A Corpus-Based Analysis of Ministerial Speeches During Natural Crises

Nor Azikin Mohd Omar[1], Ku Aimi Arissya Ku Ruslin[2], Nursalina Ismail[1], Junaidah Abdul Rahman[3] and Zanirah Wahab[1]

[1]Faculty of Languages and Communication, Universiti Sultan Zainal Abidin, Malaysia
[2]Language Academy, UiTM Pulau Pinang, Malaysia [3]Faculty of General Studies and Advanced Education, Universiti Sultan Zainal Abidin, Malaysia.
Email: norazikin@unisza.edu.my

Abstract
The intersection of disaster management and leadership discourse has garnered growing scholarly interest, particularly in understanding how language shapes the effectiveness of crisis response. In the context of natural disasters, such chaotic situations require strategic communication from leaders who must navigate the complexities of governance under public scrutiny. Taking a corpus-assisted approach to leadership, this study focuses on the linguistic patterns employed by global leaders and ministerial officers in their speeches when addressing natural disasters. The research draws on the Natural Disaster Corpus 2023 (NDC23), comprising 115,970 tokens from 104 official ministerial speeches delivered in response to various natural disasters throughout 2023. The speeches were sourced from open-access platforms, including government websites, United Nations resources, and climate-focused organizations. The corpus was analyzed using AntConc 4.2.4, which facilitated the exploration of word frequency, N-Grams, KWIC, clustering, and collocation patterns in leadership discourse. The analysis highlights the significant role of language in leadership during natural disasters, revealing a reliance on modal verbs, personal pronouns, and present continuous tense as key strategies. These linguistic choices help leaders express intentions, demonstrate ongoing efforts, and establish connections with affected communities as part of their strategies to engage and reassure audiences during crises. The study also provides fresh insights into corpus-assisted methodologies, underscoring the value of macro-level perspectives on language patterns within large datasets, while reinforcing the concept of leadership as a socially rooted practice.
Keywords: Leadership, Leadership Discourse, Crisis, Corpus- Assisted Tools, Natural Disaster

Introduction
Disasters are often political events, as they are deeply intertwined with issues of power, governance, and public policy. The management of these events can have far-reaching

political consequences (Wolensky & Miller, 1981). In times of crisis, political actors are under scrutiny by the public on how they respond and how the disasters often, but not always, become political crises (Olson & Gawronski, 2010, p. 207). When crises occur, government officials are bombarded with interviews and commentary, in which they are expected to respond with particular diligence despite the unavailability of resources or information pertaining to the current situation (Olson & Gawronski, 2010). As Wolensky and Miller (1981) emphasise, a failure to communicate promptly, effectively, and actively can result in a significant disjunction between the government and the public. Such strategies to communicate in turbulent times are typically known as crisis communication.

Fink (2013, p. 8) defines crisis as "a fluid and dynamic state of affairs containing equal parts danger and opportunity. It is a turning point, for better or worse". Ali et al. (2021), on the other hand, describe crisis as an emotionally fraught situation that invites reaction both from stakeholders and the public, which eventually leads to lost credibility and sustainability of a corporation. In short, crises are events that jeopardise the fundamental goals of an organisation. Nonetheless, a crisis does not necessarily entail threat or harm to an organisation. In some cases, it could render opportunities to improve the institution's reputational assets and hence, allow the institution to thrive (Harwati, 2013).

There are various types of crisis, namely natural and human-induced (Hutchins and Wang, 2008) and, abrupt and smouldering (Ali et al., 2021). Among natural crises are bushfires, earthquakes, and floods whereas bribery, corruption, scandal, and terrorist attack are classified as human-induced crises (Hutchins & Wang, 2008). On the other hand, abrupt crisis refers to sudden emergencies or incidents in which the company has practically no influence and perceives little blame or liability. Meanwhile, the smouldering crisis refers to the events that initially minor internal issues within a company that eventually become public and escalate over time due to ineffective management (Thomas & McNair-Connolly, 2017). In this study, we specifically focus on the natural disasters and utilise the terms crisis, disaster and hazards interchangeably when referring to hazards that occur abruptly and are ascribed to natural, physical or environmental elements (Pelling, 2003; Windsor, Dowell & Graesser, 2015).

Managing crises, also interchangeably known as responding to crisis, involves the risks of exploring every possible opportunity for disaster and preparing detailed plans for each and every one of them, or as Regester (1989) summarises it, anticipation, planning, preparation and training. Similarly, Pearson and Clair (1998, p. 61) define crisis management as "systematic attempt by organisational members with external stakeholders to avert crises or to effectively manage those that do occur". It is a process undertaken with a mixture of applied common sense, experience and time devoted to concentrating and developing flexible plans to solve the problems (Parsons, 1996). In short, crisis management refers to the comprehensive strategies implemented to reduce the severity of a crisis. Effective crisis response not only ensures the safety of individuals and the protection of critical assets but also reestablishes confidence in public governance (Boin, Kuipers & Overdijk, 2013).

According to some authors (Olson and Gawronski, 2010), a key aspect to crisis management is to gain better clarity or understanding through the various crisis phases and into a successful recovery, particularly to instill a) capabilities b) competencies c)compassion

d)correctness d)correctness e) credibility d)anticipation, or a guideline for crisis management in a variety of settings (Boin, Kuipers & Overdijk, 2013). Noticeably, studies on crisis management have also acknowledged the dynamic and collective effort between leaders and other parties, such as human resource professionals in cultivating activities crisis leadership competencies (Wooten & James, 2008).

Despite the fact that crisis communication is a profound reflection in one's leadership, scholarship on the ways in which political actors and emergency agencies lead during the various phases of a disaster has received sparse attention (Wolensky & Miller, 1981). Acknowledging that text and talk are fundamental to leadership, the scholarship within the view conceptualises leadership as an *activity* performed through discourse (Schnurr & Omar, 2021). Leadership is observed through skillful use of language by leaders in communicative events when they address the evolving needs and priorities during the crisis. Through discourse, the leaders may either represent themselves as a competent leader who acts and reacts effectively and suitably to the circumstances (Fetzer, 2011).

Hence, paralleling the emergent nature of natural disaster itself, we are interested in uncovering the word patterns utilised by leaders to communicate measures to halt the crisis and achieve particular goals during the crisis. Informed by corpus analysis tools, we explore the patterns of language choice used by the selected global leaders in response to natural disasters thereby seeking to quantify patterns of language choice in leadership used to describe the crisis situations. The study aims to address the following research question: What are the patterns of language choice used by the selected global ministerial officers in a challenging time?

In what follows, we first discuss some of the relevant literature on leadership in corpus linguistics analysis, before outlining the methodology used in this study. We then analyse the quantitative data to examine patterns of language choice and further discuss a selection of texts delivered by several global leaders while responding to natural crises. We end the paper with a discussion of these data and our observations for leadership language during turbulent times.

Corpus-Informed Analysis and Leadership in Crisis
A large of body of research has explored larger discursive devices used by politicians in unprecedented times in providing overview on language resources that help to accomplish their aims (Montiel, Uyheng & Dela Paz, 2021). Corpus refers to a collection of texts, of the written or spoken word stored and processed computationally for the purposes of linguistic research (Renouf, 1987, p. 1). The corpus of textual data in a particular context such as crisis has made a major contribution to the work of linguists, researchers and educators in comprehending the authentic use and emergent language patterns of certain communities (Minjie et al., 2023) hence providing empirical validation for current language theories and frameworks (Minjie et al., 2023). The application of data is used to explore different linguistic elements across multiple disciplines, highlighting the breadth of linguistic analysis and its application in fields ranging from translation (Olohan, 2002) to literature (Wahid, 2011), teaching and learning (McEnery and Xiao, 2011) and forensic linguistics (Blackwell, 2009) to name a few. The use of corpus linguistics and its techniques have highlighted its applicability to provide an objective corpus for analysis, thereby establishing an impartial avenue for

examination. The following paragraphs describe the studies utilising the methodological toolbox of corpus linguistics in looking more broadly at how leaders respond to a recent global crisis, COVID-19, through "patterns of shared and unique meanings between texts" (Montiel, Uyheng and Dela Paz, 2021, p. 4).

Understanding leadership as a discursive performance, Jaworska (2021) explores televised speeches and press briefings on COVID-19 given by the German chancellor Angela Merkel in March and April 2020. Using a corpus-assisted approach, this study identifies the frequent lexico-grammatical devices that she employed to do her 'convincing' work. The study then compares the identified features against her communicative style in speeches delivered in pre-pandemic times. The comparative insights show that in the limited mediatised time, Merkel chose a specific set of lexico-grammatical devices including certain pronouns to index interpersonal relationships, specifically 'wir' (we) and 'ich' (I) to create a sense unity and solidarity, express empathy, and gratitude, and to report on the recent action and her past experiences in crises. Other devices found in her speeches are modal verbs such as können (can) und müssen (must), time deictics such as heute (today) and jetzt (now) and logical connectors that highlighted the interpersonal dimension of her communications, urgency of the situation and logical cause-effect argumentation. While these devices change in her communicative style during the evolving health crises were not entirely new in Merkel's public statements, they were used with much higher frequency in her COVID-19 speeches. This study not only provides support for the notion of leadership as a discursive and situated activity but also shows that the corpus- based assisted tool reveals the available pool of systematic resources of Merkel's mediatised discourse during the first two months of the pandemic against her overall communicative style that might lead to a successful leadership at times of a crisis.

Power and Crosthwaite (2022), on the other hand, compares Scott Morrison and Jacinda Ardern's crisis response communication on COVID-19 by analysing lexical content within documents that were published on their websites. Using automatic extraction and statistical cross-corpus keyword comparison, the entire corpus shows the most significant keywords for Jacinda Ardern are alert level, *if*, *if you* statements and the pronouns *you*, and *your*. These lexicals show Ardern's clear communication and her highly familiar experiences with New Zealand natural disaster alert systems. Meanwhile, the increased use of *if*, *if you* statements and the pronouns *you,* and *your* are also noteworthy in Ardern's crisis response communication, in which these lexicals add empathy to direction-giving, build solidarity and display communality, and shape and promote compliance with public health guidelines. Scott Morrison, on the other hand, was found with frequent invocation of the National Cabinet that emphasised his collaboration and power sharing in decision making. Despite this, his commitment to delivering actionable and policy-focused messages resulted in a more depersonalised rhetoric of crisis in comparison to Ardern.

Mandl and Reis (2022) compiled a corpus of over 1500 pandemic-related speeches, containing over 4 million words that were delivered by 50 US state governors during the initial months of the COVID-19 pandemic. The studies utilised computational linguistic methods to explore how leaders respond to the crisis at the semantic, grammatical and linguistic-complexity properties of these speeches. the prevalence of hospital-related words (HOP), extreme descriptions (MST) and words related to the concept "bad" (BAD). Other

terminologies such as religious and prayer-related are used to console, show empathy, or offer hope to their constituents while delivering actionable messages. The study found an overall shift in verb usage from future tense (VB) to past (VBD) and present tenses (VBZ), such as shifting from talking about what they are planning to do in anticipation of the looming crisis, to describing what they are currently doing or what they have already done to respond to increasing case rates. This study contributes to pandemic-related public communication by leaders. Such findings may serve to decrease the quality and impact of public health communication, or alternatively, may serve to improve it and emphasise the power of the message.

Montiel, Uyheng and Dela Paz (2021) explores political rhetoric by national leaders during the COVID-19 pandemic by characterising shared and distinct patterns in the language used by national leaders during the crisis. Employing corpus linguistics methodology, the study uncovered the linguistic patterns in leaders' national addresses, which include 1) enforcing systemic interventions 2) uphold global unity 3) encourage communal cooperation 4) stoking patriotic fervour and finally 5) assuring responsive governance. More specifically, the study found that countries with populist head of states like Turkey and India are likely to invoke national spirit in their political rhetoric, meanwhile countries known for their institutional enforcers such as Japan and Italy are highly associated with implementing systematic interventions. The study also highlighted the differences between countries featuring populist and cosmopolitan rhetoric, which is distinct in terms of their leadership styles, as well as their experienced pandemic severity.

The reviewed studies indicated that corpus linguistics is advantageous for examining politics in its naturalistic contexts and highlighting linguistic devices that are prominent in national leaders' speeches throughout all phases of a crisis. (Jaworska, 2021; Montiel, Uyheng and Dela Paz, 2021; Mandl and Reis, 2022; Power and Crosthwaite, 2022). The automatic extraction and statistical cross-corpus keyword comparison help to organise global political rhetoric systematically, hence suggesting shared and distinct communicative styles that serve various functions in an evolving crisis.

In particular, corpus linguistics locates these integrative benefits in language, thereby offering the advantage of examining politics in its naturalistic context. It is worth highlighting the devices that were absent or less prominent in their speeches, within a context that requires decisive and timely response of those in power. This suggests a somewhat different communicative style in the evolving health crisis. Of course, it would be naive to assume that the language utilised could stop the crisis (Jaworska, 2021). Nevertheless, language patterns may serve as markers for language evolutions further discoveries, hence emphasising the discursive nature of discourse that are central in leadership (Omar & Habil, 2023).

Methodology
The corpus compiled for the current study consists of a total of 115,970 tokens drawn from 104 official ministerial speeches. These speeches were delivered in response to natural disasters in 2023, including but not limited to the California storms, Tropical Cyclone Freddy, floods in Brazil and New Zealand, Cyclones Gabriel and Mocha, the Maui Fire, and Hurricane Otis.

Table 1
Details of NDC23

Natural Disaster Corpus 2023 (NDC23)	
Type of corpus	Open–access, purpose-built corpus, written corpora
Number of tokens	115, 970 tokens
Text inclusive of	Official ministerial speeches addressing Natural Disasters in 2023
Text published dates	1st January 2024 to 31st December 2024
Text taken from	Open-access websites

The Natural Disaster Corpus 2023 (NDC23) is a collection of around 120,000 words (115,970 tokens) derived from official speeches by prime ministers, government representatives, and other notable figures. These speeches were predominantly gathered from official government platforms, United Nations websites, and organisations focused on climate issues, including the UK and US government sites (e.g., www.royal.uk, www.whitehouse.gov, https://www.un.org/en/). Additional materials were sourced from websites like www.waseda.jp, www.govt.nz, www.worldbank.org, and www.gob.mx, which were vital for assembling the corpus. The analysis of NDC23 utilised the word frequency and N-Grams features of AntConc 4.2.4, complemented by an in-depth examination using KWIC, clustering, and collocation functionalities.

Findings and Discussion
Based on the analysis of the 115,970-token corpus, the findings highlight the frequent use of specific words, cluster patterns, and multiword expressions, which are elaborated upon in the following section.

1. Wordlist, frequency and concordance line analysis
It was essential to first compile a list of the most frequently occurring words within the corpus. This list, once compiled, revealed a more substantial dataset for this study. Table 1 below presents the top 100 most frequently used words in the Natural Disaster Corpus 2023. Notably, 12% of these words appeared more than 1,000 times, with *'the'* occurring the most frequently at 6,552 instances, followed by *'and'* at 4,894 and *'to'* at 4,084. Upon reviewing the top 12 words, it is evident that they are all function words, primarily serving to establish grammatical relationships with content words within a sentence. Over time, it became clear that content words related to and commonly found alongside terms associated with natural disasters, such as 'climate' (25), 'people' (29), 'countries' (48), and 'disaster' (59), also featured prominently among the top 100 most frequent words.

Table 1
Wordlist of top 100 frequently used words in Natural Disaster Corpus 2023

No	Word	Freq	No	Word	Freq	No	Word	Freq
1	**the**	6552	48	**countries**	245	95	*first*	150
2	*and*	4894	49	*these*	243	96	*inflation*	149
3	*to*	4084	50	*there*	235	97	*development*	147
4	*of*	3295	51	*an*	234	98	*out*	147
5	*in*	2244	52	*who*	224	99	*transition*	145

6	**we**	1975	53	support	220	100	*where*	145	
7	*a*	1799	54	*been*	218				
8	*that*	1484	55	*do*	216				
9	*is*	1434	56	*those*	216				
10	*for*	1326	57	*was*	214				
11	*i*	1089	58	*when*	212				
12	*are*	1002	59	**disaster**	211				
13	**our**	970	60	*time*	210				
14	*on*	925	61	*or*	209				
15	*this*	854	62	*work*	207				
16	*it*	846	63	*which*	206				
17	*s*	843	64	*one*	205				
18	*with*	746	65	*just*	202				
19	*have*	730	66	*now*	199				
20	*as*	675	67	*international*	196				
21	*you*	633	68	*up*	196				
22	*will*	587	69	*president*	193				
23	*by*	552	70	*us*	190				
24	*be*	540	71	*know*	181				
25	**climate**	536	72	*united*	180				
26	*all*	460	73	*year*	176				
27	*more*	434	74	*like*	175				
28	*but*	433	75	*other*	175				
29	**people**	432	76	*today*	175				
30	*from*	417	77	*change*	174				
31	*world*	389	78	*over*	172				
32	*not*	380	79	*t*	171				
33	*they*	372	80	*how*	170				
34	*so*	358	81	*security*	170				
35	*has*	354	82	*than*	170				
36	*at*	342	83	*states*	168				
37	*can*	325	84	*your*	168				
38	*their*	321	85	*financial*	167				
39	*also*	319	86	*thank*	167				
40	*must*	285	87	*energy*	166				
41	*what*	271	88	*many*	162				
42	*new*	266	89	*action*	160				

43	*global*	259	90	*ve*	159
44	*need*	255	91	*communities*	153
45	*about*	248	92	*here*	153
46	*re*	248	93	*its*	152
47	*my*	247	94	*years*	151

As previously mentioned, the most frequent words identified throughout the corpus, including those occurring less than 1,000 times, were predominantly function words. This outcome is expected, given that the wordlist was generated using a search query for "word" with a minimum frequency and range of 1. This aligns with Baker's (2023) observation that "almost all forms of language have a high proportion of grammatical words" (Baker, 2023, p. 89). A more detailed analysis of these individual words and their significance is provided in the subsequent section. Table 2 presents a word list of the top 10 most frequent 2-word clusters beginning with *"the"*. Interestingly, the results reveal that all top 10 cluster patterns follow the structure "the + noun." Further examination through extended reading and KWIC analysis has allowed for a concordance line detailing the usage of such patterns, as shown in Table 3.

Table 2
Wordlist of top 10 most frequent 2-cluster patterns of 'The + N' as the most frequent word in Natural Disaster Corpus 2023

No	Cluster 'The + N'	Freq	Range	NormFreq	NormRange
1	*The World*	265	59	0.040	0.573
2	*The United*	156	48	0.024	0.466
3	*The Global*	82	34	0.013	0.330
4	*The Most*	79	45	0.012	0.437
5	*The International*	77	35	0.012	0.340
6	*The Climate*	70	40	0.011	0.388
7	*The UK*	69	11	0.011	0.107
8	*The Same*	64	35	0.010	0.340
9	*The People*	63	35	0.010	0.340
10	*The First*	56	33	0.009	0.320

Table 2 above showcase the top 10 common use of cluster 'The + N' in NDC23. The first on the list, *The World* with 265 occurrences is further elaborated in Table 3.

Table 3
Concordance line of cluster pattern "The World"

No	Left Context	Hit	Right Context
1	this Summit is a reminder of what	the world	must do to make the
2	to a renewable future. Now at COP28,	the world	must hit the brakes. And
3	fossil fuels – period. The solution is clear:	The world	must phase out fossil fuels
4	tackle climate change all the countries in	the world	must work together. This can
5	negotiations within the framework of the WHO.	The world	needs an ambitious and legally
6	the most vulnerable countries in the world.	The world	needs more from international financial
7	for the common good. Action is what	the world	needs now. We will be
8	for thirty pieces of silver is immoral.	The world	needs the industry to apply
9	But the writing is on the wall.	The world	needs to commit to a
10	repeated. Because all of us can see	the world	as it is – and by
11	they are if institutions do not reflect	the world	as it is. Instead of
12	reforming the Security Council in line with	the world	of today. It means redesigning
13	it up. Keep it going. Keep reminding	the world	of hope that Lithuania embodies.
14	share our values and our democracies around	the world	will benefit from the strength
15	together with our Allies and partners around	the world	will continue to stand with
16	to all of humanity." — "Russia believes that	the world	will grow weary and allow
17	growth that the net-zero economy around	the world	will need over the coming
18	women and girls and young people around	the world	are already on the streets,
19	security for the British people. Mr Speaker,	the world	faces a moment of danger,
20	face the existential threat of climate change…	The world	faces another existential threat… One

A detailed examination of the 20 concordance lines for the cluster "The World" in Table 3 reveals that it is most followed by modal verbs such as '*must*,' '*need*,' and '*will*,' which occur more frequently than '*as*,' '*of*,' and '*are*.' The use of these modal verbs suggests various functions. Specifically, when "The World" is followed by '*must*' or '*will*,' it appears that the speakers are expressing their commitment to taking action—actions that, in this context, are aimed at addressing the challenges posed by natural disasters. Additionally, some instances suggest future aspirations and predictions, as highlighted by Quirk et al. (1973).

For example, lines such as "The World must do…" (line 1) and "The World must work together…" (line 2) indicate a collective responsibility between the public and the authorities. The significant occurrence of the metaphor is no surprising knowing the fact that politicans are aware of the significance of connecting emotionally with the masses (Glotti, 2020; Imani et al., 2021; Jaworska, 2021; Omar & Habil, 2023). Similarly, lines that suggest future aspirations include "The world will benefit from the strength…" (line 14) and "The world will continue to stand with…" (line 15). Here, speakers project hopes for how "The World," in the future, will engage in actions related to disaster response, revealing a recurring pattern in

how speakers address natural disasters in 2023. Notably, there is a tendency to use modal verbs to convey intentions, aspirations, and future predictions.

Tables 4 and 5
Further Illustrate the Specific Use of "We" and "Our" in Three-Word Clusters

No	Cluster 'We + V + Prep'	Freq	No	Cluster 'We + V + Prep'	Freq
1	*We need to*	56	11	*We re also*	12
2	*We re going*	34	12	*We are seeing*	11
3	*We will continue*	25	13	*We need a*	11
4	*We have to*	23	14	*We also need*	10
5	*We are also*	18	15	*We do not*	10
6	*We will also*	17	16	*We don t*	10
7	*We have a*	15	17	*We must also*	10
8	*We want to*	13	18	*We need your*	10
9	*We are working*	12	19	*We will be*	10
10	*We know that*	12	20	*We have been*	9

Table 4 Wordlist of top 10 most frequent 3-cluster patterns of 'We + V + prep.'

To achieve this, a wordlist for "we" with a minimum frequency of three was generated, revealing the top 10 most frequent three-word clusters involving "we." Notably, these clusters predominantly follow the pattern 'We + verb + preposition.' A detailed analysis shows a strong tendency for the pronoun "we" to be followed by modal verbs, as seen in phrases like "we need to…" (line 1), "we will…" (line 3), "we have to…" (line 4), "we want to…" (line 8), and "we must…" (line 17). The phrase "we need to" (line 1) appears most frequently, with 56 occurrences, while "we will continue" (line 3) ranks third with 25 occurrences. The frequent use of the pronoun "we" followed by modals indicates the speakers' commitments, express sympathy and serves to reassure the public about their forthcoming actions (Jaworska, 2021).

Table 5
The 10 most frequent 3-cluster patterns of 'our + N + Conj

No	Cluster 'Our + N + Conj'	Freq	No	Cluster 'Our + N + Conj'	Freq
1	Our commitment to	10	9	Our nation and	5
2	Our efforts to	9	10	Our nation s	5
3	Our response to	8			
4	Our understanding of	8			
5	Our ability to	7			
6	Our people and	7			
7	Our world is	6			
8	Our allies and	5			

A similar wordlist with a minimum frequency of 3 was generated for the pronoun "*our*" within the corpus. Table 5 displays the top 10 most frequent 3-cluster patterns involving "*our*," revealing a clear pattern of "*our* + N" followed by a conjunction. Notably, the nouns most frequently collocating with "*our*" and followed by a conjunction are "*commitment*" (line 1), "*efforts*" (line 2), and "*response*" (line 3). These top three nouns highlight collective actions will be or being undertaken while providing reassurance to the public.

The most frequent Iusters are fur"her 'xamined in the concordance lines presented in Tables 6,7, and 8.

Table 6
Concordance lines for typical use of 'our commitment to'

No	Left Context	Hit	Right Context
1	is strengthening all four. We also affirm	our commitment to	comprehensive security for the
2	valued contributions. Throughout this document we reaffirm	our commitment to	the Arctic region. Of
3	it — we're also making good on	our commitment to	address the historic levels
4	only 28% funded. The UK is unwavering in	our commitment to	provide aid to the
5	called for international solidarity. Let us renew	our commitment to	a strong and effective
6	down. He still doesn't understand that	our commitment to	our values, our freedom
7	for African Union-led peace support operations.	Our commitment to	international peace and security
8	will not waver. (Applause.) I mean that.	Our commitment to	Ukraine will not weaken.

A closer examination of Table 6 highlights the frequent use of the cluster pattern "*our commitment to*" Contextually, it is clear that speakers are explicitly affirming their dedication to a specific cause or action.

Table 7
Concordance lines for typical use of 'our efforts to'

No	Left Context	Hit	Right Context
1	We're going to continue to keep up	our efforts to	counter terrorist threats in
2	in sustainability reporting. 11. Second, we will redouble	our efforts to	forge a climate-resilient
3	current assessment of the economic outlook and	our efforts to	bring inflation back to
4	climate crisis, we need to step up	our efforts to	make our economies more
5	and supplies – is a body blow to	our efforts to	deliver food, water, health

Similar to the cluster "*our efforts to*," speakers elaborated on their initiatives to undertake specific actions. Examples include phrases such as "...*forge a climate-resilient*..." (line 2) and "...*deliver food, water, health*..." (line 5).

Table 8
Concordance lines for typical use of 'our response to'

No	Left Context	Hit	Right Context
1	no greater example of those commitments than	our response to	the war in Ukraine.
2	The heartening thing is that over time,	our response to	disasters has evolved and
3	you can see all of this in	our response to	the invasion of Ukraine.
4	security services. We will shortly set out	our response to	the Intelligence and Security
5	all member states must be unyielding in	our response to	Russia's grave violation
6	shared UN Charter. If we waver in	our response to	Russia's invasion of
7	purpose, determination that we have demonstrated in	our response to	Russian aggression in Ukraine
8	no greater example of those commitments than	our response to	the war in Ukraine.

Additionally, Table 8 demonstrates the typical usage of the cluster "*our response to*" where the context frequently indicates a direct object of the response, such as "*to the war*" (line 1), "*to disasters*" (line 2), and "*to Russia's invasion*..." (line 6). Common collocates in this context include terms like "*war*", "*invasion*" and "*disaster*".

N-grams analysis

The preceding analyses of wordlists, frequency, and concordance lines have identified significant language patterns within NDC23. To further investigate these patterns, N-gram analysis was conducted to generate multiword expressions (MWEs) or lexical bundles within the corpus without the need for predefined search terms. As illustrated in Table 9, the analysis utilised a search query for "words" with a minimum frequency of one and a range setting of one. An N-gram size of four was selected to ensure the generation of meaningful results.

Table 9
Top 10 N-grams of Natural Disaster Corpus 2023

No	N-Gram size of 4	Freq	Range	NormFreq	NormRange
1	*We're going to*	34	11	293.963	0.107
2	*At the same time*	28	17	242.087	0.165
3	*We will continue to*	25	16	216.149	0.155
4	*I would like to*	24	19	207.503	0.184
5	*In the face of*	23	16	198.857	0.155
6	*In the United States*	22	13	190.211	0.126
7	*Of the United Nations*	22	9	190.211	0.087
8	*Of the world s*	21	14	181.565	0.136
9	*And the United States*	19	6	164.273	0.058
10	*And that s why*	17	10	146.981	0.097

The N-grams analysis clearly indicates that the cluster pattern "*We're going to*" (line 1) is the most frequent multiword expression (MWE) or lexical bundle in the ND23 corpus, appearing 34 times with a range of 11. This finding aligns with the top 100 frequently used words in Table 1, where "*we*" ranks 6th, and the cluster "*we're going*" ranks 2nd in Table 4's top 10 frequently used "We + V + prep" patterns. It is noteworthy that throughout 2023, speakers in ministerial speeches addressing natural disasters frequently employed the pronoun "*we*" followed by the present continuous "*are going to*" to convey actions that "*we*" (in this context) will undertake. This pattern is further exemplified in Table 10 below.

3 Chunks and colligation

Analysing the co-occurrence of word clusters or patterns within a corpus is a common approach to identifying recurring lexical chunks. By examining these patterns, we can pinpoint and specify segments of sentences that frequently appear together. A more focused analysis was conducted using N-grams with a keyword of "*we're going* t" and an N-gram size of 5.

Table 10
The 5 most common patterns with 'we're going to' with sample concordance line

No	Patterns	Freq	Sample concordance lines indicating patterns
1	We're going to + be	34	Addressing the Wildfires in Maui, Hawaii & Hurricane Idalia (file 79) *We're going to be installing meters* *We're going to be with you every step of the way* *We're going to be there for whatever they need* *We're going to be with you – the whole country will be with you*
2	We're going to + have	28	*We're going to have to think very hard, collectively (file 12)* *We're going to have days – and sometimes (file 88)* *We're going to have to make sure we stay competitive (file 14)*
3	We're going to + continue	25	*File 14* *We're going to continue to work together* *We're going to continue to keep our efforts* *We're going to do that*
4	We're going to +build	44	*We're going to build our economies from the middle out* *We're going to build back a stronger and more resilient future* *We're going to build back better*
5	We're going to + make	44	*We're going to make a better future* *We're going to make some great contributions*

As shown in Table 10 above, the cluster pattern "*we're going to*" is most followed by the collocates "*be*", "*have*", "*continue*", "*build*" and "*make*". The two strongest collocates, "*build*" and "*make*" appear with a frequency of 44, followed by "*be*" (34), "*have*" (28), and "*continue*" (25). Both "*build*" and "*make*" are action verbs, indicating a clear tendency among speakers to express intentions. The concordance lines 4 and 5 illustrate those sentences following "*we're going to build*" and "*we're going to make*" are closely associated with positive aspirations and actions concerning both the near and distant future. Additionally, the repeated use of "*we're going to be*" in sample sentences, particularly within a single speech addressing the Maui wildfires and Hurricane Idalia, suggests a rhetorical strategy aimed at reassuring the audience and those affected by these events.

Conclusion
The corpus-driven analysis of ministerial speeches (inclusive of prime ministers and government officials) addressing Natural Disasters in 2023 reveals a few prominent results. First and foremost, there is a strong tendency of speakers expressing their 'intentions' and

'need for action' to curb and lessen the impact from the Natural Disasters. This was showcased throughout the heavy usage of modal verbs together with common collocates that co-occurred in the corpora. Besides, findings reveal speakers' inclination towards the use of personal pronouns "*we*" and "*our*" in addressing their intentions. These uses of personal pronouns are indeed a form of engagement markers (Jaworska, 2021) which was a clear strategy of the speakers to establish connection with audience (Jaworska, 2021; Montiel, Uyheng & Dela Paz, 2021; Kristina, Setiarini & Thoyibi, 2021; Omar and Habil, 2023). In terms of tenses, speakers showed a preference in utilising present continuous tense to express their ongoing efforts related to the disasters or their near-future actions. Some collocates and MWE expressions were found used repeatedly and repetitively throughout the corpora which suggest speakers' seriousness and tendency to assure the affected communities from the disasters as well as the speakers' way of empathising with their sufferings after a devastating crisis.

The findings of this study align with previous research in discourse analysis that examines leaders' strategies when addressing crises (Jaworska, 2021; Omar & Habil, 2023). Prior studies have established that leadership discourse during crises often involves building solidarity and providing reassurance, which are routine elements in leadership communication. The purpose-built corpus created for this study offers a statistical, macro-level analysis that systematically captures language patterns from a larger dataset. This approach contrasts with traditional discourse analysis, which typically focuses on one or a few speeches at a time (Clifton, 2019; Jawaroska, 2021). The study underscores the value of corpus-assisted research, particularly in complementing micro-level analyses of leadership discourse (Clifton, 2019; Omar & Habil, 2023), and proves especially useful for examining relatively large datasets. The data also reaffirm the understanding of leadership as a social practice, rooted in naturally occurring language, thereby offering fresh insights into leadership discourse.

Corresponding Author
Email**:** norazikin@unisza.edu.my (Nor Azikin Mohd Omar)

References
Ali, M., Anum, Z., Nasir, A., & Ahmad, N. (2021). The indispensable liabilities of leaders in times of Covid-19 pandemic. *South Asian Journal of Social Sciences and Humanities, 2*(1), 16–28.

Baker, M. (1993). Corpus: linguistics and translation studies: implications and applications. In M. Baker, G. Francis, & E. Tognini-Bonelli (Eds.), *Text and Technology: In honor of John Sinclair* (pp. 233–250). John Benjamins. https://doi.org/10.1075/z.64.15bak

Beeching, K. (2013). A parallel corpus approach to investigating semantic change. In K. Aijmer & B. Altenberg (Eds.), *Advances in corpus-based contrastive linguistics: Studies in honour of Stig Johansson* (pp. 103–126). John Benjamins. https://doi.org/10.1075/scl.54.07bee

Boin, A., Kuipers, S., & Overdijk, W. (2013). Leadership in times of crisis: A framework for assessment. *International Review of Public Administration, 18*(1), 79–91. https://doi.org/10.1080/12294659.2013.10805241

Blackwell, S. (2009). Why forensic linguistics needs corpus linguistics. *Comparative Legilinguistics, 1*, 5–19. https://doi.org/10.14746/cl.2009.01.01

Clifton, J. (2019). Using conversation analysis for organisational research: A case study of leadership-in-action. *Communication Research and Practice, 5*. https://doi.org/10.1080/22041451.2019.1629756

Harwati, N. L. (2013). Crisis management: Determining specific strategies and leadership style for effective outcomes. *Asian Journal of Management Sciences and Education, 2*(2), 170–181.

Hutchins, H. M., & Wang, J. (2018). Organizational crisis management and human resource development: A review of the literature and implications to HRD research and practice. *Advances in Developing Human Resources, 10*(3), 310–330.

Fairhurst, G. T. (2007). *Discursive leadership: In conversation with leadership psychology*. Sage Publications, Inc.

Fetzer, A. (2011). Here is the difference, here is the passion, here is the chance to be part of great change. In J. Benjamins (Eds.), *Pragmatics & Beyond New Series* (Vol. 209). John Benjamins. https://doi.org/10.1075/pbns.209.08fet

Fink, S. (2013). *Crisis Communications: The Definitive Guide to Managing the Message*. McGraw-Hill Education.

Jaworska, S. (2021). Competence and collectivity: The discourse of Angela Merkel's media communications during the first wave of the pandemic. *Discourse, Context & Media, 42*. https://doi.org/10.1016/j.dcm.2021.100506

Kristina, D., Dewi, N. L., Setiarini, P., & Thoyibi, M. (2021). Textual and discoursal strategies of national leaders to establish their political images in the global arena. *Studies in English Language and Education, 8*(2), 779–795.

Mandl, B., & Reis, B. (2022). The language of crisis: Spatiotemporal effects of COVID-19 pandemic dynamics on health crisis communications by political leaders. *Digital Medicine, 5*. https://doi.org/10.1038/s41746-021-00554-w

McEnery, T., & Xiao, R. (2011). What corpora can offer in language teaching and learning. In E. Hinkel (Ed.), *Handbook of research in second language teaching and learning* (Vol. 2, pp. 364–380). Routledge. https://doi.org/10.4324/9780203836507

Mclean, H., & Ewart, J. (2015). Political communication in disasters: A question of relationships. *Culture Unbound: Journal of Current Cultural Research, 7*, 512–523. https://doi.org/10.3384/cu.2000.1525.1572512

Minjie, C., Wei Lun, W., Guojie, Y., Singh, C., Mihat, W., & Soo May, Y. (2023). Global intellectual trend of corpus linguistics studies among scholars in social sciences from September 2013 – September 2021. *Asian Journal of University Education, 19*(4), 613–631. https://doi.org/10.24191/ajue.v19i4.24615

Omar, N. A., & Habil, H. (2023). Constructions of solidarity and leadership of powerful global leaders in post-pandemic recovery speeches. *International Journal of English Linguistics, 13*(6). https://doi.org/10.5539/ijel.v13n6p39

Montiel, C. J., Uyheng, J., & Dela Paz, E. (2021). The language of pandemic leaderships: Mapping political rhetoric during the COVID-19 outbreak. *Political Psychology, 42*(5), 747–766.

Nini, A. (2021). Corpus analysis in Forensic Linguistics. In C. Wiley (Ed.), *The Encyclopedia of Applied Linguistics*. Wiley.

Olohan, M. (2021). Corpus linguistics and translation studies: Interaction and reaction. *Linguistica Antverpiensia, New Series – Themes in Translation Studies, 1*. https://doi.org/10.52034/lanstts.v1i.29

Olson, R. S., & Gawronski, V. T. (2010). From disaster event to political crisis: A "5C+A" Framework for Analysis. *International Studies Perspectives, 11*(3), 205–221. https://www.jstor.org/stable/44218637

Ou, J., & Wong, I. A. (2020). Strategic crisis response through changing message frames: A case of airline corporations. *Current Issues in Tourism, 24*(20), 1–15.

Parsons, W. (1996). Crisis Management. *Career Development International, 1*(1), 26–28. https://doi.org/10.1108/13620439610130614

Pearson, C. M., & Clair, J. A. (1998). Reframing Crisis Management. *The Academy of Management Review, 23*(1), 59–75. https://doi.org/10.2307/259099

Pelling, M. (2003). *The vulnerability of cities; Natural disasters and social resilience*. Earthscan Publications Ltd.

Power, K., & Crosthwaite, P. (2022). Constructing COVID-19: A corpus-informed analysis of prime ministerial crisis response communication by gender. *Discourse & Society, 33*(3), 411–437. https://doi.org/10.1177/09579265221076612

Power, K., & Crosthwaite, P. (2022). Constructing COVID-19: A corpus-informed analysis of prime ministerial crisis response communication by gender. *Discourse & Society, 33*(3), 411–437. https://doi.org/10.1177/09579265221076612

Rakhmatova, M. M., & Usmonov, A. A. (2022). The implementation of corpus-based techniques to analyze literary works. *Open Access Repository, 8*(04), 88–91. https://doi.org/10.17605/OSF.IO/XDC6U

Renouf, A. (1987). Corpus development. In J. M. Sinclair (Ed.), *Looking up: An account of the COBUILD project of lexical computing* (pp. 1–40). Collins ELT.

Sanosi, A. B. (2023). Revisiting cohesion in academic writing: A corpus-based analysis of EFL learners' use of conjunctions. *Indonesian Journal of Applied Linguistics, 14*(1), 64–78.

Schnurr, S. (2008). Surviving in a man's world with a sense of humour: An analysis of women leaders' use of humour at work. *Leadership, 4*(4), 299–319. https://doi.org/10.1177/1742715008092363

Schnurr, S., & Omar, N. A. (2021). Leadership and humour at work using interactional sociolinguistics to explore the role of gender. In J. Angouri & J. Baxter (Eds.), *The Routledge handbook of language, gender, and sexuality* (pp. 15–29). Routledge.

Thomas, C. R., & McNair-Connolly, C. J. (2017). An effective response: Smoldering crisis and capacity cost management. *Cost Management, 31*(6), 6–29.

Wahid, R. (2011). The use of corpus-based techniques in literary analysis: Exploring learners' perceptions. *Asiatic: IIUM Journal of English Language and Literature, 5*(1), 104–128. https://doi.org/10.31436/asiatic.v5i1.404

Windsor, L. C., Dowell, N., & Graesser, A. (2015). The language of autocrats: Leaders' language in natural disaster crises. *Risk, Hazards & Crisis in Public Policy, 5*(4), 446–467.

Wolensky, R. P., & Miller, E. J. (1981). The everyday versus the disaster role of local officials: Citizen and official definition. *Urban Affairs Quarterly, 16*(4), 483–504.

Wooten, L. P., & James, E. H. (2008). Linking crisis management and leadership competencies: The role of human resource development. *Advances in Developing Human Resources, 10*(3), 352–379. https://doi.org/10.1177/1523422308316450