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Multidimensional Corpus Analysis of the Constitution of Bangladesh: A Methodological Approach

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Abstract

This study investigates the constitution of the People's Republic of Bangladesh, a fundamental document that roles as the foundation of national governance, legal structures, and societal values. By engaging linguistic and thematic analyses, this study shows the complex nature of the constitution, its unwavering dedication to democratic ideals, the supremacy of law, and the safeguarding of individual liberties. Examination of the frequency and collocation of significant terms like "parliament," "law," and "rights" is conducted to determine their importance and contextual usage within the constitutional text. Furthermore, thematic inquiry highlights the essential principles of nationalism, socialism, democracy, and secularism, while also providing an extensive examination of the governance framework, basic rights, and governmental policies outlined in the constitution. This study also explains the flexibility of the document through its amendments, proving the transformation of societal values and beliefs in Bangladeshi society. This in-depth analysis offers a nuanced understanding of the impact of the constitution on the legal and societal framework of Bangladesh, proving its enduring significance and ability to address the changing requirements of its populace. By offering valuable insights into the intricate interplay between legal documents and societal norms, this study contributes to the understanding of constitutional law and governance

Keywords   Bangladesh Constitution, Constitutional Amendments, Fundamental Rights, Governance structure, Linguistic Analysis

1. Introduction

The constitution of the People's Republic of Bangladesh, ratified on the 4th of November 1972, serves as the paramount legal instrument of the nation, outlining its foundational principles and governance framework. It comprehensively articulates national aspirations, values, and democratic ethos, detailing the organization and operation of governmental bodies and the entitlements of the populace. This research conducted an exhaustive examination of the constitution, employing linguistic and thematic methodologies to investigate its clauses and fundamentals.

By utilizing linguistic analysis to scrutinize the frequency and collocation of significant terms, this study sheds light on the thematic focus and conceptual priorities of the constitution. The prevalence of terms like 'parliament, ' 'law,' 'rights,' and 'citizens' signifies a clear preference for democratic rule, adherence to the rule of law, and protection of civil rights. Thematic analysis further categorizes the document into key themes encompassing the fundamental principles of nationalism, socialism, democracy, secularism, governance structures and functions, basic rights, and state policy frameworks. Of particular note is the adaptable nature of the constitution, which has undergone numerous revisions over time, mirroring the changing needs of Bangladeshi society. These revisions exemplify a nation's commitment to enhancing and adjusting its legal and structural foundations in accordance with societal transformation and aspirations.

The primary objective of this study was to offer an intricate comprehension of the linguistic and thematic characteristics of the constitution of Bangladesh. This underscores the document's role as the cornerstone of legal framework, governance, and societal principles. Through an analysis of the intricate language and profound themes enshrined within it, this study contributes to broader dialogue on constitutional law, governance, and societal progress in South Asia, providing valuable insights for scholars, legal experts, and policymakers.

2. Literature Review

The constitution serves as a fundamental legal and political instrument delineating the organizational framework of a government, distribution of authority, and safeguarding the liberties of the populace (Darusman et al., 2020). It establishes a governance structure and formulates the guiding principles for societal administration, rendering it an indispensable component of a nation's operations (Barber & Vermeule, 2016). Particularly in autocratic systems, the essence and operation of a constitution are pivotal since they act as a "power map" (Crouch, 2020), emphasizing the crucial role of a constitution in shaping a country's political terrain. The regulations governing constitutional amendments hold significant importance, as they facilitate the adjustment and evolution of the constitutional framework (Szakály, 2022). The capacity to modify a constitution is essential for rectifying deficiencies and unintended repercussions, thereby enhancing its durability and pertinence (Ginsburg & Melton, 2014). Moreover, the amendment procedure constitutes a fundamental element of constitutional structuring, with comparative analyses revealing the varied impacts of different modes of constitutional modification on federal stability in the long term (Behnke & Benz, 2008). Furthermore, constitutional tribunals are vital in upholding the constitution and ensuring its supremacy (Skuratov et al., 2023). Accessibility of constitutional courts to the public is imperative for fostering the widespread acceptance of a novel constitutional framework (Sólyom, 2003). Judicial elucidation and evaluation of constitutional amendments play a significant role in the adaptation and stability of the constitution (Negretto, 2012; Szentgáli-Tóth, 2021). The scrutiny of the constitutionality of legislation by constitutional courts is crucial for safeguarding liberties and entitlements of individuals (Toubat et al., 2019). In summary, the significance of a constitution resides in its function as the cornerstone of governance, blueprint for political structures, and guardian of individual liberties. The essence and operation of a constitution, regulations on amendments, and the role of constitutional courts are all pivotal facets that contribute to the importance of a constitution in any given society.

The examination of constitution is an intricate and multifaceted endeavour that necessitates a profound comprehension of political science, law, and constitutionalism. The constitution embodies the fundamental principles and regulations that oversee a country, shaping its political and legal structure (Klug, 2010). It is paramount to contemplate the essence and implications of constitutions in a general sense alongside the economic ramifications of constitutional regulations (Voigt, 2010; Craig, 2001). Additionally, the procedure of crafting and modifying a constitution is of vital importance, as it mirrors the evolving necessities and principles of a society (Siburian, 2022). Comparative investigations of the transplantation of constitutions and the fate of states offer valuable insights into the dynamics of constitutional progression (Perju, 2012; Popović, 2021). Furthermore, the notion of constitutional supremacy and its function in safeguarding fundamental rights and the rule of law are pivotal aspects of

constitutional scrutiny (Hamad & Anuar, 2022; Romeo, 2020; Eleftheriadis, 2018). Constitutions also have a significant influence on the interconnection between various legal frameworks, such as the correlation between national constitutions and supranational laws (Roznai, 2013). For example, the principle of supremacy or priority of EU law has implications for the foundational principles of EU law and its interface with national legal structures (Avbelj, 2011). Additionally, constitutional oversight of laws and subsidiaries in jurisdictions with rigid constitutions underlines the significance of constitutional supremacy in upholding the hierarchy of legal standards (Hamad & Anuar, 2022). The inspection of the constitution also requires an examination of the historical and philosophical principles of constitutional law. Grasping the origins and development of constitutional principles, along with the correlation between constitutional law and constitutional ethics, provides a comprehensive outlook on the constitutional structure of a state (Walters 2011). Moreover, the correlation between the constitution, administrative law, and the administrative apparatus accentuates the intricate interplay between constitutional standards and the operation of public governance (Ginsburg, 2010; Woźniak, 2017). In short, the scrutiny of a state's constitution encompasses a broad spectrum of subjects, including the essence of constitutions, economic consequences of constitutional regulations, constitutional transplants, constitutional supremacy, and interplay between diverse legal frameworks. It also delves into the historical, philosophical, and administrative facets of constitutional law, offering a comprehensive grasp of a country's constitutional structure.

Corpus analysis plays a crucial role in substantially contributing to diverse academic domains. Its application spans across fields, such as medical research, language acquisition, and psychology. For example, within the realm of medical research, corpus analysis has been used to investigate the prevalence of histological atrophy and intestinal metaplasia in the corpus, revealing a decline in these conditions over time (Kwon et al., 2019). In the domain of language learning, corpus analysis has been employed to examine learner language through corpora, thus adding to the discourse on the appropriate utilization of corpus data in language-learning research (Gablasová et al., 2017). Moreover, corpus analysis has played a pivotal role in comprehending the processing of lexical bundles by both native and non-native English speakers as well as in analysing spoken interactions among diverse linguistic groups (Valsecchi et al., 2013; Lin, 2014). Additionally, corpus analysis has been instrumental in exploring the connections between language structure and language acquisition, offering insights into universal linguistic patterns and grammatical classifications (Clair et al., 2009). Furthermore, in the field of psychology, corpus analysis has been employed to devise methodologies for analysing multimodal data corpora in expressive instrumental music performance, thus facilitating an in-depth examination of various aspects of musical performance (Visi et al., 2020). These instances underscore the importance of corpus analysis in yielding valuable insights and pushing the boundaries of knowledge across multiple disciplines, including medicine, language learning, and psychology. The integration of corpus analysis has aided in unravelling intricate phenomena, leading to significant discoveries and advancements in novel research methodologies and approaches.

3. Research Aim and Method

3.1 Research Design

The objective of this research is to examine the diverse facets of the Bangladeshi constitution through corpus analysis. The primary goal is to employ fundamental corpus analytical methodologies such as frequency, collocation, and concordance analysis. This enquiry entailed the identification of words that exhibited high frequency, as well as those with minimal occurrence, by creating a word frequency inventory. Additionally, this study undertook collocation analysis to ascertain the prevalent words that were frequently juxtaposed within sentences or phrases in our dataset, thereby revealing recurring linguistic patterns in the text or any given textual context. Furthermore, supplementary techniques, such as thematic identification, syntactic parsing, and semantic elucidation, were utilised to delve deeper into the corpus of texts, potentially expanding beyond the aforementioned methodologies.

Numerous tools such as word clouds, hyperlinks, and word trees can be utilised to visually represent a corpus or specific themes within it for data visualisation. AntConc was used for frequency analysis, collocation analysis, and visual representations; Voyant for sophisticated linkages and word tree displays along with data validation; and Python in combination with diverse packages for comprehensive analysis of the constitution. The Flesch Reading Ease calculates the readability of a text based on sentence structure and syllable count per word. The Flesch-Kincaid Grade Level computes the educational level required to comprehend the text at an average reading proficiency, among other metrics provided by the WordStat tool, including readability assessment. In the realm of thematic identification, each segment was assigned thematic codes, with one tag allocated to each segment to ensure individual labelling while maintaining a cohesive thematic connection throughout, thus creating a "tag cloud" to

symbolise themes. Furthermore, the Natural Language Toolkit (NLTK) in Python was used for part-of-speech tagging, noun categorisation, and identification of common sentence structures prevalent within a corpus during syntactic scrutiny. The reason of chosen this methodology was to investigate diverse viewpoints on the constitution of Bangladesh through a comprehensive research approach using a corpus analysis.

3.2 Data Source and Collection

In this corpus-based analysis, the primary data source is the constitution of Bangladesh, with all tables and figures presented in this study derived directly from this corpus. The material was sourced from the official government website (http://bdlaws.minlaw.gov.bd/act-367.html), which hosts the most recent version of the constitution following the 17th Amendment passed by the *Jatiya Sangsad* [i.e., National Parliament] on July 8, 2018. The document, available in PDF format, was downloaded for subsequent analysis.

To collect the necessary data, a documentation technique was employed, grounded in the principles of language documentation. This subfield of linguistics focuses on describing the grammar and usage of languages, aiming to provide a thorough record of the linguistic practices prevalent within a specific speech community, as outlined by Himmelmann (1998) in "*Documentary and Descriptive Linguistics*". The constitution was meticulously converted into a text format to facilitate detailed linguistic analysis. This methodological approach ensures a systematic and comprehensive examination of the constitution, providing a robust dataset for the corpus analysis. The use of the official and amended version of the document ensures the accuracy and relevance of the analysis.

3.3 Data Analysis

Data analysis founds a key component of the present study, which focuses on the constitution of Bangladesh. This process includes a systematic approach to processing the text, beginning with the procurement of the constitution in PDF format from an official website. A meticulous examination was conducted to remove footnotes and their corresponding markers and to refine the text for analysis. Subsequently, the document was converted into a Docx file format to facilitate editing and organisation. The docx file was further converted into a txt format suitable for corpus analysis. This conversion was accomplished using Notepad 11, which ensured the preservation of the text integrity and format. The prepared txt file served as the basis for following analyses using various digital tools. Each tool selected for the study possesses different features that enable a comprehensive and specific corpus analysis. The blend of these tools allows for multifaceted exploration of the corpus, leveraging the unique capabilities of each to examine different aspects of the text. The conversion process and careful selection of analytical tools underscore the study's commitment to rigorous and accurate data analysis, providing a full-bodied substance for examining the constitution's linguistic and thematic elements.

Table 1: Used tools and their respective version

Tools	Version
AntConc	4.2.4
Voyant	2.0
Python	0.73 (Textstat)
Packages (Textstat, NLTK)	3.8.1(NLTK)
Taguette	1.4.1

4. Results

Analysis of the Constitution of Bangladesh through Corpus Linguistics

This study utilises corpus linguistics to analyse the constitution of Bangladesh by employing a range of tools to assess various linguistic metrics. The analysis focused on total and unique word counts, vocabulary density, average words per sentence, sentence count, and readability scores, including the Flesch-Kincaid Grade Level and Flesch Reading Ease. Table 2 shows the results of each tool.

Table 2: Various information about corpus in different tools

Tools	Total words	Unique words	Vocabulary Density	Average Words Per sentence	Number of sentences	Flesch-Kincaid Grade Level	Flesch Reading Ease
AntConc	19435	1952	-	-	-	-	-
Voyant	20,016	2,135	0.107	76.1	-	-	-
Python Package (Textstat, NLTK)	19970 (Textstat)	2102 (NLTK)	0.10 (NLTK)	41.98 (NLTK)	534 (Textstat) 554 (NLTK)	17.9 (Textstat)	33.51 (Textstat)

Total word count (including numbers) using NLTK: 23,181 Total word count using NLTK: 13,592

- **Total Words & Unique Words:** The corpus contains approximately 19,435 to 20,016 total words and 1,952 to 2,135 unique words across different tools. This variation reflects the lexical diversity and richness of the constitution's language.

- **Vocabulary Density:** The vocabulary density in the corpus is around 0.10, indicating a moderate level of lexical diversity. This suggests a balanced use of varied vocabulary throughout the text.

- **Average Words per Sentence:** The corpus exhibits an average of 59.04 words per sentence, indicating longer sentences and a more complex or technical writing style. This metric highlights the sophisticated sentence structure within the document.

- **Sentences in Total:** The average sentence count is approximately 544, providing insight into the text's overall structure and the density of ideas expressed per sentence.

- **Flesch-Kincaid Grade Level:** The Flesch-Kincaid Grade Level score is 17.9, suggesting the use of complex language. This indicates that a higher level of education might be required to understand the text effectively.

- **Flesch Reading Ease:** With a score of 33.51, the text is considered somewhat difficult to read. This score reflects the complexity and formal nature of the legal language used in the constitution.

These results collectively provide a nuanced understanding of the linguistic characteristics of Bangladesh's constitution, highlighting its complexity and the sophistication of its language. The analysis reflects the constitution's comprehensive nature, catering to a well-educated audience with rich vocabulary and complex sentence structures.

4.1 Frequency Analysis

Table 3: AntConc generated Frequency Distribution of Words in the Constitution

Function words		Content words	
Type	Frequency	Type	Frequency
the	1675	parliament	242
of	1326	law	167
to	637	president	155
and	485	office	125
or	472	court	119
in	450	person	114
shall	443	constitution	102
a	426	article	94
be	359	republic	76

any	321	Bangladesh	75
by	300	service	75
for	230	public	72
is	183	election	70
as	178	provisions	62
that	163	speaker	60

The main focus group of words would be content words because they are the main carriers of information. Parliament was the highest frequency word with a frequency of 242. Given its frequency, it is likely that the corpus covers a wide range of legislative topics, including information about laws, parliamentary processes, governance structures, and related discussions. The second most frequent word is law which implies an extensive discussion of legal statutes, rules, and judicial components, emphasising the role of legal precedents or frameworks in the corpus. The word "President" appears 155 times making it third most frequent words, indicating that it is used frequently to discuss executive authority, governance, or the role of a head of Bangladesh. Discussions were held throughout the corpus regarding the duties, responsibilities, and powers of the president. Word 'office' indicates reference about government agencies, organisation and governmental office and their roles. The appearance of the word court suggests that legal institutions, judicial procedures, or court-related topics are heavily discussed in the corpus. The next word, person, suggests discussion about personal rights or roles in this society within the legal and governmental context.

In short, high-frequency words indicate a significant emphasis on governance, legal, and legislative issues throughout the corpus. Terms such as law, parliament, constitutions, and governmental institutions are frequently used, suggesting that the corpus is primarily concerned with legal frameworks, legislative procedures, and governance structures in Bangladesh.

4.2 Collocation Analysis

In linguistics and text analysis, collocation analysis is an effective technique to provide a deep understanding of word associations and contextual meanings within a corpus. Collocation analysis examines how words co-occur in specific terms of interest to uncover the underlying relationships and contextual usage patterns in the corpus. For this collocation analysis, the ten most frequent words from Table 3 were used. Most of the three content words are used in order to obtain a more in-depth view of how the words were used in the corpus.

Table 4: AntConc generated Collocation Analysis of Frequent Words in the Constitution

Frequent words	Collocated words	Freq LR	Freq L	Freq R
parliament	member(s)	57	53	4
	dissolved	11	3	8
	secretariat	7	5	2
law	made	25	8	17
	accordance	12	9	3
	restrictions	7	7	0
president	satisfied	10	0	10
	assent	8	2	6
	approval	5	5	0
office	hold	21	19	2
	entered	11	8	3
	successor	8	4	4
court	supreme	64	54	10
	division	44	16	28
	high	33	30	3

person	a	56	42	14
	who	12	0	12
	any	44	31	13
constitution	commencement	13	12	1
	amendment	8	2	6
	provision	15	14	1
article	under	34	31	3
	applies	9	0	9
	pursuant	7	5	2
republic	service	30	28	2
	people	8	5	3
	account	7	6	1
Bangladesh	territory	6	5	1
	means	11	5	6
	people	8	8	0

Collocation analysis, an integral part of linguistic and textual studies, involves examining how words co-occur in a corpus to reveal the underlying relationships and contextual patterns. This analysis utilizes the ten most frequent words from the constitution, focusing on the top three collocates to understand the contextual use and implications of these terms.

Parliament is frequently associated with "member(s)", "dissolved", and "secretariat". These collocates indicate discussions around parliamentary composition, changes in legislative status, and the administrative facets of parliamentary operations. The term "member(s)" suggests a focus on the individuals within the parliament, "dissolved" indicates legislative alterations or disbandment, and "secretariat" points to the bureaucratic aspect of parliamentary proceedings.

Law collocates with "made", "accordance", and "restrictions", reflecting the legal processes and constraints within the corpus. "Made" is indicative of the legislative process, "accordance" suggests conformity or compliance with established standards, and "restrictions" points to the limitations or boundaries set by legal systems.

President is frequently found in proximity to "satisfied", "assent", and "approval", emphasizing the executive's decision-making and agreement roles. "Assent" and "approval" relate to the presidential sanction of laws or policies, while "satisfied" implies contentment or acceptance of conditions or outcomes.

Other words such as **office**, **court**, **person**, **constitution**, **article**, **republic**, and **Bangladesh** show varied collocations that collectively underscore the constitution's focus on governance, legal proceedings, individual rights, legislative specifics, and the national context.

In brief, collocation analysis reveals the intricate usage of significant constitutional terms, exposing a multifaceted network of thematic and contextual connections. It offers a comprehensive perspective on the constitution's concentration on legislative, legal, and administrative matters, offering a more profound insight into the content and emphasis of the document. This analytical strategy aids in deciphering the text, leading to a more comprehensive interpretation of the constitution's language and ramifications for governance and legal frameworks in Bangladesh.

4.3 Concordance Analysis

Concordance analysis explores the use of words in specific contexts to unveil their semantic connections, collocates, and syntactic functions, thereby establishing an empirical foundation for linguistic scrutiny. This scrutiny elucidates subtle nuances and contextual applications of words in the body of legal documents. The examples of concordance shown in Table 5 describe how particular words manifest in various governmental and legal settings, each contributing to thematic comprehension of the material. By offering instances of a chosen word within its respective context, concordance analysis scrutinises word utilisation, exposing semantic connections, collocates, and syntactic functions to grasp nuanced significance. Through systematic scrutiny of word applications, concordance analysis

provides empirical backing for linguistic studies and illuminates the composition and interpretation of words in a given text or corpus.

Table 5: AntConc generated Concordance Analysis of Top Ten Frequent Words

Left context	Hit	Right context
(5) Subject to this article, the privileges of	parliament	and of its committees and member may be determined by Act of Parliament.
All citizens are equal before	law	and are entitled to equal protection of law.
(1) There shall be a	president	of Bangladesh who shall be elected by members of Parliament in accordance with law.
(3) The Auditor General may resign his	office	by writing under his hand addressed to the President.
There shall be in addition to the Supreme	court	such courts subordinate thereto as may be established by law.
(5) No	person	shall be subjected to torture or to cruel, inhuman, or degrading punishment or treatment.
(2) The executive power of the Republic shall, in accordance with this	constitution	be exercised by or on the authority of the Prime Minister.
Suspension of provisions of certain	article	during emergencies 141B.
Bangladesh is a unitary, independent, sovereign	Republic	to be known as the People's Republic of Bangladesh.
The citizenship of	Bangladesh	shall be determined and regulated by law.

- **Parliament** is situated within discussions about privileges, committees, and members, indicating its central role in legislative governance and the procedural aspects of legislative activities.
- **Law** is prominently associated with equality and protection, reinforcing its fundamental role in establishing justice and legal standards within the country.
- **President** appears in the context of election and governance, highlighting the role of the executive in the country's political structure.
- **Office** refers to official positions and duties, often in the context of resignation or official procedures, emphasizing the administrative and functional aspects of governance.
- **Court** is linked to judicial authority and legal establishments, pointing to the constitution's coverage of the judiciary and its subordinate entities.
- **Person** is associated with rights and humane treatment, reflecting the constitution's commitment to individual rights and protections.
- **Constitution** is frequently mentioned in relation to executive powers and legal frameworks, underscoring its role as the supreme law guiding the governance and legal order of the country.
- **Article** appears in discussions about legal provisions and their applications, especially in exceptional circumstances such as emergencies.
- **Republic** and **Bangladesh** are found in contexts that define the nation's identity, sovereignty, and legal regulations concerning citizenship.

Through this concordance analysis, it is evident that the constitution extensively covers topics related to the Republic of Bangladesh's legal and political systems, individual rights, and governance structures. The analysis highlights the document's focus on legal and governmental discourse, suggesting a higher level of reading comprehension due to

the specialised and technical language used. This examination allows for a deeper understanding of the constitution's themes, offering insights into its legal, political, and social dimensions.

4.4 Syntax Analysis

Syntax analysis involves dissecting the sentence structure and grammatical components of the text. One critical aspect of syntax analysis is Part of Speech (POS) tagging, which finds the distribution and frequency of grammatical categories like nouns, verbs, adjectives, etc. In the context of the constitution of Bangladesh, examining the distribution of nouns provides insight into the thematic and conceptual focus of the document.

Table 6 shows a diverse selection of nouns extracted from the corpus, which collectively highlight the central concepts and recurring themes that permeate the corpus. These nouns can be classified into three primary categories: *common nouns*, *proper nouns*, and *other nouns*. Each category represents distinct aspects of the discourse, encompassing governing structures and fundamental ideologies, among other elements. By offering a comprehensive overview of the text's thematic range and focal points, Table 6 reflects the multifaceted ideas and concepts that form the core of the text, thereby providing an illuminating perspective on the text's overall scope and content.

Table 6: Type of nouns in the corpus

Type of noun	Examples of the nouns in the corpus
Common Nouns	'independence', 'day', 'struggle', 'liberation', 'nationalism', 'socialism', 'democracy', 'secularism', 'heroic', 'brave', 'martyrs', 'pledging', 'aim', 'process', 'society', 'exploitation', 'rule', 'law'
Proper Nouns	'Constitution', 'People', 'Republic', 'Bangladesh', 'Allah', 'Beneficient', 'Merciful', 'Creator', 'Merciful', 'PREAMBLE', 'March', 'Further', 'State',
Other Nouns	'people', 'ideals', 'lives', 'principles', 'rights', 'freedom', 'equality', 'justice', 'citizens', 'duty', 'protect', 'supremacy', 'embodiment', 'contribution', 'peace', 'operation', 'aspirations', 'mankind', 'Constituent', 'day'

Interpretation of Syntax Analysis:

- **Common Nouns:** These nouns often signify general entities, concepts, or ideas. In the constitution, common nouns, for examples, 'independence', 'liberation', and 'struggle' echo the historical context and goals of the nation. Terms like 'nationalism', 'socialism', 'democracy', and 'secularism' indicate the political and ideological foundations upon which the country is governed. The frequent occurrence of these nouns underlines a emphasis on historical narratives, political ideologies, and societal goals.

- **Proper Nouns:** Proper nouns symbolise specific names and titles, often giving particularity to the discourse. In this corpus, for examples, 'Constitution', 'Republic', and 'Bangladesh' frequently occur, emphasizing the document's legal and national significance. References to 'Allah', 'Beneficient', 'Merciful', 'Creator' resonance religious undertones, highlighting the spiritual or divine aspect acknowledged in the constitution.

- **Other Nouns:** This category captures a broad range of nouns that do not fit neatly into the common or proper categories but are significant in carrying the corpus's thematic spirit. Nouns for examples 'ideals', 'principles', 'rights', 'freedom', 'equality', and 'justice' signify the fundamental values and goals embedded in the constitution. 'Citizens', 'duty', 'protection', and 'supremacy' refer to the roles, responsibilities, and governance apparatuses. 'Aspirations', 'collaboration', and 'peace' show a focus on communal goals and international cooperation.

In short, the syntax analysis through part of speech tagging, particularly examining nouns, reveals a rich bonding of themes in the constitution of Bangladesh. It echoes a broad range of notions across-the-board national identity, foundational principles, societal goals, and governance structures. The range and distribution of nouns highlight the constitution's wide-ranging approach to defining the nation's code, legal framework, and social aims. This analysis helps in understanding the constitution's attention on rights, governance, historical narratives, and the ideological reinforcements that guide the nation.

Syntax analysis through part of speech (POS) tagging provides a quantitative look into the grammatical components of a text, offering insights into the frequency and types of words used in a corpus (Bird, Klein, & Loper, 2008;). The

following table exemplifies the distribution of POS tags in the constitution of Bangladesh, according to the NLTK library classifications. It also provides examples of each part of speech as found in the text.

Table 7: Frequency of Part-of-Speech with Examples from the Corpus

The list of POS tags in the NLTK library	Frequency of Part-of-Speech Tags in the corpus	Examples of each part of speech from the corpus
CC – coordination conjunction	CC: 1006	CC: and, but
CD – cardinal digit	CD: 690	CD: 1972, 1971
DT – determiner	DT: 2842	DT: The, a
EX – existential there	EX: 19	EX: There, there
FW – foreign word	FW: 14	FW: etc.
IN – preposition/ subordinating conjunction	IN: 3415	IN: OF, through
JJ – adjective	JJ: 1145	JJ: historic, national
JJR – adjective, comparative	JJR: 30	JJR: greater, earlier
JJS – adjective, superlative	JJS: 4	JJS: highest, nearest
MD – modal	MD: 587	MD: shall, will
NN – noun, singular	NN: 3598	NN: independence, struggle
NNS – noun, plural	NNS: 953	NNS: people, ideals
NNP – proper noun, singular	NNP: 1964	NNP: Constitution, Republic
NNPS – proper noun, plural	NNPS: 4	NNPS: Nations, Judges
PDT – predeterminer	PDT: 6	PDT: all, such
POS – possessive ending	POS: 8	POS: 's, '
PRP – personal pronoun	PRP: 208	PRP: We, themselves
PRP\$ - possessive pronoun	PRP\$: 154	PRP\$: our, their
RB – adverb	RB: 282	RB: Assembly, hereby
RBR – adverb, comparative	RBR: 8	RBR: more, later
RBS – adverb, superlative	RBS: 2	RBS: most
RP – particle	RP: 16	RP: out, about
VB – verb, base from	VB: 905	VB: dedicate, sacrifice
VBD – verb, past tense	VBD: 153	VBD: established, inspired
VBG – verb, gerund/ present participle	VBG: 301	VBG: having, Pledging
VBN – verb, past participle	VBN: 691	VBN: proclaimed, secured
VBP – verb, present	VBP: 91	VBP: do, are
VBZ – verb, 3rd person. Present takes	VBZ: 400	VBZ: abrogates, subverts
WDT – wh-determiner	WDT: 103	WDT: which, whatever
WP – wh-pronoun	WP: 33	WP: who, whom
WRB – wh-adverb	WRB: 36	WRB: When, Where

Table 7 shows the frequency of Part-of-Speech as examples from the corpus of the linguistic elements from constitution. Determiners (DT) play most frequently, signifying their crucial role in sentence construction and specificity in the text. Singular nouns (NN) and prepositions/subordinating conjunctions (IN) follow closely, suggesting a text rich in specific concepts and detailed relational structures.

The examples provided under each POS tag show the variation and context of the grammatical elements. For instance:

- **CC (Coordinating Conjunction):** Words identical "and" and "but" are fundamental in connecting clauses and ideas, indicating complex sentence structures.

- **NN (Singular Noun):** "Independence" and "struggle" are central themes, reflecting the focus on national identity and historical context.
- **VB (Base Verb):** Verbs identical "dedicate" and "sacrifice" signify action and commitment, likely reflecting the tone and intent of the constitution towards national aims and duties.
- **JJ (Adjective):** Adjectives such as "historic" and "national" describe the qualities of nouns, adding depth to the narrative and exemplifying important features and values.

The POS tagging and frequency analysis provide a quantitative description of the constitution's language, showing the complexity and diversity of its grammatical structure. This analysis aids in understanding how different grammatical elements contribute to the overall meaning and thematic emphasis of the text. It puts the groundwork for deeper linguistic and semantic analyses, facilitating a more nuanced interpretation of the constitution's language and its implications for the nation's governance and legal framework.

4.4.1 Grammatical Patterns in the Constitution in Bangladesh

Grammatical patterns in a text disclose the common sentence structures and their frequency, providing understandings into the language patterns, recurrent themes, and the ways ideas are typically structured and communicated. The following analysis breaks down various sentence structures identified within the constitution, each with its respective frequency and an example for each pattern. These patterns help know the thematic analysis and the grammatical structure of the text.

a) Sentence Structure: NN IN NN CD.

- **Frequency:** 5

- **Example:** Equality of opportunity 19.

This structure includes singular nouns followed by a preposition, another noun, and a cardinal number, often indicating an article or section number. The structure is typically used to highlight specific concepts or principles alongside their location in the document, as seen in "Equality of opportunity 19", referring to article 19.

b) Sentence Structure: NNP IN NN CD.

- **Frequency:** 3

- **Example:** Reorganisation of service 136.

This pattern is characterized by proper nouns followed by a preposition, a noun, and a cardinal number. It is used to signify specific provisions or sections, often named or titled with proper nouns, such as "Reorganisation of service 136", pointing to a particular reorganization clause in article 136.

c) Sentence Structure: NN IN DT NNP CD.

- **Frequency:** 2

- **Example:** Supremacy of the Constitution 7.

This structure typically indicates the importance or status of a specific concept, often a proper noun, in relation to the constitution. It includes a singular noun, a preposition, a determiner, a proper noun, and a cardinal number. For instance, "Supremacy of the Constitution 7" emphasizes the primacy of the constitution, specifically mentioned in article 7.

d) Sentence Structure: NN CC NN IN NN $ CD.

- **Frequency:** 2

- **Example:** Socialism and freedom from exploitation 10.

This pattern links two concepts with a conjunction, followed by a preposition, a noun, a dollar sign, and a cardinal number. It is used to connect and emphasize two related ideas or principles, as seen in "Socialism and freedom from exploitation 10", representing a emphasis on both socialism and freedom from exploitation in article 10.

e) Sentence Structure: NN IN JJ NNS CD.

- **Frequency:** 2

- **Example:** Provision of basic necessities 15.

Connecting a singular noun, preposition, adjective, plural noun, and cardinal number, this structure underlines provisions or rights, often described qualitatively and linked to a specific article or section number. "Provision of basic necessities 15" focuses on the promise of fundamental rights as charted in article 15.

These grammatical patterns expose a constitution concerned with outlining specific rights, principles, and organizational structures, often associated with their precise location in the document. The frequency and form of these structures indicate a text that uses formal, structured language to convey its foundational laws and principles, reflecting the constitution's function as a detailed, authoritative source of national governance and legal framework.

4.5. Word Cloud

Figure 1: AntConc generated Word Cloud from the Corpus of the constitution of Bangladesh

Creating a word cloud visually represents the frequency and prominence of specific terms within a text [i.e. corpus]. In the context of the constitution of Bangladesh, terms such as "parliament", "president", "shall", "law", "office", "constitution", "republic", "court", "Bangladesh", "article", "public", and "service" are particularly emphasised and showed as bolder within the word cloud. This emphasis indicates the importance and frequent occurrence of these terms within the corpus, suggesting central themes related to governance, law, and public services in Bangladesh. This image [i.e., word cloud] are likely echoed in the constitutional emphasis on legislative, executive, and judicial structures and national identity. Thus, the word cloud may be considered an effective tool for quickly identifying and understanding key concepts and themes prioritised in the constitution. This also presents a sophisticated representation of the interplay among democracy, law, and governance. It shows elaborate interconnections within a formalised system, all of which are deep-rooted in the constitution. Each relation signifies a key association, highlighting the collaborative efforts necessary for an effective government and protection of a successful democratic society.

4.6 Thematic Analysis

The examination of the constitution of Bangladesh through thematic analysis discloses several key themes that embody its fundamental principles, such as rights and freedoms, governance structure, judicial and electoral frameworks, and mechanisms for oversight and accountability. These themes encompass a diverse collection of elements that reflect the comprehensive nature of constitutional documents.

Theme 1: Constitutional Ideals and Foundations of Bangladesh:

The theme encompasses the fundamental principles and values protected in the constitution, which represent the nation's ethos, governance structure, and societal aspirations. It includes: Acknowledgement of national identity and struggle, recognising the pursuit of independence and the resulting collective sense of national identity. Foundation on Founding Principles, incorporating nationalistic, socialist, democratic, and secular ideologies. Emphasis on constitutional supremacy, highlighting the paramount importance of the constitution as the ultimate expression of people's choice. The principles of citizenship and constitutional integrity govern citizenship, reaffirming the

immutability of the constitution, the separation of powers, and judicial independence. This ensures the independence of the judiciary and a clear separation of powers among the legislative, executive, and judicial branches of government. A system of checks and balances has been implemented and established to prevent the abuse of power and maintain government integrity. State policy and international relations encompass commitments to human rights, socialism, rural development, and peaceful foreign policy.

Theme 2: Fundamental Rights in the Constitution

This theme highlights the commitment of the constitution to safeguard the liberties and entitlements of individuals through the inclusion of various clauses. These clauses guarantee that individuals are bestowed with specific core rights and assurances such as freedom of expression, freedom of worship, and entitlement to a fair trial. The constitution voids any contradictory statutes in favour of national laws. Upon its activation, the constitution invalidates any regulations conflicting with fundamental rights. Legal equality ensures that all individuals receive uniform legal safeguards and recognition. This principle of legal equality is indispensable for upholding a righteous and equitable society where individuals are treated with honour and consideration. Discrimination based on various factors is prohibited. Gender equality ensures that women possess equal entitlement in all spheres of public and governmental activities. Legal protection and fairness in legal proceedings are ensured by all individuals. Citizens have the freedom to migrate, assemble, unite, and exercise faith without hindrance. The constitution also maintains the liberty of peaceful assembly and the privilege of establishing organisations. The constitution assurances the protection of property rights and privacy for citizens, about the protection of communications and residences. This protection includes both physical and digital modes of communication. The High Court Division is responsible for enforcing such rights. It is empowered to adjudicate cases refer to openings of fundamental rights and deliver a right compensation.

Theme 3: Governance and Constitutional Structure:

This theme explores into the details adjacent the framework, jurisdiction, and obligations of the state apparatus, as elucidated in constitution. It includes the section connect to executive powers, which explains the scope of authority and obligations consigned in the head of country alongside those of the executive authorities. The section on legislative powers and membership addressed the establishment, composition, and operation of the legislative body. Simultaneously, the government structure and function segment provides a detailed interpretation of the mandates and duties of the prime minister, cabinet, and assorted government divisions. Finally, the section proceeding financial statements and expenditures directs financial allocations, budgetary processes, and fiscal accountability.

Theme 4: Judiciary and Electoral Processes Framework

This explores into the fundamental and functioning parts of the judiciary and electoral processes, including the judicial institution and structure, and directs into the founding, organisation, and divisions of the Supreme Court. Judges' terms and selection include their qualifications, appointment process, and duration of service. Judicial independence and functions ensure judicial independence and detail how it functions. Election commission framework and procedures outline the formation, responsibilities, and operation of the election commission and related electoral processes.

Theme 5: Constitutional Oversight and Administrative Accountability

This theme involves constitutional governance, regulatory agendas, oversight mechanisms, and emergency provisions. It specifies the power of the accountant and auditor general and role in supervision public finances, governs the appointment, terms, and conditions of public service members, and defines the establishment, functions, and roles of Public Service Commissions [PSC, Bangladesh].

Furthermore, it outlines emergency powers and protects fundamental rights during state crises and the procedures for constitutional amendments and other legal and administrative provisions.

The constitution of Bangladesh has several attributes that exemplify its unwavering commitment to preserving national ideals, defending fundamental human rights, promoting sound governance, and establishing a system of supervision of the administrative process. The intricate and multifaceted nature of law presents a robust basis for the legal, social, and cultural fabric of the country. By adhering to these national principles and fostering equity among individuals, the constitution of Bangladesh instils confidence in their aspirations.

5. Discussion And Conclusion

The constitution of Bangladesh, established on 4 November 1972 is a formative document that underpins the governance structure, legal framework, and societal values. Its inclusive nature is reflected through various analyses ranging from frequency and collocation to thematic analysis. Here, I examined the insights resulting from these analyses and their implications for understanding the constitution's content. Specifically, I and many other studies (Rayhan & Khan, 2020; Bari & Dey, 2020; Hossain, 2022) found the role of the constitution in shaping the political landscape of Bangladesh and its impact on the rights and freedoms of its citizens.

Moreover, the frequent use of the word "parliament" highlights democratic values and highlights the crucial role of elected representatives in governing and making laws in Bangladesh. This not only shows the constitution's commitment to democratic principles, but also presents how the legislative body actively denotes the will of the people. Parliamentary systems allow citizens to participate directly in decision-making processes, ensuring a government that is more inclusive and representative. Through collocation and concordance analyses, we gain a deeper understanding of how these terms are used in specific contexts, revealing the associations and nuances attached to key constitutional terms. This linguistic analysis helps people understand the importance placed on different aspects of governance, law, and societal values.

Next, constitutional ideals and foundations of Bangladesh (i.e., Theme 1) examines the fundamental principles of the Bangladeshi constitution, affirming its firm commitment to nationalism, socialism, democracy, and secularism. These ideals are not mere aspirations but are embedded within the very core of legal and societal frameworks. Moreover, the constitution provides extensive explanation on the geographical boundaries, language, religion, and national symbols, firmly establishing its legal and cultural identity within these clearly defined parameters.

The thematic analysis examines a broad statement concerning fundamental rights (i.e., Theme 2), showing how the constitution upholds public freedoms and enforces equal and impartial treatment for all. This establishes a pivotal element in establishing a societal structure. Next, the constitution of Bangladesh is focused on the protection and enhancement of the environment, conservation of natural resources, biodiversity, wetlands, forests, and wildlife for the well-being of both current and future citizens (Alam & Endacott, 2022). Moreover, it highlights the government's duty to provide healthcare services to all segments of society and to improve the health and nutrition status of its populace (Seddiky, 2020). The constitution also ensures the direct involvement of citizens in the establishment of local bodies and development initiatives, emphasizing the significance of empowerment through participation in local governance (Uddin, 2019).

 Furthermore, the constitution of Bangladesh enacts legal obligations on the government to defend the rights of its citizens, including ensuring food security and preventing food adulteration, which are believed as violations of fundamental human rights (Solaiman & Ali, 2014). Additionally, the constitution impacts the health policies, as evidenced by the attention given to musculoskeletal health in the policies of the Ministry of Health and Family Welfare (Briggs et al., 2022).

The constitution offers a sturdy and all-encompassing legal groundwork that delineates national principles and governing frameworks. It elucidates the parliamentary system, protects fundamental rights, explains the structure and functions of the government, and establishes the key principles of state policy. This legal document has undergone multiple amendments to meet the changing needs and aspirations of Bangladeshi society. This study uses extensive linguistic and thematic scrutiny to delve into the intricate details and expansive scope of the constitution, emphasising the democratic institutions, rights, and governance mechanisms it upholds. The constitution's significance on fundamental rights highlights Bangladesh's commitment to individual dignity and social justice, ensuring its sustained significance and flexibility to the citizen's conditions. The stable significance of the constitution as a guiding text for the country attests to its capacity to embody the collective spirit and aspirations of Bangladesh for well-being, justice, and equality under the governance framework.

5. Limitation

This study provides valuable insights into syntax analysis and operates within several constraints that warrant consideration. First, the analysis relies predominantly on automated processes generated using Python-based tools. Such a dependency on tool-generated results can introduce biases specific to the algorithms and methodologies implemented in the software used. Second, the study employed the Textstat package and NLTK version 3.8.1, an older version of the natural language processing package. The use of this version, while sufficient for the basic

analyses, might not pull the advancements and improvements available in more recent versions of these packages. Consequently, the results and interpretations might differ from those obtained using the latest tools, which may include enhancements in algorithmic accuracy, efficiency, and size of linguistic features analysed. Moreover, the field of natural language processing is rapidly evolving, and newer packages or versions might offer more refined approaches to syntax analysis that could generate different results, more closed to accuracy. This difference is particularly applicable in the context of frequency analysis. This is why for triangulation of frequency, more than one tools were employed (see Table 1). The coding and analytical approach adopted in this study might have led to inaccuracies in the frequency counts of syntactic structures. Such potential inaccuracies stem from both the inherent limitations of the older software version and the specific coding practices employed in this analysis. In conclusion, while the findings of this study provide a foundational understanding of syntactic patterns in the corpus under investigation, they should be interpreted with awareness of the methodological limitations imposed by the tools and techniques used. Future research could benefit from incorporating more recent software versions and by considering alternative coding approaches to enhance the robustness and generalisability of the results.

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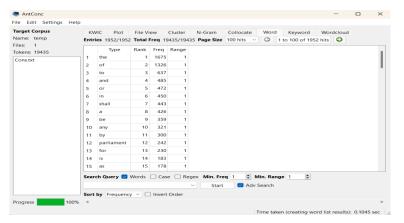
Appendix

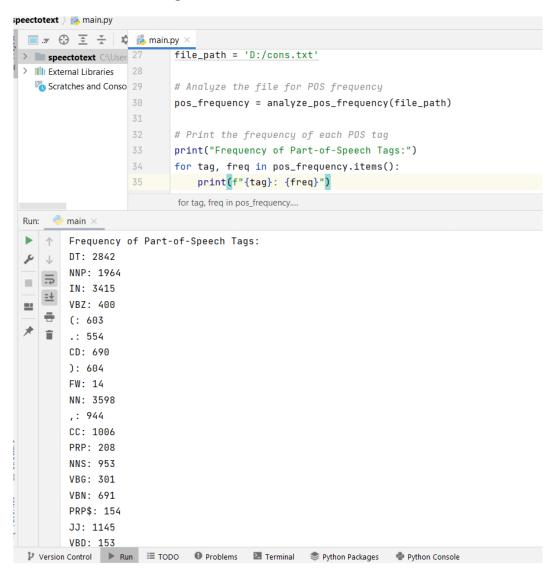**Figure A 1**. Screenshot of AntConc interface.

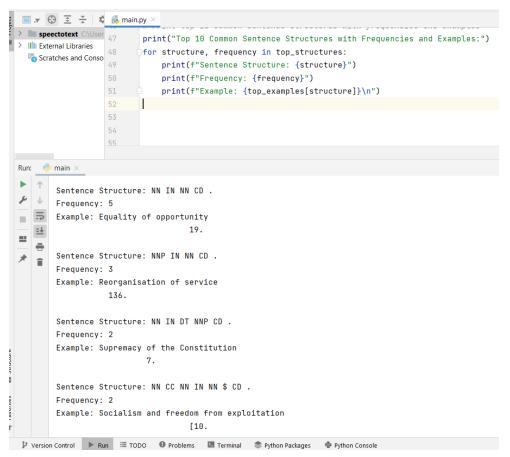**Figure A 2**. Python code examples of frequency of parts of speech.

Figure A3. Python code example. The screenshot shows a Python script designed to perform textual analysis, illustrating how the code is structured and executed in a development environment.
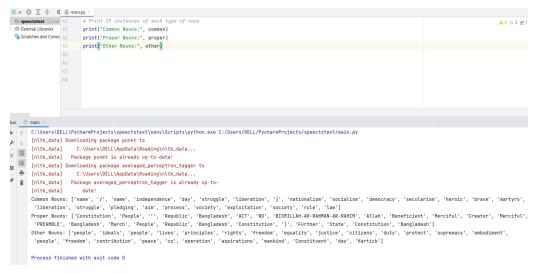

Figure A4. Python code example. The screenshot shows a Python script designed to perform syntax analysis nouns in the corpus.

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