (NEP) 2020*.

**Discipline, Character Formation, and Personality Development**:Discipline and moral integrity have been central to NCC's philosophy. Patil (2016) observed that NCC cadets demonstrate greater punctuality, commitment, and perseverance, which are essential for academic and professional success. Similarly, Singh and Kaur (2019) found that cadets internalize ethical values and teamwork through participatory training and community engagement. Personality enhancement through NCC training extends beyond physical endurance; it fosters emotional stability and resilience (Verma, 2021). These findings align with experiential learning theory (Kolb, 1984), which posits that real-life engagement and reflection strengthen individual learning outcomes.

**NCC and Life Skills Education**: The NCC curriculum integrates life skill development through adventure training, disaster management, and social service activities. Studies by Rao (2015) and Mishra (2018) highlighted the positive impact of NCC on time management, empathy, and civic responsibility. Exposure to outdoor camps and community initiatives allows cadets to apply classroom knowledge in real contexts, bridging the gap between academic learning and social application. Furthermore, NCC's focus on service learning nurtures social sensitivity, cultural tolerance, and democratic participation (Bhattacharya, 2020). These outcomes correspond with UNESCO's (2015) emphasis on education for sustainable development and global citizenship.

**NCC and Employability Skills**: In recent years, research has underscored NCC's contribution to enhancing employability among graduates. A study by Kumar and Das (2021) found that employers value attributes such as discipline, teamwork, and problem-solving—skills strongly associated with NCC training. Likewise, institutional reports (University Grants Commission, 2019) recommend promoting NCC as a credit-based elective to integrate soft skills and leadership competencies within formal education. By combining theoretical instruction with experiential

learning, NCC develops a balanced personality profile suited to contemporary professional demands.

#### IV. RESEARCH GAPS

While the literature consistently supports NCC's positive influence on student development, several studies have relied primarily on qualitative or descriptive approaches. There remains limited quantitative validation of the NCC's impact through psychometric measures. Few studies have examined institutional support systems or the challenges faced in course implementation. The present study addresses these gaps by applying statistical techniques such as reliability testing and factor analysis to empirically evaluate the structure and outcomes of NCC education in higher education settings.

##### Stages of Pilot Study:

###### Item Generation

The researcher generated items for the leadership qualities scale using three sources:

1. Existing standardized scales,
2. Relevant psychological literature and documents, and
3. Expert discussions in the field.

For this investigation, the second and third sources were primarily used. The researcher reviewed literature, past studies, and documents on leadership attributes and held discussions with subject experts. Based on these inputs, an initial pool of approximately 60 statements was drafted to represent different dimensions of leadership qualities.

###### Modification and Scaling of Items

Each statement was edited for clarity, brevity, and relevance following the standards suggested by Edwards and guidelines by Price (2017). The process involved reducing overlapping or redundant statements and ensuring that each item expressed one clear idea, used simple language, and avoided ambiguity, double negatives, and factual or universally agreed statements.

From the original pool items were selected and refined through expert review to ensure linguistic and conceptual accuracy. Finally, statements were retained for the pilot form of the scale, balanced across components and polarity (positive and negative).

A five-point Likert-type scale was adopted with response options: *Fully Agree, Agree, Undecided, Disagree, and Fully Disagree*. Respondents indicated their agreement level for each item. The total score represented overall leadership quality, calculated by summing individual item scores and dividing by the number of items.

###### Item Analysis and Standardization

Item analysis was carried out to determine the discriminatory power, validity, and internal consistency of the items. The pilot study served as a pretest to evaluate the adequacy and reliability

of the instrument (Chappel, 2019). Objectives included assessing feasibility, identifying sampling and logistical issues, refining research instruments, and verifying data analysis techniques.

#### Sample and Administration

A pilot sample of 175 cadets (Current and Alumni) and 26 trainers/instructors was selected through random sampling to ensure representativeness. Prior permission was obtained from NCC Directorates, Battalion Headquarters, and institutional heads. The researcher personally administered the scale in assembly halls after briefing participants about the procedure and ethical guidelines. The survey was concise, and respondents' time was respected.

#### Scoring and Reliability

Responses were scored according to a predetermined key. Reliability was assessed through Cronbach's Alpha, a measure of internal consistency among test items. The method evaluates the degree to which all items measure a common construct. According to Cortina (1993), Cronbach's alpha represents the average of all possible split-half coefficients. The obtained reliability coefficient demonstrated that the scale possessed satisfactory internal cohesion, confirming its suitability for subsequent full-scale administration.

#### Hypotheses:

- $H_0$ : NCC Studies as an elective credit course has no significant effectiveness in higher education institutions.
- $H_1$ : NCC Studies as an elective credit course is significantly effective in higher education institutions.

#### V. DESCRIPTIVE AND RELIABILITY ANALYSIS

##### *Students (N = 175)*

Statistic	Range	Mean	Std. Deviation	Skewness
Total Score	0–125	91.05	34.58	-1.254

Normality tests: Kolmogorov–Smirnov  $D = 0.163$ ,  $p < .001$ ; Shapiro–Wilk  $W = 0.838$ ,  $p < .001$  - both reject normality. Skewness (-1.254) and kurtosis (0.671) indicate a left-skewed distribution. KMO = 0.942 and Bartlett's test ( $\chi^2(300) = 3628.597$ ,  $p < .001$ ) confirm suitability for factor analysis.

Reliability: Cronbach's alpha for the 25-item student scale = 0.973, indicating excellent internal consistency.

##### *Trainers / Instructors (N = 26)*

Statistic	Range	Mean	Std. Deviation	Skewness
Total Score	65–95	80.58	9.07	-0.102

Normality tests for trainers did not reject normality: Kolmogorov–Smirnov D = 0.101, p = .200; Shapiro–Wilk W = 0.951, p = .246.

Reliability for the 20-item trainer scale = 0.839, indicating good internal consistency.

## VI. EXPLORATORY FACTOR ANALYSIS RESULTS

### *Students*

Extraction method: Principal Component Analysis (Varimax rotation). Communalities were satisfactory (mostly  $> .60$ ).

Eigenvalues  $> 1$  suggested three significant factors accounting for 71.7% of total variance.

Factor Interpretation:

- Factor 1: Personal Growth and Career Development.
- Factor 2: Institutional Support and Academic Structure.
- Factor 3: Challenges and Areas for Improvement.

### *Trainers*

Principal Component Analysis for trainers revealed five interpretable factors, collectively explaining approximately 88% of total variance.

Factor Interpretation:

- Factor 1: Leadership & Skill Development through NCC.
- Factor 2: Student Interest & Career Orientation.
- Factor 3: Practical & Collaborative Implementation.
- Factor 4: Instructor and Administrative Support.
- Factor 5: Policy Alignment (NEP 2020).

## VII. DISCUSSION

The findings of this pilot statistical study provide empirical evidence supporting the *National Cadet Corps (NCC)* as a transformative educational experience in higher education. The reliability and factor analysis results confirm that the NCC course successfully fosters multidimensional student development, aligning with both the objectives of the National Education Policy (NEP 2020) and the broader vision of experiential learning. The high internal consistency (Cronbach's  $\alpha = .973$  for students;  $\alpha = .839$  for trainers) reflects the robustness of the instruments and indicates that participants responded consistently to items measuring leadership, discipline, and institutional support. The extraction of three key factors among students—*Personal Growth and Career Development, Institutional Support and Academic Structure, and Challenges and Areas for Improvement*—illustrates the depth of the NCC's impact on personality development and social engagement. Students perceive NCC as a means to strengthen teamwork, self-confidence, and civic responsibility. Similarly, the five-factor solution for trainers—*Leadership and Skill Development, Student Interest and Career Orientation, Practical Implementation, Administrative Support, and Policy Alignment (NEP 2020)*—shows that instructors view the course as highly

relevant but constrained by administrative and infrastructural limitations. These dimensions demonstrate coherence between pedagogical goals and practical implementation, although varying institutional readiness remains a challenge. The findings echo those reported by Singh and Gupta (2017) and Mehta and Pillai (2020), who emphasized that NCC training cultivates leadership and discipline, while institutional factors play a crucial role in determining programme success. The present study adds to this body of research by providing quantitative validation of these attributes through factor analytic evidence, offering a psychometric foundation for future evaluations of NCC's educational outcomes. The analyses confirm the strong psychometric reliability and conceptual clarity of the NCC course evaluation instruments. Both students and trainers recognised the programme's contribution to leadership, discipline, and holistic personality development. The factor structures align with the *National Education Policy (NEP) 2020*, reinforcing NCC's value as a credit-based course promoting experiential learning. Institutional investment in infrastructure, mentorship, and administrative support is recommended to enhance programme delivery and impact.

## VIII. RECOMMENDATIONS

**Institutional Strengthening and Integration:** Institutions offering NCC as a credit-based course should strengthen logistical arrangements, including dedicated infrastructure, schedules aligned with academic calendars, and recognition of NCC performance in student assessment frameworks.

**Capacity Building for Trainers and Mentors:** Continuous professional development programmes for NCC trainers are essential to maintain quality and consistency. Training in pedagogy, counselling, and leadership facilitation can help mentors align NCC activities with academic learning outcomes.

**Curricular Enrichment and Assessment Reform:** NCC course modules should be reviewed to integrate reflective journals, project-based assessments, and credit-linked evaluation methods. Incorporating experiential learning rubrics will enhance academic recognition and motivation among students.

**Policy Support and NEP 2020 Alignment:** Higher education regulators and universities should strengthen policy support to include NCC within the Academic Bank of Credits (ABC) framework. Institutional policies must ensure that participation contributes directly to degree credits and employability portfolios.

**Further Research and Longitudinal Validation:** Given the pilot nature of this study, future research should expand the sample size and employ longitudinal designs to assess sustained outcomes such as leadership retention, civic engagement, and behavioural transformation. Cross-sectional comparisons across universities and disciplines can further refine the NCC's academic model.

## IX. CONCLUSION

Overall, this study validates the educational and developmental value of the National Cadet Corps as a credit-bearing course within Indian higher education. The statistical evidence reinforces that NCC training contributes significantly to the holistic development of learners while promoting the national objectives of unity, discipline, and responsible citizenship. Continued institutional and policy support will ensure that NCC remains a dynamic model of experiential, value-based education in the 21st century.

This report presents the statistical findings of an empirical study evaluating the implementation and impact of the *National Cadet Corps (NCC)* as a General Elective Credit Course in higher education institutions. Data were collected from 175 students and 26 trainers to assess the effectiveness, structure, and outcomes of the NCC programme. The analysis employed descriptive statistics, tests of normality, reliability coefficients, and exploratory factor analysis (EFA) using principal component analysis with varimax rotation. The student dataset demonstrated excellent internal consistency (Cronbach's alpha = .973) and strong sampling adequacy (KMO = .942), confirming the robustness of the scale. The EFA identified three major components—(a) Personal Growth and Career Development, (b) Institutional Support and Academic Structure, and (c) Challenges and Areas for Improvement—accounting for more than 70% of total variance. Trainer responses, with acceptable reliability ( $\alpha = .839$ ), revealed five meaningful dimensions: Leadership & Skill Development, Student Interest & Career Orientation, Practical Implementation, Administrative Support, and Policy Alignment (NEP 2020), explaining approximately 88% of variance.

Findings confirm that NCC participation significantly contributes to the holistic development of students by enhancing leadership, discipline, teamwork, and civic awareness. Trainers further emphasised the course's relevance to the *National Education Policy (NEP) 2020*, which promotes experiential and value-based learning. Despite these strengths, challenges related to infrastructure, academic scheduling, and mentorship support persist. The study recommends that institutions enhance logistical and infrastructural provisions, strengthen instructor and mentor capacities, and integrate NCC studies more deeply into academic frameworks. Such actions will reinforce NCC's potential as a transformative educational experience fostering national integration, social responsibility, and employability among students.

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