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Referencing Style: A study of PhD Theses in the University of Calcutta during 2019 to 2023 under the Faculty Council for Post-Graduate Studies in Engineering & Technology

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Prasenjit Paul[1], Saptami Das[2], Ashim Kumar Paul[3]

ABSTRACT

Purpose: *This study aimed to investigate the citation styles followed by researchers under the Faculty Council for Post-Graduate Studies in Engineering and Technology at the University of Calcutta between 2019 and 2023. It sought to identify the predominant referencing patterns and assess the extent of consistency in their application.*

Methodology: *A quantitative content analysis was conducted using dissertations available in the Shodhganga digital archive. Each dissertation was manually reviewed, categorized by department and year, and examined to identify the citation styles used. The analysis focused on commonly adopted styles such as IEEE, APA, Vancouver, Harvard, and the prevalence of mixed or inconsistent formats.*

Findings: *The results revealed that while IEEE, APA, Vancouver, and Harvard were the most frequently used styles, a significant number of dissertations relied on mixed citation formats. These were often applied inconsistently, reflecting the absence of a standardized referencing policy across departments. The study also observed that*

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[1] Assistant Librarian, Dr. Sudhir Chandra Sur Institute of Technology & Sports Complex, Dum Dum); Email: paulprasenjit1988@gmail.com; ORCID: 0000-0003-2233-5891

[2]Assistant Librarian, Grade II, Jadavpur University, Jadavpur; Email: saptami.das5@gmail.com; ORCID: 0009-0008-9684-1379

[3] Librarian, Sushil Kar College; Email: ashimkrpaul21@gmail.com; ORCID: 0009-0002-1329-4725

some disciplines demonstrated limited awareness of the variety of citation styles available or their importance in ensuring academic rigor.

Implications: *The findings highlight the need for a university-wide referencing guideline to ensure uniformity in citation practices. Additionally, targeted training for researchers and stronger supervisory oversight are recommended to enhance academic quality, maintain consistency, and uphold scholarly integrity in doctoral research.*

Keywords: Referencing Styles, Citation Practices, Doctoral Theses, Academic Writing, Engineering Research, Shodhganga, Citation Consistency, Bibliometric Analysis

1. INTRODUCTION

Referencing is a fundamental component of academic writing, ensuring that scholarly work upholds responsibility, transparency, and integrity. In addition to crediting original authors, proper citation practices help readers trace the evolution of ideas, validate claims, and avoid issues of plagiarism. As Santini (2018) highlights, referencing is essential to maintaining the scholarly quality of research outputs. Furthermore, Divecha, Tullu, and Karande (2023) emphasize that accurate referencing contributes to a researcher's intellectual identity and demonstrates their understanding of academic standards (Gravett & Kinchin, 2021).

In disciplines such as engineering and technology where precision, uniformity, and clarity are critical referencing plays a vital role in organizing technical communication. However, citation practices in Indian academic institutions, particularly at the doctoral level, vary widely. Such inconsistencies can lead to confusion, undermine academic integrity, and make it more difficult to assess the quality of research.

The University of Calcutta, one of the oldest and most prestigious universities in India, produces a substantial number of PhD dissertations each year. Despite this, little empirical research has examined how referencing styles are applied across its departments. Given the importance of citation in upholding academic standards, this study investigates referencing practices in PhD dissertations submitted to the Faculty Council for Post-Graduate Studies in Engineering and Technology between 2019 and 2023.

By identifying the most widely used citation styles and highlighting discrepancies or emerging trends, this study aims to support institutional efforts to improve research quality and uphold academic integrity. The findings will also inform policy development for standardizing citation practices among future doctoral scholars.

1.1. Statement of Purpose

This study looks at the referencing styles used in doctoral dissertations submitted from 2019 to 2023 to the University of Calcutta's Faculty Council for Post-Graduate Studies in Engineering and Technology. It seeks to identify the most frequently used citation styles, evaluate the level of adherence to established referencing standards, and assess the consistency of referencing practices across departments. By highlighting both patterns and anomalies, the study intends

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to support institutional efforts to improve academic writing quality and promote integrity in scholarly communication.

1.2. Statement of problem

Doctoral dissertations should ideally follow a recognized referencing style to uphold academic integrity, ensure proper attribution, and enhance the credibility of scholarly work. A consistent citation format also facilitates clarity, comparability, and transparency in academic communication.

However, at many Indian universities—including the University of Calcutta—there appears to be no standardized referencing policy across departments. As a result, doctoral theses often display significant variation in citation formats, and some even use multiple referencing styles within a single document.

These inconsistencies not only reduce the overall quality and readability of academic writing but may also lead to unintentional plagiarism or improper attribution. Furthermore, the absence of standardized citation practices can hinder the replication of research and complicate the evaluation of scholarly rigor. This study addresses the urgent need to assess existing referencing practices and to identify dominant citation patterns and inconsistencies in doctoral research at the University of Calcutta.

1.3. Objectives of the study

- To analyze the referencing patterns in doctoral dissertations submitted to the Faculty Council for Postgraduate Studies in Engineering and Technology at the University of Calcutta from 2019 to 2023.
- To identify the most commonly used citation styles and evaluate the consistency of referencing across departments.
- To detect irregularities, including the use of mixed or inconsistent citation formats.
- To recommend institutional strategies for improving citation practices and researcher training.

1.4. Scope and Coverage of the Study

This study examines doctoral dissertations submitted to the Faculty Council for Post-Graduate Studies in Engineering and Technology at the University of Calcutta from 2019 to 2023. Nine departments' worth of 196 English-language dissertations that were obtained from the Shodhganga Repository were examined. Because they were unavailable, dissertations from the Department of Jute and Fibre Technology were not included, and there were no submissions for Applied Physics in 2020.

The study does not evaluate citation accuracy in terms of formatting or content relevance; instead, it concentrates on identifying citation styles and analyzing patterns.

2. LITERATURE REVIEW

The importance of citation and reference techniques in academic writing and scholarly communication has long been acknowledged. Citation practices are frequently discipline-

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specific and impacted by supervisory direction and institutional culture, according to a number of studies (Adiyodi, 1993; Afolabi, 1983; Bandyopadhyay & Nandi, 2001).

The lack of a defined institutional policy was highlighted by Das and Mondal's (2021) study on PhD theses at Jadavpur University, which found significant diversity in referencing styles among departments. In a similar vein, Bandyopadhyay and Nandi (2001) identified discrepancies in the citation formats used in political science dissertations through a citation analysis. These results indicate a larger pattern in Indian universities where academic rigor and consistency are impacted by a lack of referencing requirements.

In a thorough review of more than 18,000 citations in chemistry dissertations at Banaras Hindu University, Srivastava (2002) discovered that there was little adherence to normal citation guidelines but a significant dependence on journal material, especially in English. Similar findings in science dissertations were mirrored by Abbas Khan (1999), who emphasised the necessity of improved referencing standards to guarantee traceability and accurate credit of earlier work.

Although citation patterns varied greatly, Gopikuttan (2005) noted that journal articles continued to be the most common source of citations in doctoral research in the context of scientometric studies. Together, these studies indicate that although resource categories and citation density have been investigated, there is still a significant gap in the analysis of the structure and coherence of referring itself.

There is no enforcement mechanism in place to guarantee adherence to a standard referencing style, despite the growing significance of institutional archives such as Shodhganga that propose submission requirements for theses. In technical professions like engineering and technology, where reference should ideally adhere to internationally recognized styles like IEEE, APA, or Vancouver, this is especially problematic.

Few previous studies have thoroughly analyzed the actual referencing strategies used in doctoral dissertations within engineering fields; most have concentrated on bibliometric patterns, such as citation counts and document kinds. By presenting a department-by-department investigation of the University of Calcutta's referencing practices, this study aims to close that gap and offer factual support for the creation of institutional referencing rules.

3. METHODOLOGY

3.1. Data Sources

This study analyzes referencing styles in doctoral dissertations from 2019 to 2023 at the University of Calcutta. The primary data source was the Shodhganga digital repository, maintained by INFLIBNET, which houses accepted theses that have been submitted to Indian universities. The following inclusion criteria were used to choose 196 PhD dissertations in total**:**

- Submitted from the 2019–2023 academic year
- Being a member of the Faculty Council for Engineering and Technology Post-Graduate Studies
- Accessible on Shodhganga in full-text PDF format
- Composed in English

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- The **exclusion criteria** were as follows:
- Dissertations are not available on the Shodhganga platform.
- Dissertations written in languages other than English
- Dissertations from departments with missing submissions in the selected timeframe (e.g., Applied Physics in 2020) or no accessible data (e.g., Jute and Fibre Technology) were excluded.

3.2. Data Collection & Analysis

Departments and years were utilized to classify the dissertations, and each thesis was examined to determine the referencing style (e.g., IEEE, APA, Vancouver, Harvard, or hybrid). The analysis was conducted manually**,** without the use of software tools, to ensure accuracy in identifying citation styles and consistency. It was also noted whether the citation formatting used in each thesis was consistent or inconsistent.

To record each dissertation's metadata (title, department, year, citation style used, and consistency), a straightforward coding frame was created in Microsoft Excel. Patterns in the adoption of referencing styles across departments and years were examined using descriptive statistics (frequency and percentage).

The study did not require ethical clearance because it did not use human subjects and instead used publicly available data from a government-maintained repository. Nonetheless, every effort was made to maintain the source papers' scholarly integrity.

3.3. Sampling

The dissertations were gathered from INFLIBNET's Shodhganga digital repository, which houses doctoral theses that have been submitted to Indian universities. Purposive sampling was used to pick 196 PhD dissertations, limited to submissions from departments under the University of Calcutta's Faculty Council for Post-Graduate Studies in Engineering and Technology between 2019 and 2023. The selection process was guided by the following standards to guarantee methodological rigor**:**

Inclusion: Dissertations written in English**,** submitted within the selected timeframe, affiliated with the relevant faculty, and available in full-text PDF format**.**

Exclusion: Dissertations written in languages other than English, not available in full, or submitted from departments with no accessible entries during the study period (e.g., Applied Physic**s** in 2020 and Jute and Fibre Technology with no available submissions).

All dissertations were downloaded and manually reviewed to ascertain the formatting uniformity and referencing style (APA, IEEE, Vancouver, Harvard, or hybrid). Microsoft Excel was used to code metadata, including department, year of submission, citation type, and citation consistency. Descriptive statistics, such as frequency and percentage distribution, were used to analyze the results.

Since there were no human participants and all of the data came from publicly accessible scholarly sources, no ethical approval was needed.

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4. DATA ANALYSIS AND FINDINGS

I paid attention to citation styles of all departments within the corresponding years and excluded certain styles from the figure. The listing incorporated APA, MLA, Chicago, Harvard, Vancouver, IEEE, SPIE, AAS, A&A, APS, OSA, ACS, AMA, RSC, ACM, and Mixed Citation Styles. This ensures that the results are evident and credible.

4.1. Applied Optics & Photonics

The analysis of referencing styles in the Department of Applied Optics & Photonics reveals notable year-wise variations. To illustrate these findings, Figure 1 and 2 present the distribution and most frequently used styles, while Table 1 provides a comprehensive breakdown across the years 2019 to 2023. The table highlights the consistent use of APA, Vancouver, and IEEE styles, alongside occasional usage of SPIE, AAS, and OSA. In total, 32 doctoral dissertations were analyzed for this department.

Table1: Year-Wise Distribution of referencing styles in Ph. D Dissertations under the department of applied optics and photonics 2019-2023

Referencing Style	Year					Total
	2019	2020	2021	2022	2023	
APA	-	1(3.13%)	1(3.13%)	2(6.25%)	1(3.13%)	5(15.63%)
CHICAGO	-	-	1(3.13%)	1(3.13%)	-	2(6.25%)
Harvard	-	1(3.13%)		1(3.13%)	1(3.13%)	3(9.38%)
Vancouver	-	-	1(3.13%)	1(3.13%)	3(9.38%)	5(15.63%)
IEEE	2(6.25%)	-	1(3.13%)	1(3.13%)	1(3.13%)	5(15.63%)
SPIE	3(9.38%)	-	-	-	-	3(9.38%)
AAS	3(9.38%)	-	-	-	-	3(9.38%)
A&A	1(3.13%)	-	-	-	-	1(3.13%)
APS	1(3.13%)	-	-	-	-	1(3.13%)
OSA	-	-	-	2(6.25%)	-	2(6.25%)
Mixed Citation Style	-	-	-	-	2(6.25%)	2(6.25%)
YEAR TOTAL	**10(31.25%)**	**2(6.25%)**	**4(12.50%)**	**8(25%)**	**8(25%)**	**32(100%)**

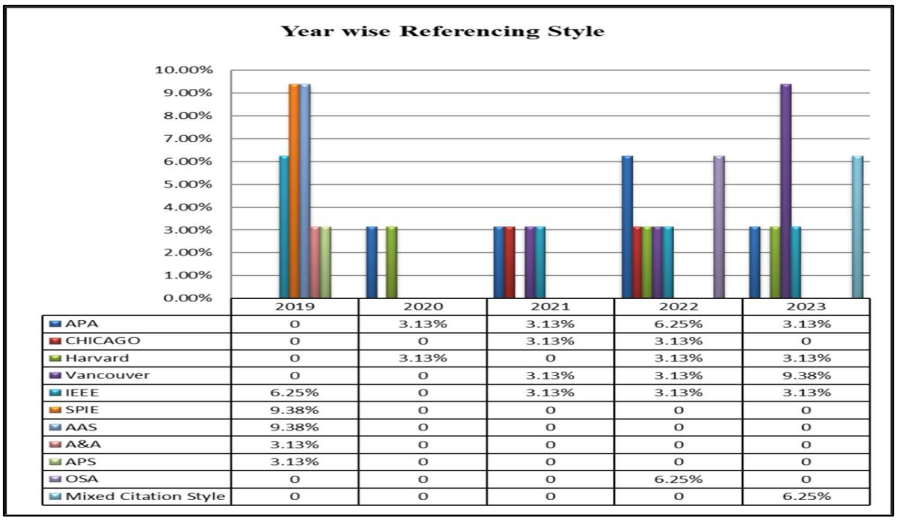

Figure 1: Distribution of Referencing Style under Department of Applied Optics & Photonics

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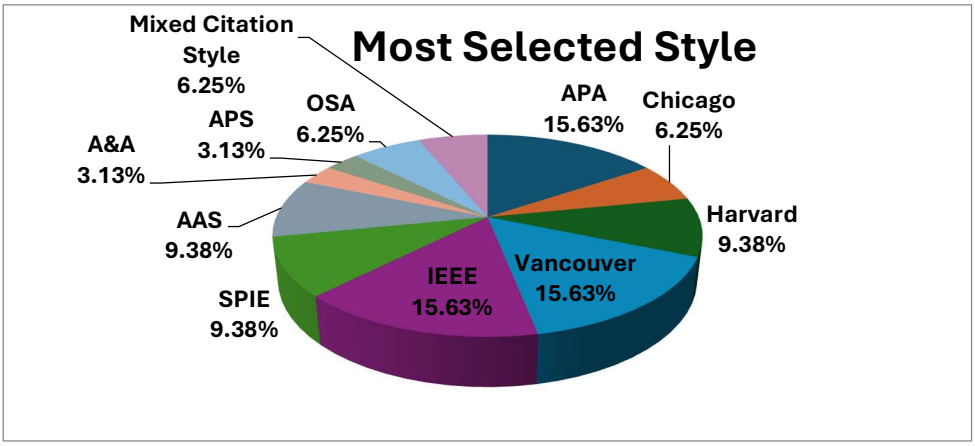

Figure 2: Most selected referencing Style under department of Applied Optics & Photonics

Between 2019 and 2023, the Department of Applied Optics & Photonics at the University of Calcutta deposited 32 doctoral dissertations. This data, obtained from the Shodhganga database, highlights various referencing styles used in the research.

From Figures 1 and 2, it is noted that in 2019, the predominant styles were SPIE and AAS at 9.38% each, followed by IEEE (6.25%) and then a few minor styles. In 2020 and 2021, the use of styles was more varied. The APA, Harvard, Vancouver, IEEE and Chicago styles all made an appearance (3.13% each). An increase in APA usage (6.25%) from 2021 occurred in 2022. In 2023, there was a considerable change, in which Vancouver (9.38%) was the most used style, followed by Mixed Citation Style (6.25%). This means, the three predominant referencing styles were IEEE (15.63%), Vancouver (15.63%) and APA (15.63%). Other notable references included Harvard, SPIE, and AAS (9.38% each), Chicago and OSA (7.25% each), and A&A and APS being the least adopted (3.13%).

The data indicate a preference for APA, IEEE, and Vancouver citation styles in engineering and technology dissertations at the University of Calcutta. The introduction of Mixed Citation Style in 2023 highlights flexibility in citation practices, reflecting the evolving nature of academic writing within the Department of Applied Optics & Photonics.

4.2. Applied Physics

The analysis of referencing styles in the Department of Applied Physics reveals significant year-wise variations. To illustrate these findings, Figures 3 and 4 present the distribution and most frequently used styles, while Table 2 provides a comprehensive breakdown across the years 2019 to 2023. The table highlights the consistent use of IEEE, APA, and Vancouver styles, alongside a considerable presence of Mixed Citation Style**.** In total, 28 doctoral dissertations were analyzed for this department.

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Table 2: Year-wise distribution of referencing styles in PhD dissertation under the department of Applied Physics (2019-2023

Referencing Style	Year					Total
	2019	2020	2021	2022	2023	
APA	1(3.57%)	-	1(3.57%)	2(7.14%)	1(3.57%)	5(17.86%)
Vancouver	2(7.14%)	-	-	2(7.14%)	-	4(14.28%)
IEEE	2(7.14%)	-	2(7.14%)	3(10.71%)	6(21.43%)	13(46.43%)
Mixed Citation Style	2(7.14%)	-	1(3.57%)	-	3(10.71%)	6(21.43%)
YEAR TOTAL	7(25%)	0	4(14.28%)	7(25%)	10(35.71%)	28(100%)

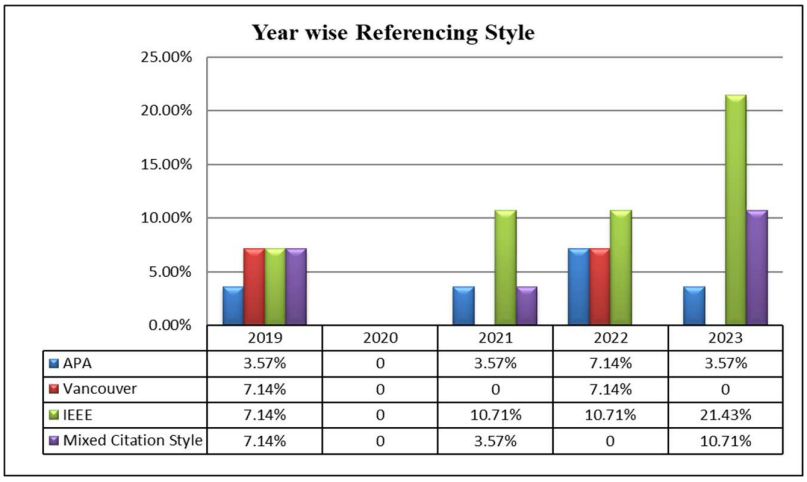

Figure 3: Distribution of Referencing Style under Department of Applied Physics

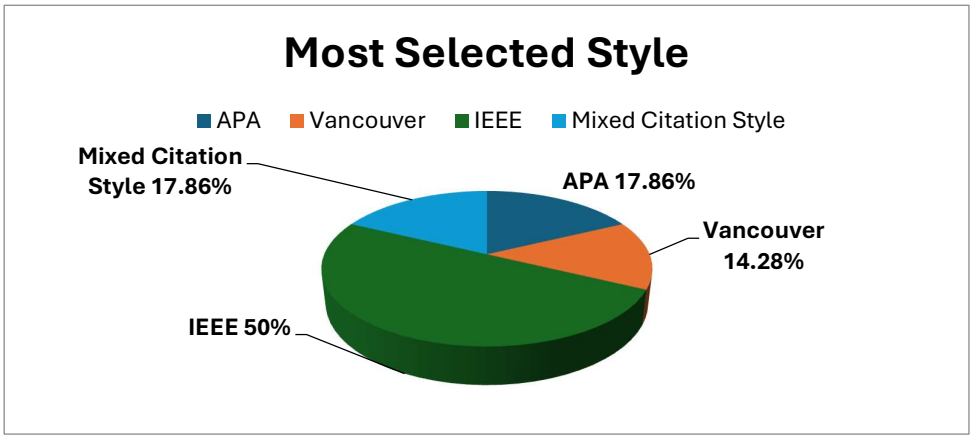

Figure 4: Most selected referencing Style under department of Applied Physics

There are 28 doctoral dissertations that were submitted from 2019 to 2023 under the Department of Applied Physics, Faculty Council for Post-Graduate Studies in Engineering & Technology at the University of Calcutta**.** Figure 3 and 4 are showing that the selection of style preferences varied significantly over the years. In 2019**,** Vancouver and IEEE were taken by researchers, each contributing 7.14%**,** followed by APA that is 3.57% **and** Mixed Citation Style

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that is 7.14%. In 2020, no dissertation was submitted. In 2021, IEEE emerged as prominent, and its usage was 7.14%, whereas APA and Mixed Citation Style remained constant at 3.57% only. In 2022, the pattern continued to be varied; IEEE at 10.71% was used by the largest number of researchers, followed by APA (7.14%) and Vancouver (7.14%). In 2023, a significant turn is seen such that IEEE usage reached its peak at 21.43% and Mixed Citation Style at 10.71%, with APA still at 3.57%.

Thus, it can be deduced that IEEE was the most favored style, totaling 46.43% of the dissertations. APA was applied in 17.86%, and Vancouver in 14.28%. Also, 17.86% of the dissertations utilized a Mixed Citation Style, reflecting that some researchers adopted more than one referencing format instead of using a single style.

The data implies that IEEE is the prevailing citation style in doctoral dissertations in the Department of Applied Physics. Nevertheless, the occurrence of Mixed Citation Style reflects an inconsistency in referencing practices.

4.3. Chemical Engineering

The analysis of referencing styles in the Department of Chemical Engineering reveals notable year-wise variations. To illustrate these findings, Figure 5 and 6 present the distribution and most frequently used styles, while Table 3 provides a comprehensive breakdown across the years 2019 to 2023. The table highlights the consistent use of the Vancouver style across multiple years, alongside occasional adoption of Harvard and IEEE styles. In total, 07 doctoral dissertations were analyzed for this department.

Table 3: Year-wise distribution of referencing styles in PhD dissertations under the Department of Chemical Engineering (2019–2023)

Referencing Style	Year					Total
	2019	2020	2021	2022	2023	
Harvard	-	-	2(28.57%)	-	-	2(28.57%)
Vancouver	1(14.28%)	1(14.28%)	-	1(14.28%)	1(14.28%)	4(57.14%)
IEEE	-	-	-	-	1(14.28%)	1(14.28%)
YEAR TOTAL	1(14.28%)	1(14.28%)	2(28.57%)	1(14.28%)	2(28.57%)	7(100%)

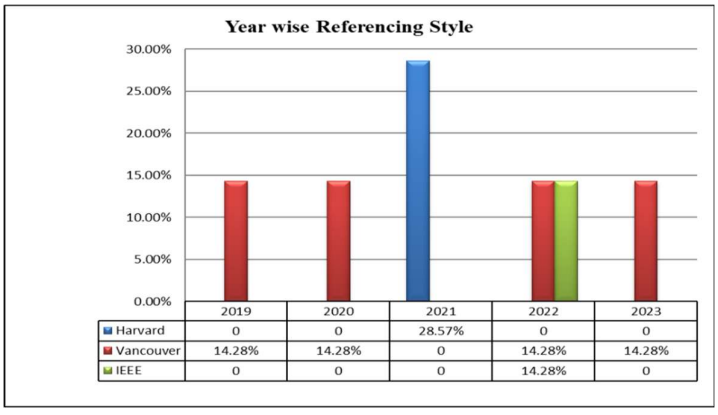

Figure 5: Distribution of Referencing Style under Department of Chemical Engineering

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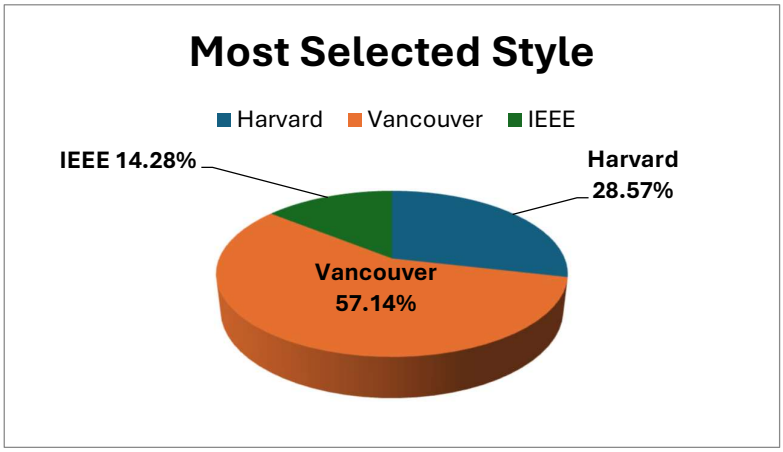

Figure 6: Most selected referencing Style under department of Chemical Engineering

Seven doctoral dissertations were submitted from 2019 to 2023 by the Department of Chemical Engineering at the University of Calcutta.

Figure 5 and 6 indicate that the use of referencing styles differed between the years. The Vancouver style had been used 14.28% in 2019. The Vancouver style appeared again in 2020 with the same percentage value of 14.28%. In 2021, a drastic change was observed, with the Harvard style being the most frequently used at 28.57%. The Vancouver style remained popular in 2022 with 14.28%. As of 2023, a well-balanced split, with Vancouver and IEEE styles each representing 14.28% in their presence over several years.

It is also noted that Vancouver style became the most popular, accounting for 57.14% of total dissertations. 28.57% were Harvard style, while 14.28% were IEEE style. Generally, the data reveals that Vancouver and Harvard styles were the most used for Chemical Engineering researchers. The minimal usage of IEEE suggests a broad variety of citation styles. The dominant usage of Vancouver style implies that there is a preponderance towards systematic methods of citation in technical and scientific publications within the Department of Chemical Engineering.

4.4. Chemical Technology

The analysis of referencing styles in the Department of Chemical Technology reveals considerable year-wise variations. To illustrate these findings, Figure 7 and 8 present the distribution and most frequently used styles, while Table 4 provides a comprehensive breakdown across the years 2019 to 2023. The data shows that Mixed Citation Style is used the most, followed by IEEE, Vancouver, APA, AMA, ACS, and Chicago. In total, 27 doctoral dissertations were analyzed for this department.

Table 4: Year-wise distribution of referencing styles in PhD dissertations under the Department of Chemical Technology (2019–2023)

Referencing Style	Year					Total
	2019	2020	2021	2022	2023	
APA	-			1(3.70%)		1(3.70%)
ACS	1(3.70%)	-	-	-	-	1(3.70%)
AMA	-	-	-	-	1(3.70%)	1(3.70%)

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CHICAGO	1(3.70%)	-	-	-	-	1(3.70%)
Vancouver	2(7.41%)	-	-	-	-	2(7.41%)
IEEE	3(11.11%)	-	1(3.70%)	1(3.70%)		5(18.52%)
Mixed Citation Style	5(18.52%)	4(14.81%)	1(3.70%)	5(18.52%)	1(3.70%)	16(59.26%)
YEAR TOTAL	12(44.44%)	4(14.81%)	2(7.41%)	7(25.93%)	2(7.41%)	27(100%)

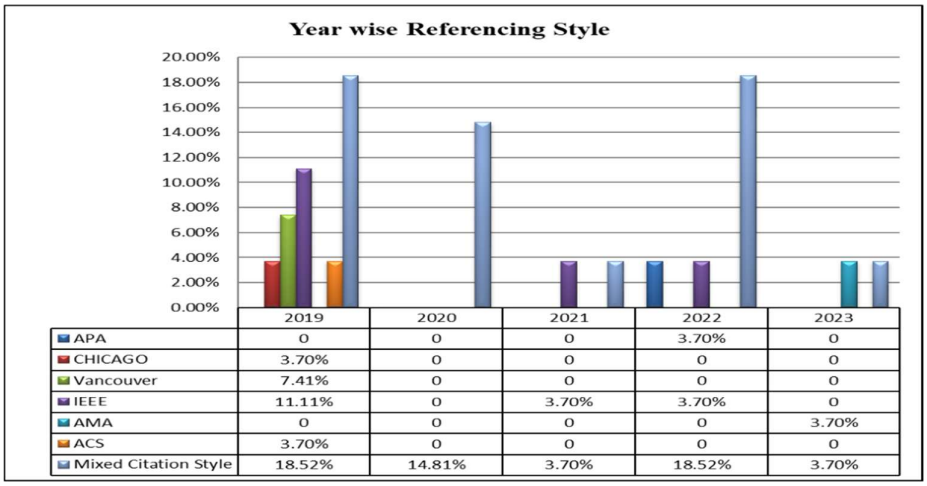

Figure 7: Distribution of Referencing Style under Department of Chemical Technology

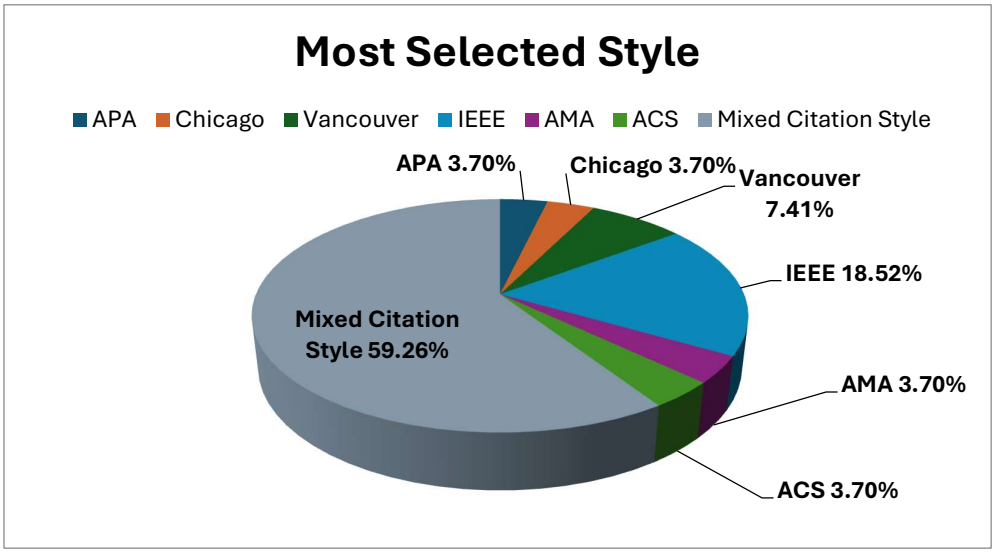

Figure 8: Most selected referencing Style under department of Chemical Technology

Between 2019 and 2023, 27 doctoral dissertations were submitted at the University of Calcutta. Figures 7 and 8 show yearly variations in referencing styles. In 2019, Mixed Citation Style dominated with 18.52%, then IEEE (11.11%), Vancouver (7.41%), and some used Chicago and ACS, which is 3.70% each. In 2020 there was no other noted specific referencing style other than Mixed Citation Style with 14.81%. In 2021, a little percentage of researchers employed IEEE (3.70%) and Mixed Citation Style (3.70%). By 2022 and Mixed Citation Style is 18.52% being the most prominent styles. Also, IEEE with 3.70% and APA with 3.70% were still in the

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picture. In 2023, AMA with 3.70% was still the most favored style, and AMA (3.70%) also appeared, reflecting a degree of diversification.

The figure presents citation styles used over the years, with Mixed Citation Style at 59.26% and IEEE at 18.52%. Other styles include Vancouver (7.41%) and APA, Chicago, AMA, and ACS (all at 3.70%), showing a diverse range of references.

Overall, the statistics indicate that although certain conventional referencing styles such as Vancouver, IEEE, and APA are widely utilized within the Department of Chemical Technology, most researchers have a high percentage of adopting various citation styles in the same research paper. The trend can be an indicator of a transition period regarding referencing preferences or the application of various styles to suit the needs of diverse research topics.

4.5. Computer Science & Engineering:

The analysis of referencing styles in the Department of Computer Science and Engineering reveals significant year-to-year variability. To illustrate these findings, Figure 9 and 10 present the distribution and most frequently used styles, while Table 5 provides a comprehensive breakdown across the years 2019 to 2023. The table highlights the dominance of the IEEE style, followed by the increasing adoption of APA, along with occasional usage of Harvard, ACM, and Mixed Citation Style. In total, 38 doctoral dissertations were analysed for this department.

Table 5: Year-wise distribution of referencing styles in PhD dissertations under the Department of Computer Science & Engineering (2019–2023)

Referencing Style	Year					Total
	2019	2020	2021	2022	2023	
APA	1(2.63%)	-	-	2(5.26%)	10(26.31%)	13(34.21%)
ACM	1(2.63%)	-	-	-	-	1(2.63%)
Harvard	1(2.63%)	-	-	-	-	1(2.63%)
IEEE	7(18.42%)	1(2.63%)	6(15.79%)	6(15.79%)	-	20(52.63%)
Mixed Citation Style	3(7.90%)	-	-	-	-	3(7.90%)
YEAR TOTAL	13(34.21%)	1(2.63%)	6(15.79%)	8(21.05%)	10(26.31%)	38(100%)

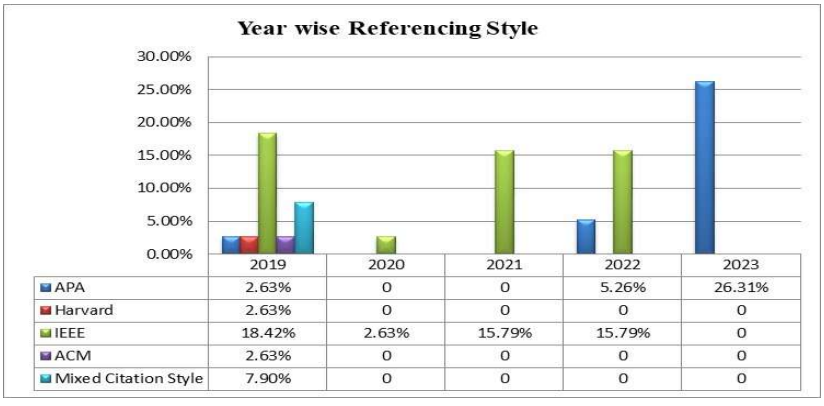

Figure 9: Distribution of Referencing Style under Department of Computer Science & Engineering

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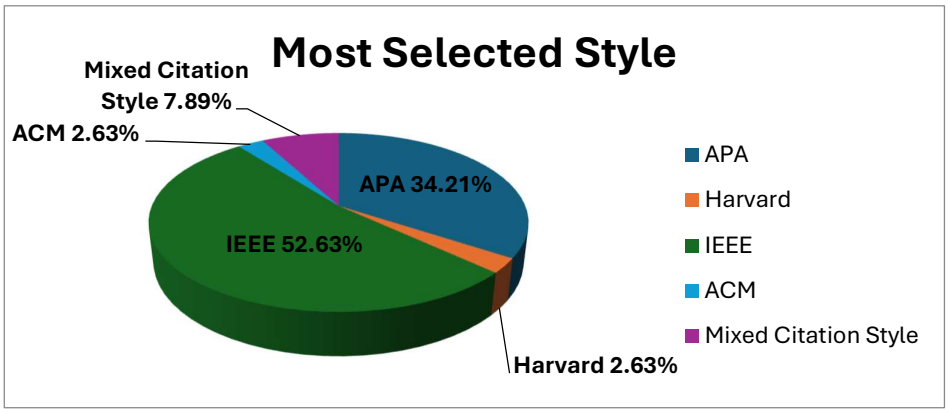

Figure 10: Most selected referencing Style under department of Computer Science & Engineering

The Department of Computer Science & Engineering at the University of Calcutta submitted 38 doctoral dissertations from 2019 to 2023. Figure 9 and 10 showing that in 2019**,** IEEE with 18.42% was the most commonly used style by researchers, followed by APA (2.63%)**,** Harvard (2.63%)**,** ACM (2.63%), and Mixed Citation Style (7.90%)**.** In 2020, citation styles were mostly non-existent aside from IEEE (2.63%), which persisted in sporadic use. In 2021, IEEE adopted by 15.79%, became more prominent, indicative of its robust usage in technical and engineering research. In 2022, IEEE with 15.79% was a favored option, though APA (5.26%) made its debut. A dramatic turn came in 2023, where APA usage reached 26.31%, its first time being at the forefront of preference, though IEEE was not seen.

Figure also depicts the cumulative rate of referencing styles overall years. IEEE (52.63%) shows up as the most widely used format, establishing itself as the undisputed leader in the Computer Science & Engineering field. APA (34.21%) ranks next, reflecting its growing significance in research writing in this department. Mixed Citation Style (7.90%) shows up too, implying that a few dissertations utilized more than one referencing style. Harvard (2.63%) and ACM (2.63%) were used the least, an indication of minimal adoption.

Overall, the evidence indicates that IEEE is still the dominant style of referencing used in the Department of Computer Science & Engineering, following from its prevalence in technical research. Nevertheless, the increase in the use of APA in 2023 reveals a probable change in citation practice, perhaps stemming from changing scholarly requirements or organizational regulations. The occurrence of Mixed Citation Style indicates a certain level of inconsistency in citation practices, which can be due to different researcher preferences or interdisciplinary nature of particular studies.

4.6. Polymer Science & Technology

The analysis of referencing styles in the Department of Polymer Science & Technology reveals notable year-wise variations. To illustrate these findings, Figure 11 and 12 present the distribution and most frequently used styles, while Table 6 provides a comprehensive breakdown across the years 2019 to 2023. The table emphasizes the widespread use of Mixed Citation Style, as well as prominent usage of ACS, Harvard, APA, Chicago, Vancouver, IEEE, and RSC styles. In total, 22 doctoral dissertations were analyzed for this department.

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Table 6: Year-wise distribution of referencing styles in PhD dissertations under the Department of Polymer Science & Technology (2019–2023)

Referencing Style	Year					Total
	2019	2020	2021	2022	2023	
APA	1(4.55%)	-	-	1(4.55%)	-	2(9.09%)
ACS	1(4.55%)	1(4.55%)	-	1(4.55%)	1(4.55%)	4(18.18%)
CHICAGO	1(4.55%)	-	-	-	-	1(4.55%)
Harvard	-	1(4.55%)	-	2(9.09%)	-	3(13.64%)
Vancouver	-	-	-	1(4.55%)	-	1(4.55%)
IEEE	1(4.55%)	-	-	-	-	1(4.55%)
RSC	1(4.55%)	-	-	-	-	1(4.55%)
Mixed Citation Style	-	5(22.73%)	3(13.64%)	1(4.55%)		9(40.91%)
YEAR TOTAL	5(22.73%)	7(31.82%)	3(13.64%)	6(27.27%)	1(4.55%)	22(100%)

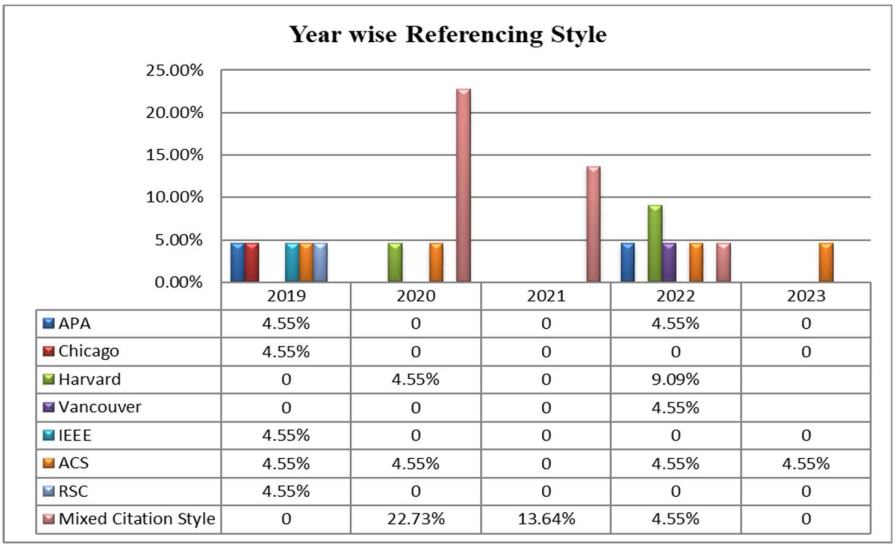

Figure 11: Distribution of Referencing Style under Department of Polymer Science & Technology

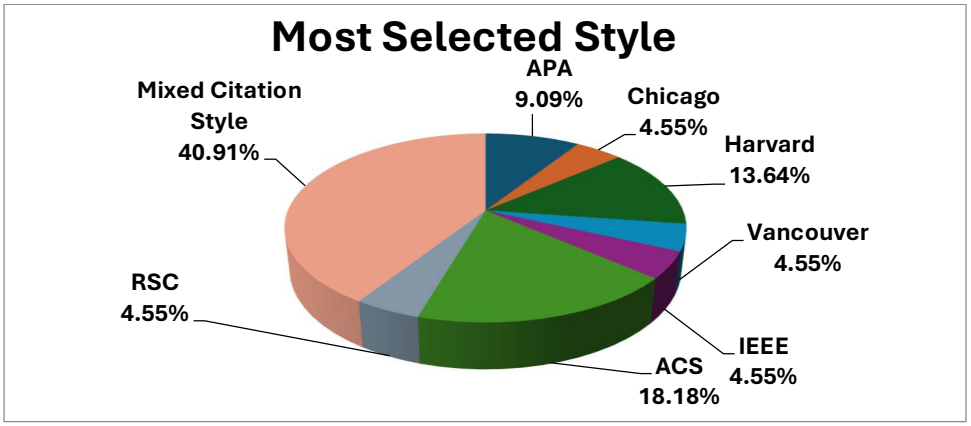

Figure 12: Most selected referencing Style under the department of Polymer Science & Technology

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From 2019 to 2023, 22 doctoral dissertations were submitted in the Department of Polymer Science & Technology at the University of Calcutta. In Figures 11 and 12, it is shown that in 2019, the citation styles used included APA, Chicago, IEEE, and ACS, each at 4.55%, while RSC also held 4.55%. Harvard, Vancouver, and Mixed Citation Styles were absent that year. In 2020, Harvard and ACS each accounted for 4.55%, but the most notable change was the emergence of Mixed Citation Style at 22.73%, indicating a trend of utilizing multiple citation styles in dissertations.

In 2021, researchers mainly used a Mixed Citation Style (13.64%), indicating no single standard was followed. In 2022, citation styles became more diverse, with Harvard being the most common at 9.09%, followed by Vancouver, APA, IEEE, and ACS (all at 4.55%). By 2023, ACS was the only style reported, reflecting a decline in citation variety.

The figure provides a snapshot of citation styles used over the years. The Mixed Citation Style leads with 40.91% adoption, indicating potential opportunities for improved standardization in dissertations. The ACS style follows at 18.18%, highlighting its importance in Polymer Science & Technology. Other notable styles include Harvard (13.64%), APA (9.09%), and Chicago, Vancouver, IEEE, and RSC (each at 4.55%), reflecting a diverse range of referencing practices that researchers should consider adhering to disciplinary standards.

The statistics reveal that standard citation styles such as ACS, Harvard, and APA are commonly used in the Department of Polymer Science & Technology. However, a significant number of researchers prefer a Mixed Citation Style, indicating a potential shift towards greater flexibility in citation practices. This trend may reflect a transitional phase in the approach to referencing styles, aligning more closely with specific research topics.

4.7. Radio physics & Electronics

The analysis of referencing styles in the Department of Radio Physics & Electronics reveals notable year-wise variations. To illustrate these findings, Figures 13 and 14 present the distribution and most frequently used styles, while Table 7 provides a comprehensive breakdown across the years 2019 to 2023. The table highlights the extensive use of Mixed Citation Style and IEEE, along with occasional adoption of APA**.** In total, 42 doctoral dissertations were analyzed for this department.

Table 6: Year-wise distribution of referencing styles in PhD dissertations under the Department of Radio Physics and Electronics (2019–2023)

Referencing Style	Year					Total
	2019	2020	2021	2022	2023	
APA	1(2.38%)	1(2.38%)	1(2.38%)	1(2.38%)	-	4(9.52%)
IEEE	7(16.67%)	-	2(4.76%)	5(11.90%)	4(9.52%)	18(42.86%)
Mixed Citation Style	4(9.52%)	-	1(2.38%)	8(19.04%)	7(16.67%)	20(47.62%)
YEAR TOTAL	12(28.57%)	1(2.38%)	4(9.52%)	14(33.33%)	11(26.19%)	42(100%)

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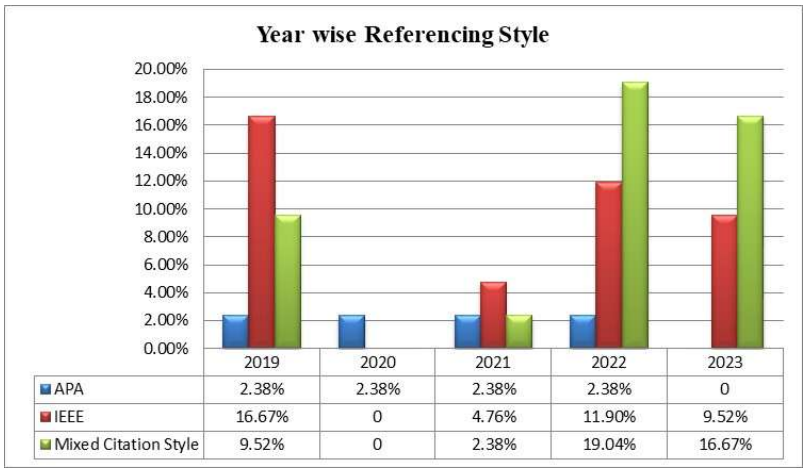

	2019	2020	2021	2022	2023
APA	2.38%	2.38%	2.38%	2.38%	0
IEEE	16.67%	0	4.76%	11.90%	9.52%
Mixed Citation Style	9.52%	0	2.38%	19.04%	16.67%

Figure 13: Distribution of Referencing Style under Department of Radio Physics and Electronics

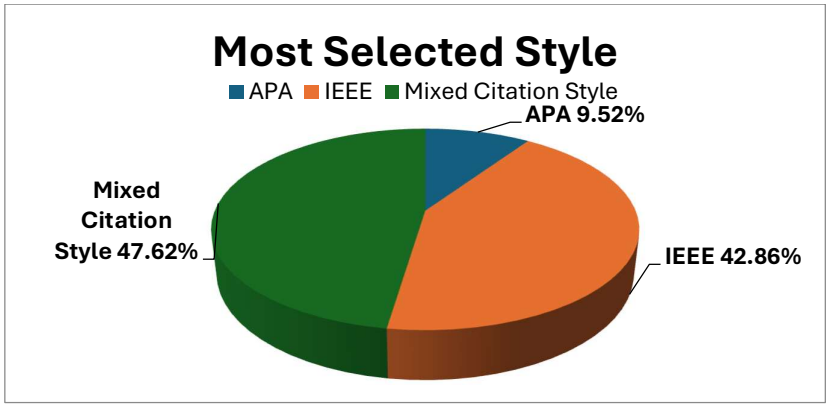

Figure 14: Most selected referencing Style under department of Radio Physics and Electronics

From 2019 to 2023, 42 doctoral dissertations were submitted in the Department of Radio Physics and Electronics at the University of Calcutta. In 2019, IEEE was the most used referencing style at 16.67%. APA was the only style in 2020. By 2021, IEEE (4.76%) and Mixed Citation Style (2.38%) reappeared alongside APA. In 2022, Mixed Citation Style surged to 19.04%, becoming the most popular, followed by IEEE (11.90%). In 2023, it remained at 16.67%, with IEEE at 9.52%.

Most popular is the Mixed Citation Style (47.62%), which is evidence of lack of consistency or use of varying citation styles in one dissertation. IEEE (42.86%) follows closely, which is indicative of its relevance in the area of Radio Physics and Electronics. APA (9.52%) has a relatively minor role but is nonetheless part of the referencing scheme.

The data shows that although IEEE is the standard citation style in the Department of Radio Physics and Electronics, many researchers also use a mixed citation style. This suggests a

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potential shift in preferences or an integration of various styles to address different research needs.

5. FINDINGS AND DISCUSSION

5.1. Key Referencing Trends: The analysis of 196 PhD dissertations across nine departments between 2019 and 2023 revealed several notable trends in referencing styles at the University of Calcutta's Faculty Council for Post-Graduate Studies in Engineering and Technology.

5.1.1. Dominant Referencing Styles:

The most frequently adopted styles were IEEE**,** APA**,** and Vancouver**.**

- IEEE was dominant in departments such as Applied Physics (50%) and Computer Science & Engineering (52.63%), reflecting its standard use in engineering and technical fields.
- APA usage showed a noticeable increase **in** Computer Science & Engineering by 2023, indicating a possible shift in preference.
- Vancouver was consistently used in Chemical Engineering and Chemical Technology, possibly due to its structured format, which is suitable for technical disciplines.

5.1.2. Rise of Mixed Citation Styles:

A significant number of these employed Mixed Citation Styles, particularly in Chemical Technology (59.26%)**,** Radio Physics and Electronics (47.62%)**,** and Polymer Science & Technology (40.91%)**.** This trend suggests either a lack of clear guidance or flexibility allowed by supervisors. The presence of mixed citation styles within a single thesis raises concerns about standardization and consistency in academic writing.

5.1.3. Year-wise Trends:

- The years 2022 and 2023 saw a greater diversification in referencing styles, with a notable increase in APA and Mixed citation styles in departments like Computer Science and Radio Physics**.**
- Departments such as Applied Optics & Photonics demonstrated evolving patterns, with styles like SPIE and AAS used in earlier years and a shift to Vancouver and APA in later years.

5.1.4. Departmental Preferences:

Each department showed unique citation behavior:

- Engineering-heavy departments (e.g., Computer Science, Applied Physics) leaned toward IEEE.
- Chemistry-related departments (e.g., Polymer Science, Chemical Technology) showed high use of ACS, Vancouver, and Mixed citation style.
- Emerging or less centralized departments had greater inconsistency.

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5.1.5. Consistency Issues:

While some theses followed a single, consistent style throughout, many others displayed citation inconsistency — even within the same document. This aligns with earlier studies (e.g., Das & Mondal, 2021; Bandyopadhyay & Nandi, 2001), which highlighted the absence of citation standardization in Indian universities.

5.1.6. Implications:

The findings underscore the urgent need for institutional referencing policies, especially considering the variety of styles and their uneven adoption. The presence of mixed citation style and frequent inconsistencies may hinder scholarly clarity and weaken the academic integrity of doctoral research. The frequent reliance on Mixed Citation Style highlights the absence of clear institutional guidelines and limited awareness among researchers. This finding underscores the need for policy intervention and training to ensure consistency in academic writing.

5.2. Recommendations

The Faculty Council for Post-Graduate Studies in Engineering & Technology at the University of Calcutta proposes the following measures to enhance referencing practices for PhD candidates:

- **Implement a University-Wide Referencing Policy:** A clear and uniform citation policy should be introduced across all departments. This would reduce discrepancies and bring academic coherence in doctoral research.
- **Conduct Regular Training Workshops:** Practical workshops on major referencing styles (APA, IEEE, Vancouver) should be organized. Training may also be discipline-specific, so that scholars in engineering fields learn IEEE while those in chemical sciences gain more practice in Vancouver or ACS style.
- **Develop an Official Referencing Manual:** A comprehensive guide approved by the University should be circulated among scholars and supervisors. This should include discipline-wise examples of citing books, theses, journals, and digital resources.
- **Discourage Mixed Citation Styles within a Thesis:** Using multiple styles in a single dissertation must be actively discouraged. Supervisors should ensure consistent referencing throughout the research process.
- **Integrate Plagiarism Detection Tools:** Software such as Turnitin or Ouriginal should be used not only at the final submission stage but also during the draft stage, to prevent inadvertent plagiarism and encourage correct attribution.
- **Strengthen Supervisory Oversight:** Monitoring of citation practices should be a formal responsibility of supervisors. Orientation and refresher sessions may help supervisors guide scholars effectively.
- **Encourage Department-Level Review Committees:** Departments may establish small citation review committees to check referencing before submission. This will help maintain uniformity and improve quality control.

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6. CONCLUSION

This study reviewed referencing styles in doctoral dissertations at the University of Calcutta from 2019 to 2023. The main styles used were APA, IEEE, Harvard, and Vancouver, with specific departmental preferences noted. A trend of mixed styles in some departments highlights a lack of citation guidance. The rise of APA in 2023 suggests evolving norms. To ensure academic integrity, the university should create referencing manuals, offer training workshops, and establish a unified citation policy, enhancing the quality of doctoral research.

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