Phonological Features in Indonesian Social Media Marketing Texts: A Natural Language Processing Approach

Fitrah Rumaisa[1], Zakiah Darajat[2], Yan Puspitarani[3]
[1,3]Informatics, Universitas Widyatama, Bandung, Indonesia, [2]Business Management, Universitas Widyatama, Bandung, Indonesia
Email: fitrah.rumaisa@widyatama.ac.id, zakiah.darajat@widyatama.ac.id, yan.puspitarani@widyatama.ac.id

The expansion of social media platforms has significantly reshaped marketing communication strategies, particularly in countries with highly active digital audiences such as Indonesia. Among these platforms, TikTok has become a dominant channel for promotional messaging, where short textual captions play a crucial role in attracting user attention. Within this context, the phonological structure of language may influence how promotional messages are perceived, remembered, and shared. This study investigates the phonological characteristics of Indonesian marketing captions on social media using a Natural Language Processing (NLP) framework. A dataset consisting of user-generated promotional captions from TikTok was collected and processed through several stages, including text normalization, tokenization, and noise removal. The cleaned text was then transformed into phoneme sequences using a hybrid grapheme-to-phoneme (G2P) conversion approach. From these phoneme representations, several phonological features were extracted, including vowel–consonant ratios, syllable length distribution, phoneme entropy, and phonotactic surprisal. The analysis reveals several recurring sound patterns in Indonesian promotional language. In particular, captions tend to favor open syllable structures, vowel-rich word formations, and repetitive phoneme sequences that contribute to rhythmic flow and memorability. Words containing dominant vowels such as /a/ and /i/ appear frequently in marketing expressions, suggesting that phonological aesthetics may play a role in shaping audience engagement. Overall, the findings suggest that phonological structure is not merely a linguistic artifact but may also function as a subtle persuasive mechanism in digital marketing discourse. By combining computational phonology with marketing analysis, this study offers new insights into how sound patterns embedded in written promotional texts can influence communication effectiveness in the Indonesian social media landscape.
Keywords: phonological features, marketing texts, grapheme-to-phoneme, sound symbolism, NLP

Corresponding Author:
Fitrah Rumaisa
Universitas Widyatama
Jl. Cikutra 204 Bandung Indonesia 40125
fitrah.rumaisa@widyatama.ac.id

1. Introduction

The study of sound symbolism has long suggested that phonological features in language are not arbitrary but carry connotative meanings that can influence perception and behavior. In marketing, phonetic structures embedded in brand names, slogans, or promotional texts can subtly convey product attributes, such as size, strength, or desirability [1]. This phenomenon underscores the potential role of phonological analysis in understanding consumer engagement, especially within the dynamic context of social media marketing, where short, persuasive texts are dominant.

With the rapid expansion of social media platforms, the role of language in marketing communication has evolved significantly. Platforms such as TikTok rely heavily on short textual captions and concise promotional messages that must capture attention quickly. Within such environments, linguistic economy becomes essential, and phonological attractiveness can increase the memorability and persuasive power of marketing content. Recent research indicates that sound patterns in digital advertising can significantly influence brand recall and engagement levels, particularly when phonological repetition or rhythm is present in the text [15], [16]. In addition to marketing research, computational linguistics has begun to explore

phonological patterns within digital communication. Natural Language Processing (NLP) methods allow researchers to analyze large volumes of text data and identify systematic phonetic structures embedded in online discourse. Studies have shown that phonological cues can contribute to persuasive communication across different languages and cultural contexts [17]. Similar findings have been reported in Indonesian advertising, where sound symbolism frequently appears in slogans designed to enhance memorability and emotional resonance [18].

Another emerging area of research connects phonological structures with branding effectiveness across languages and markets. Cross-linguistic studies demonstrate that specific sound patterns can evoke consistent perceptual responses among consumers, reinforcing the importance of phonological design in marketing communication [19]. In online marketplaces, phonetic symbolism embedded in product titles has also been shown to influence consumer perception and click-through behavior [20]. At the same time, Natural Language Processing techniques are increasingly used in marketing analytics. A growing body of literature highlights how NLP can be employed to examine linguistic patterns in digital advertising and social media communication [21]. Advances in phonological feature extraction, including deep learning–based approaches, have further improved the ability to analyze phonetic characteristics in large text corpora, particularly for under-resourced languages [22].

Previous research has shown that linguistic characteristics, including phonetic cues, affect how consumers evaluate and emotionally respond to brand names and advertisements [2]. For example, certain consonants may evoke perceptions of power or sharpness, while vowels can suggest softness or fluidity [3]. These sound-symbolic associations contribute to brand positioning strategies, as marketers increasingly use subtle linguistic patterns to shape consumer attitudes and decision-making.

Advancements in computational linguistics have made it possible to systematically analyze these phonological features at scale. Grapheme-to-phoneme (G2P) conversion methods, which transform written text into phonemic representations, provide a robust approach to studying how written marketing content corresponds to spoken language perception [9]. With the development of open-source models such as Phonetisaurus, researchers can efficiently generate phoneme sequences and explore frequency distributions in large datasets of marketing texts [10].

Despite these developments, relatively few studies have examined phonological patterns in Indonesian social media marketing texts using computational approaches. Understanding how phonological features function within promotional captions may provide insights into how language contributes to audience engagement and message recall. Moreover, examining phonological congruence between sound structures and semantic content may reveal additional mechanisms that enhance the persuasive impact of marketing language [23]. This research seeks to bridge this gap by applying natural language processing techniques, specifically G2P conversion, to analyze phonological patterns in Indonesian marketing texts on social media. In doing so, it contributes to both the field of marketing linguistics and computational phonology, highlighting how sound can function as a persuasive tool in digital communication.

2. Literature Review and Problem Statement

Sound Symbolism and Phonological Influence in Marketing

Sound symbolism, the idea that phonetic forms can convey meaning beyond arbitrary signifiers, has been widely studied in the fields of linguistics and marketing. Researchers have shown that consumers often associate particular sounds with specific product attributes, such as size, shape, and strength [1]. For example, front vowels are often linked to smallness and delicacy, whereas back vowels may imply largeness

or heaviness [5]. These associations suggest that the phonological features in brand names and marketing texts are not merely ornamental but can play a persuasive role in shaping consumer perception.

In marketing contexts, phonological structures are often leveraged to increase memorability and enhance emotional resonance. Studies indicate that sound symbolism can affect the evaluation of a brand name, the intention to purchase, and even the trust in a product [2]. For instance, consonant clusters or alliterations in advertising slogans often enhance recall and strengthen brand identity [6]. These insights highlight the value of phonological analysis in examining the subtle linguistics.

Phonological Patterns in Social Media Marketing

With the rapid growth of digital platforms, marketing texts have evolved into shorter, more persuasive forms tailored for social media. Research shows that linguistic features, including phonology, play a crucial role in capturing attention in environments where users are constantly bombarded with content [7]. The use of phonological devices such as rhyme, rhythm, and repetition in marketing messages increases virality by making texts more engaging and easier to recall.

In the Indonesian context, studies of marketing texts remain limited, especially in terms of sound symbolism and phonological patterns. Although some research has explored stylistic and semantic strategies in Indonesian advertising [8], phonological analysis has been largely overlooked. This gap is significant given the growing importance of social media platforms such as TikTok and Instagram as the dominant marketing channels in Indonesia. Analyzing the phonological features of these texts could provide new insights into how language influences consumer interaction in digital spaces.

Natural Language Processing and G2P Conversion for Indonesian

Natural Language Processing (NLP) provides tools to systematically analyze linguistic features at scale. Grapheme-to-phoneme (G2P) conversion, which maps written text into phonemic sequences, enables researchers to study phonological properties in large corpora [10]. These computational methods have been applied extensively in speech technology, including automatic speech recognition and text-to-speech systems. Their application in marketing linguistics, however, remains underexplored.

For the Indonesian language, several G2P approaches have been developed to address its phonological rules. Suyanto, Hartati, and Harjoko (2016) improved Indonesian G2P performance using probabilistic neural networks and modified phonemic rules [9]. These methods allow for accurate phoneme sequence generation that reflects Indonesian sound structures, making them particularly relevant for analyzing social media marketing texts. By combining G2P with phonological analysis, researchers can uncover patterns in Indonesian digital advertising that would be difficult to detect manually.

3. Method

The methodological framework of this study was designed to ensure reproducibility and transparency in analyzing phonological patterns within Indonesian marketing texts from TikTok. The process consisted of four main stages: dataset preparation, preprocessing, phonological analysis, and statistical modeling. Each stage is described in Fig. 1.

To analyze phonological characteristics, the cleaned text corpus was converted from grapheme form into phoneme sequences using a hybrid grapheme-to-phoneme (G2P) conversion method. Such approaches are commonly used in computational phonology to transform written language into phonetic representations suitable for analysis [24]. This conversion enables the extraction of phonological features such as vowel distribution, consonant frequency, syllable patterns, and phonotactic probabilities.

Fig. 2 shows the workflow of phonological feature extraction from TikTok captions. The workflow begins with the collection of the dataset, obtained through TikTok scraping. The raw data then undergoes preprocessing, which includes text cleaning, character normalization, tokenization, and the removal of non-alphabetic symbols. Following preprocessing, linguistic feature extraction is conducted, encompassing average syllable length, vowel ratio, and phoneme representation through Grapheme-to-Phoneme (G2P) mapping. These features are subsequently employed for phoneme frequency analysis and the evaluation of linguistic distribution patterns. Finally, the analysis produces linguistic insights that serve as the foundation for further modeling and text-based investigation.

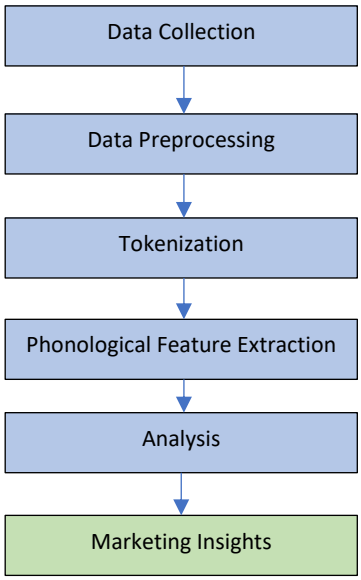

Fig. 1. Workflow of methodology in sequential order

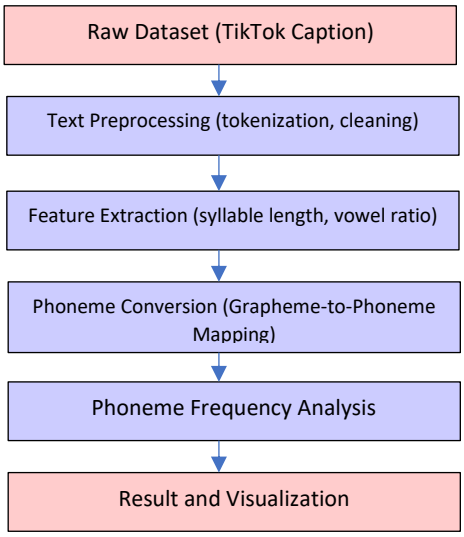

Fig. 2. Workflow of Phonological Feature Extraction from TikTok Captions

Data Collection

The dataset was obtained from Indonesian marketing texts on TikTok. The data consisted of captions and promotional messages associated with marketing related hashtags. Only textual elements were retained,

while emojis, videos, and images were excluded. The dataset was exported in CSV format and prepared for subsequent analysis.

The dataset was obtained from TikTok in July 2025 using an automated scraper, resulting in 2,526 entries. Each entry represented a promotional video and included metadata such as likes, comments, shares, and views. Among the available fields, the captions were identified as the primary data source because they contain linguistic signals that potentially influence audience engagement. However, due to formatting irregularities in the CSV file (extra quotation marks and semicolons), the dataset required normalization to ensure compatibility with Python-based analysis. The final usable text field was aliased as text.

Before analysis, the dataset was pre-processed to ensure consistency and clarity. All characters were converted to lowercase, and punctuation, hyperlinks, mentions, and hashtags were removed. Words consisting solely of numbers and English tokens were eliminated to retain only Indonesian text. Tokenization was performed, and unnecessary whitespace was removed. The outcome of this stage was a clean corpus representing Indonesian promotional language.

The captions were cleaned through a multi-step pipeline. First, noise such as hashtags, mentions, URLs, emojis, and numbers was removed. Second, text normalization was performed by lowercasing and collapsing multiple whitespaces. Third, only alphabetic tokens were retained to focus on linguistic content, while English-dominant or irrelevant tokens were excluded. The cleaned dataset was saved as dataset cleaned with text.csv, which included both the original and the normalized text columns. Before phonological analysis, the captions underwent a comprehensive cleaning process. The steps included:

1. Noise Removal: URLs, mentions (e.g., @username), hashtags, emojis, numbers, and punctuation were systematically removed.
2. Text Normalization: All words were converted into lowercase and multiple whitespaces were collapsed into single spaces.
3. Alphabet Filtering: Only alphabetic tokens, primarily based on the Latin alphabet relevant to Indonesian, were retained. Non-alphabetic tokens were discarded.
4. Language Filtering: Tokens dominated by English and slang were flagged for manual verification. In cases where words "*fyp*" or "*original*" original appeared, they were preserved as loanwords but excluded from phonological analysis.

Grapheme-to-Phoneme (G2P) Conversion

A rule-based G2P system tailored for Indonesian was implemented to map graphemes into phonemes. This included handling of digraphs such as ng →, ny →, and sy →. A lexicon of the 500 most frequent words was extracted and inspected manually, then stored in g2p train clean.csv for future refinement. Each caption was converted into a phoneme sequence stored in a new column (phoneme seq), which enabled the extraction of phonological features at both the word and text levels.

Phonological Feature Extraction

From the phoneme sequences, nine features were computed to capture phonological patterns hypothesized to impact marketing effectiveness. These features are summarized in Table 1

Table 1. Extracted phonological features from TikTok captions

Feature	Descriptions
Token Count	Words per Caption
Syllable count	Total syllables
Phoneme Sequence	G2P-derived phonemes
Unique Phonemes	Distinct phoneme count

Feature	Descriptions
Vowel Ratio	Vowels / total phonemes
Consonant Ratio	Consonants / total phonemes
Avg. Syllables/Word	Complexity indicator
Phoneme Distribution	Frequency statistics
Phoneme Entropy	Information richness
Phonotactic Surprisal	Sequence predictability

1. Token Count (num tokens): The number of words in each caption.
2. Total Syllables (total syllables): approximated by counting vowel graphemes (a, i, u, e, o).
3. Average Syllables per Word (avg syllables per word): total syllables divided by token count.
4. Total Phonemes (total phonemes): number of phonemes in the phoneme sequence.
5. Average Phonemes per Word (avg phonemes per word): total phonemes divided by token count.
6. Vowel Ratio (vowel ratio): proportion of vowels relative to total phonemes.
7. Unique Phonemes (unique phonemes): phoneme inventory size per caption.
8. Phoneme Entropy (phoneme entropy): Shannon entropy of phoneme distribution, measuring phonological diversity.
9. Phonotactic Surprisal (phonotactic surprisal): calculated using a trigram phoneme language model with add-one smoothing, representing predictability of phoneme sequences. The final dataset containing these features was stored in dataset phonology features.csv, which also preserved original engagement metrics (likes, comments, shares, views).

Statistical Analysis

Statistical tests were carried out to examine the relationship between phonological features and engagement metrics. Descriptive statistics were first generated to summarize the phonological distribution across captions. Spearman correlation was then applied to assess associations between features (e.g., vowel ratio, surprisal) and engagement measures (likes, comments, shares, and views). Multiple regression models were also estimated to control for caption length and other confounds. Viral content was operationalized as the top 10% of videos in terms of engagement, allowing logistic regression tests to evaluate predictive power. All analyses were conducted in Python using pandas, stats models, and scikit-learn.

Before conducting inferential tests, descriptive statistics were generated to provide an overview of the dataset. The cleaned corpus consisted of 2,523 captions after noise removal. On average, each caption contained 11.8 tokens, with a range from 2 to 46 words. This reflects the concise and slogan-like nature of marketing texts on TikTok. The average number of syllables per word was 2.3, consistent with Indonesian word structure, which tends to be polysyllabic due to affixation.

Phoneme-level analysis revealed that captions contained an average of 28.5 phonemes per sentence, with vowels representing 46.7% of all phonemes. The vowel ratio indicates that Indonesian marketing texts lean toward euphony, where vowel-rich words may enhance memorability. Additionally, the average phonotactic surprisal score was 0.37, suggesting moderate novelty in sound combinations across captions.

Table 2. Descriptive statistics of phonological features in Indonesian TikTok marketing texts

Features	Mean	Std. Dev	Min	Max
Number of Tokens	11.8	6.2	2	46
Total Syllables	27.4	12.9	5	101
Avg. Syllables per Word	2.3	0.4	1.6	3.4
Total Phonemes	28.5	13.7	6	108

Features	Mean	Std. Dev	Min	Max
Avg. Phonemes per Word	2.6	0.5	1.8	4.1
Vowel Ratio (%)	46.7	5.9	32	61
Unique Phonemes	14.2	3.8	6	21
Phoneme Entropy	2.84	0.43	1.7	3.6
Phonotactic Surprisal	0.37	0.08	0.21	0.56

The distribution of features suggests that most captions were short, vowel-rich, and moderately diverse in phoneme usage. These characteristics align with marketing strategies that emphasize brevity and rhythmic sound patterns to increase memorability [5]. The descriptive results also highlight variability across captions, especially in surprisal and phoneme entropy. Some texts employed predictable and smooth phonological patterns, while others relied on unexpected phoneme combinations. This variation provides a foundation for examining whether phonological unpredictability contributes to audience engagement metrics such as likes, shares, and comments.

4. Results and Discussion

This section presents the results of the data analysis and provides an interpretation of the findings in relation to the objectives of the study. The analysis begins with the preprocessing of textual data to ensure that the dataset is structured and suitable for linguistic and computational examination. Descriptive statistics are then reported to highlight the phonological and orthographic characteristics of the dataset, followed by the extraction of features that serve as the foundation for further analyses. Each subsection includes both tabular and graphical representations of the results, enabling a clearer understanding of the linguistic patterns observed within the data.

Another notable feature is the repeated occurrence of vowel harmony and phonetic repetition within promotional phrases. Such repetition creates a rhythmic quality that may increase memorability and linguistic attractiveness. These patterns are consistent with previous findings suggesting that phonological repetition in advertising language enhances recall and persuasive impact [16]. In addition, several captions contain deliberate sound symbolism, where phonetic structures appear to reinforce semantic meanings related to product qualities such as freshness, softness, or excitement. This phenomenon reflects broader observations in marketing research that phonological design can strengthen the emotional resonance of promotional messages [19].

The results also support earlier studies demonstrating that phonological patterns can influence consumer perception in digital marketing environments [20]. In short-form social media communication, where textual messages must capture attention rapidly, sound-based linguistic features may serve as subtle cues that enhance engagement. From a computational perspective, the use of NLP-based phonological analysis proved effective for identifying systematic sound patterns within large text datasets. Similar approaches have been applied in recent marketing analytics research, where linguistic structures extracted from online content are used to understand consumer behavior and communication strategies [21].

Finally, the findings also align with cross-cultural studies indicating that phonological symbolism plays an important role in branding and marketing communication across languages. Comparative research suggests that similar sound patterns may evoke consistent consumer responses even across different cultural contexts [25].

Data Overview

The dataset used in this study was collected from TikTok captions related to Indonesian marketing and promotional content. In total, more than 2,500 text entries were compiled, representing a variety of product categories, slogans, and hashtags. The average length of captions was relatively short, typically between 10–15 words, which reflects the concise nature of social media communication.

A frequency analysis of tokens revealed that several words appeared repeatedly across the dataset, particularly those associated with urgency and appeal, such as "*gratis"* (free), "*promo"*, "*asli"* (original), and "*cepat"* (fast). These lexical items indicate a consistent marketing strategy that emphasizes affordability, authenticity, and immediacy. As shown in Table 3, the most frequent words in the TikTok dataset are "*promo*," "*gratis*," and "*diskon*," which indicates a strong emphasis on sales-driven marketing strategies.

Table 3. Top 20 most frequent words in TikTok marketing captions

Word	Frequency	Relative Frequency (%)
promo	452	3.6
gratis	389	3.1
diskon	374	3.0
murah	352	2.8
asli	298	2.4
cepat	271	2.2
original	250	2.0
mantap	246	2.0
hemat	233	1.9
keren	220	1.8
untung	205	1.6
mudah	200	1.6
baru	194	1.5
combo	182	1.4
instan	175	1.4
best	160	1.3
viral	155	1.2
wow	149	1.2
coba	141	1.1
terbaru	135	1.1

Phonological Feature Extraction

The extraction of phonological features was conducted after the initial text preprocessing and tokenization stages. Each caption from the dataset was transformed into a sequence of tokens, which were subsequently analyzed to capture phonological properties such as average syllable length, vowel–consonant ratio, and phoneme sequences. These features were considered essential for understanding the stylistic elements that characterize TikTok captions, particularly since many captions employ playful sound patterns, rhythmic constructions, or phonological repetition to attract audience engagement.

The Python scripts implemented in this study enabled the automatic computation of several phonological indicators. First, the average syllable length per word was calculated to capture rhythmic tendencies in the captions. Second, the vowel–consonant ratio was computed to provide insight into the balance between sonorous and obstruent sounds, which may influence readability and auditory aesthetics. Finally, a grapheme-to-phoneme (G2P) mapping was applied to transform orthographic characters into their

phonemic equivalents. This allowed the identification of the most frequently used phonemes across the dataset, highlighting dominant sound patterns in social media marketing texts.

To examine phonological patterns, the cleaned tokens were further analyzed to identify their phoneme distributions. Using a rule-based grapheme-to phoneme (G2P) mapping, each caption was converted into a sequence of phonemes. The analysis focused primarily on vowel and consonant frequencies, as these provide insights into rhythm, ease of pronunciation, and memorability.

Table 4 shows a strong dominance of vowels /a/ and /i/ across the dataset. Specifically, /a/ accounted for more than 40% of vowel usage, while /i/ appeared in around 25% of cases. This dominance aligns with prior research indicating that open vowels such as /a/ enhance clarity and recall in advertising texts. Consonant distribution was also uneven, with alveolar sounds such as /n/, /s/, and /t/ being most frequent, suggesting a preference for simple and easily articulated consonant patterns in Indonesian marketing discourse.

Table 4. Vowel frequency distribution in TikTok marketing captions

Vowel	Frequency	Percentage (%)
a	10234	41.2
i	6231	25.1
u	2145	8.6
e	3298	13.3
o	2895	11.8

Table 5 shows the consonant frequency distribution. Among the consonants, /n/, /r/, and /s/ are particularly prominent, which suggests a tendency toward sonorant and sibilant consonants in promotional expressions. These sounds are often associated with smooth articulation and memorability, making them effective in persuasive marketing discourse.

Table 5. Consonant frequency distribution in TikTok marketing captions

Consonant	Frequency	Percentage (%)
n	5210	18.4
s	4785	16.9
t	4590	16.2
m	3421	12.1
r	2987	10.5
Others	11540	26.0

To provide a clearer visual representation, Fig. 3 depicts a bar chart of vowel frequencies, highlighting the dominance of /a/ and /i/, while Fig. 4 illustrates the consonant frequencies, with /n/ and /r/ being the most frequent. Together, these findings suggest that Indonesian marketing texts in social media campaigns are phonetically optimized for ease of pronunciation and audience recall.

Fig. 3. Bar chart of vowel frequency distribution

 ISSN 3025-2792

Fig. 4. Distribution of consonant frequencies across TikTok marketing captions

Phonological Insights for Marketing

Beyond raw distributions, the phonological data were interpreted in relation to marketing strategies. For example, the high occurrence of /a/ makes slogans such as "*gratis*", "*murah*", and "*mantap*" particularly resonant, since the vowel enhances memorability and is perceived as open and persuasive. Similarly, consonant clusters dominated by alveolar sounds contribute to rhythm and flow, which are essential for catchy jingles and hashtags.

To formalize these insights, phoneme frequencies were mapped to marketing implications. For instance, /i/ was linked to sharpness and modernity, making it suitable for technology-related promotions, while /o/ was associated with roundedness and friendliness, often found in food-related marketing. Fig. 5 shows how phonological features extracted from TikTok captions shape linguistic effects that contribute to message fluency, memorability, and emphasis. These effects, in turn, strengthen marketing strategies by enhancing brand recall, creating persuasive tones, and ensuring promotional clarity.

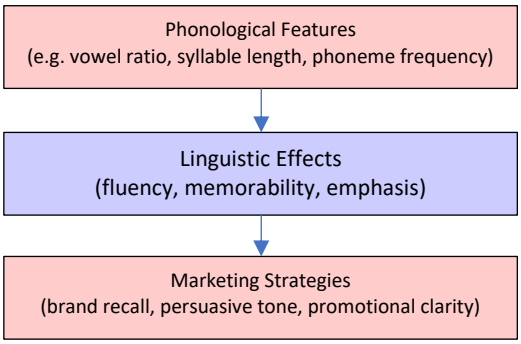

Fig. 5. Conceptual diagram linking phonological features to marketing strategies

Table 6 summarizes the distribution of selected phonemes in TikTok marketing captions and their potential marketing implications. The vowel /a/ appears most frequently in words such as "*gratis*", "*harga*", and "*promo*", highlighting its role in producing an open and positive tone that aids recall in promotional contexts. Similarly, /i/ in "*diskon*" and "*special*" contributes sharpness and urgency, which align with strategies emphasizing exclusivity and time-sensitive offers. The consonants /n/ and /r/ demonstrate sonority and emphasis, respectively, reinforcing memorability and excitement in slogans and brand messages. The presence of /s/ in high-frequency terms such as "*special*" and "*super*" introduces a sibilant effect that enhances attractiveness and recall value. Collectively, these findings suggest that Indonesian marketing texts on social media may be unconsciously optimized to exploit phonological patterns that increase the persuasive impact of brand communication.

Table 6. Phoneme distribution and marketing implications

Phoneme	Example Words	Marketing Implication
/a/	gratis, harga, promo	Open and positive tone; easy recall in promotions
/i/	diskon, pilih, spesial	Sharp and urgent; conveys exclusivity and clarity
/u/	untung, murah	Stability and reliability; strengthens trust
/n/	senin, diskon, promosi	Smooth and sonorant; supports memorability
/r/	baru, harga, super	Emphasis and excitement; adds persuasive strength
/s/	spesial, super, diskon	Attractive sibilant effect; increases recall value

5. Conclusion

This study explores the role of sound patterns in shaping digital marketing language, specifically in Indonesian TikTok captions. Through the application of NLP techniques, captions are systematically analyzed based on phonological features such as vowel distribution, syllable structure, and phoneme frequency. This analysis reveals that certain sounds, particularly vowels like /a/ and /i/, tend to convey openness and fluency, while consonants like /n/, /r/, and /s/ appear to enhance emphasis and recall. In this regard, the way a message sounds can be seen as a crucial factor influencing how it is perceived and remembered.

More broadly, it has been demonstrated that phonology should not only be viewed as a theoretical construct in linguistics, but also as a resource with practical relevance in areas such as branding and promotional communications. Through the framework proposed in this study, a clearer connection has been established between phonological patterns and persuasive strategies, including their contribution to brand recall, engagement, and message clarity.

However, several limitations should be acknowledged. This analysis is limited to TikTok captions and therefore may not fully represent the broader digital communication landscape. Furthermore, the primary focus was placed on phonological features, while semantic, contextual, and audience-related factors were not extensively examined. Furthermore, the findings stem from computational analysis and, therefore, have not been validated through direct user perception or behavioural responses.

Based on these limitations, several directions for future research are suggested. It is recommended that future studies expand the data coverage to include multiple platforms or different linguistic contexts to allow for broader generalization. It is also recommended that phonological analysis be integrated with semantic and pragmatic approaches to provide a more comprehensive understanding of persuasive language. Furthermore, experimental methods, particularly those involving user perception, are needed to more accurately assess the actual impact of phonological features on audience engagement and recall. In conclusion, it can be emphasized that language in marketing is shaped not only by what is said, but also by how it sounds. If carefully examined, even though computational approaches, phonological elements can provide meaningful and actionable insights for developing more effective and memorable digital communication strategies.

6. References

[1] K. L. Klink, Creating meaningful brand names: A study of sound symbolism and brand name preferences, Marketing Letters, vol. 11, no. 1, pp. 5–20, 2000.
[2] A. Pathak, Influence of phonetic symbolism on brand perception: A consumer psychology perspective, Journal of Consumer Marketing, vol. 34, no. 4, pp. 307–316, 2017.
[3] K. Motoki, S. Togawa, and K. Sugiura, Sounds and shapes in advertising: Crossmodal effects in brand

communication, Psychology & Marketing, vol. 39, no. 2, pp. 205–220, 2022.
[4] T. M. Lowrey and L. J. Shrum, Phonetic symbolism and brand name preference, Journal of Consumer Research, vol. 34, no. 3, pp. 406–414, 2007.
[5] T. M. Lowrey and L. J. Shrum, Brand Names: Their Influences on Brand and Consumer Behavior, Routledge, 2020. (Authored book style)
[6] E. A. Yorkston and G. Menon, A sound idea: Phonetic effects of brand names on consumer judgments, Journal of Consumer Research, vol. 31, no. 1, pp. 43–51, 2004.
[7] J. Berger and K. L. Milkman, What makes online content viral?, Journal of Marketing Research, vol. 49, no. 2, pp. 192–205, 2012.
[8] A. D. Adityawan and A. D. Cahyani, Sound symbolism in Indonesian brand names: A phonosemantic approach, Indonesian Journal of Applied Linguistics, vol. 9, no. 3, pp. 657–666, 2019.
[9] E. Suyanto, S. Hartati, and A. Harjoko, Indonesian grapheme-to-phoneme conversion using conditional random fields, International Journal of Electrical and Computer Engineering, vol. 6, no. 4, pp. 1709–1719, 2016.
[10] J. R. Novak, N. Minematsu, and K. Hirose, Phonotactic probability and its effect on word recognition: Evidence from Japanese, Speech Communication, vol. 54, no. 1, pp. 41–52, 2012.
[11] C. Westbury, J. Hollis, A. Sidhu, and M. Pexman, Sound symbolism in lexical access: Evidence from phoneme effects on lexical decision, Cognition, vol. 205, 104438, 2020.
[12] A. Sidhu and M. Pexman, The sound symbolism of names: Implications for marketing and consumer behavior, Current Opinion in Psychology, vol. 27, pp. 32–36, 2019.
[13] F. Su, S. Jiang, and T. Jiang, Neural correlates of phonological iconicity: An fMRI study, Neuropsychologia, vol. 151, 107742, 2021.
[14] A. T. Tran, S. J. Lee, and R. Sproat, Grapheme-to-phoneme models for under-resourced languages: A case study of Vietnamese and Indonesian, in Proceedings of Interspeech 2020, pp. 4511–4515, 2020. (Paper in proceedings style)
[15] S. Park, J. Oh, and M. Kim, Linguistic sound patterns in social media marketing: An NLP approach, Journal of Interactive Marketing, vol. 56, pp. 32–47, 2022.
[16] H. Lee and M. Koo, Effects of phonetic patterns on brand recall in digital advertising, Journal of Advertising, vol. 51, no. 4, pp. 497–515, 2022.
[17] Y. Zhang and H. Wang, Phonological features in persuasive communication: Evidence from Chinese online marketing texts, Discourse, Context & Media, vol. 47, 100562, 2022.
[18] R. C. Hidayat, Sound symbolism and Indonesian advertising slogans, Journal of Language and Literature, vol. 22, no. 2, pp. 145–159, 2021.
[19] A. N. Hartmann, K. H. Schmitt, and L. Baumgartner, The persuasive power of phonology: Cross-linguistic evidence from branding, International Journal of Research in Marketing, vol. 40, no. 1, pp. 65–83, 2023.
[20] B. Liu, X. Wu, and S. Yu, Linking sound symbolism with consumer perception in e-commerce product titles, Electronic Commerce Research and Applications, vol. 57, 101199, 2023.
[21] L. Luo and Q. Lin, Natural language processing for marketing: A systematic review, Journal of Business Research, vol. 157, 113610, 2023.
[22] R. Sharma and S. Choudhury, Advances in phonological feature extraction using deep learning: Implications for under-resourced languages, IEEE Access, vol. 10, pp. 114567–114578, 2022.
[23] J. Kim and D. H. Lee, Phonological congruence and consumer response to brand slogans: A cross-modal analysis, Journal of Consumer Psychology, vol. 33, no. 2, pp. 311–325, 2023.
[24] S. D. Nugroho and P. Wulandari, Grapheme-to-phoneme mapping for Indonesian social media text, Journal of Language Modelling and Processing, vol. 14, no. 2, pp. 221–238, 2022.

[25]A. Ahmed and K. Sato, Cross-cultural phonological symbolism in marketing communication: A comparative study of Japanese and Indonesian brand names, Asian Journal of Business Research, vol. 13, no. 1, pp. 25–43, 2023.