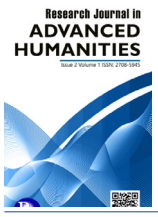

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Causal markers in Indonesian article: A pragmatics study

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Abstract

Comprehending application of pragmatics in academic texts is important as it affects at the meanings conveyed which it undeniably impacts on the quality of articles. Causal marker is one among linguistic components pertaining pragmatics. This study utilizes qualitative and quantitative methods to examine causal patterns and their variations within Indonesian articles. Causal pattern development was analyzed using qualitative method, whereas the significant differences in the use of causal markers was determined using a quantitative method. Data are divided into two: causal marker-containing Indonesian sentences and the frequency at which these markers appear in each article. Data were collected through documentation and ANOVA test was utilized to determine the mean differences among the markers. Results show there are eleven patterns manifest as causal markers in the Indonesian article. Further, hypothesis testing reveals that the *karena* causal marker appears most frequently (59.86%) compared to other causal markers; this is likely attributable to writers' preference for and understanding of this marker. However, further studies are required to ascertain the manner in which causal markers are utilized in Indonesian articles and their functions in promoting sentence constructions to improve sentence comprehensiveness.

Keywords: causal marker, causal pattern, Indonesian articles, pragmatics

Introduction

Researchers and academics concur that publishing their research in reputable scientific journals is crucial, as it is not only individual motivation but also an obligation (Kaur, 2013) due to individual portfolios on Google Scholar, performance evaluations, or other requirements. As a reputable indexer for academic journals in Indonesia, Sinta (Science and Technology Index) Indonesia records a substantial number of authors and affiliates, around 5,467 (https://sinta.kemdikbud.go.id/journals). This data underscores the expeditious expansion of articles published within the country. Many aspects require evaluation in academic articles, including the context, advantages, fields of study, and language employed (Awagu, 2021). The topic, relevant studies, and findings of those studies all influence the choice of the article's subject matter. Each indexer arranges everything differently. In their study, Leydesdorff et al. (2010) contend that the Web of Science (WoS) fails to encompass a comparable number of domains as the renowned international indexer Scopus. Scopus, for instance, comprises 27 subject categories, including Agricultural and Biology, Science, Neuroscience, Nursing, Pharmacology, Toxicology, and Pharmaceutical Science. In contrast, the WoS does not delve into these specific areas. Multidisciplinary, physics and astronomy, psychology, social sciences, and veterinary were among the additional field groups that García et al. (2011) included. The purpose of the subject category is to facilitate listing. In Indonesia, describing the subject matter of a narrative is equivalent to stating its topic. Each narrative in the collection focuses primarily on a single subject. The Science and Technology Index (Sinta) does not impose subject restrictions, in contrast to Scopus. Since Sinta Indonesia contains 350 subject categories, their utilization as the data source is appropriate. Content-based causality pragmatics markers belong to many significant aspects of the use of language in articles (Rao, 2022). Pragmatics, according to Mariana, Jaafar, and Radzi (2023), is a set of principles that ascertain the significance of every language system. Kecskes et al. (2018), Stadler (2018), Jiao et al. (2020), and Mohd, Aziz, & Musaev (2020) all assert that learners require practical experience in the context in which pragmatics is employed to successfully use it. Moreover, pragmatic competence enables individuals to effectively employ their language abilities in any given circumstance to achieve a variety of overarching objectives, including reasoning and communication (Németh, 2004). Pragmatics examines the effects of individual choices and how language users perceive language use (Crystal, 1985; Mohd, Aziz, & Musaev, 2020; Marliana, Jaafar, & Radzi, 2023). Considerable emphasis is placed on causal markers rather than pragmatic markers, with the former being regarded as less significant in linguistics research (Salam et al., 2018; Luk & Ponsonnet, 2019; Suherdi et al., 2020; Tocalo, 2021). Moreover, the examination of arguments, causation, and causal connections is a rare occurrence in pragmatic investigation. Thus, pragmatic causal marker research is novel and crucial to the study of language. By examining patterns of causality in the use of causal markers, this study presents an alternative perspective that has not been explored previously (Baltaci, 2019; Putri, 2019; Devani & Abdurahman, 2023) as most merely discussed patterns and their significance in writing. Additionally, the fact that only a small number of academics use ANOVA and other statistical methods to evaluate linguistic theories suggests the existence of unexplored domains (Lakens, 2013). According to the rules of scientific reasoning, causal connections should be used to support more than one argument (Comrie, 1976; Kyratzis, Guo, and Ervin-Tripp, 2014; Khetan et al., 2020; Yerkhassym, 2023) and there are a lot of them in scientific articles. Pragmatics as it pertains to the Indonesian language is the subject of this study. It examines the temporal evolution of causal markers in scientific articles from Indonesia. The researchers sought to ascertain the significance of the various marker uses in Indonesian articles, apart from examining the causality pattern. Thus, they formulated an initial hypothesis (Ha). In addition, the results of this study could offer insights into the extent to which academics adhere to language conventions in their written work.

Causal Markers in Indonesian

Causal pragmatic markers in discourse serve to indicate cause-and-effect relationships (Ament et al., 2020). A study of 63 Turkish-speaking individuals identified six distinct categories of causal markers: nouns, verbs, postpositions, suffixes, conjunctions, and adjectives (Ulucay and Hatipolu, 2017). The use of these markers varies according to the causal patterns formed. Moreover, they discovered that the linguistic categories most frequently employed in the Turkish language to establish causal connections are nouns and verbs. This discovery indicates that nouns and verbs play a significant role in the use of causal markers in Turkish (Durgunolu, 2003; Ger et al., 2021[a,b]). Causal markers are present in hypotactic and paratactic structures (Povolná, 2012). To effectively illustrate causal pragmatic markers (henceforth referred to as causal markers), conjunctions such as because, hence, therefore, and thus are used. Excluding conjunctions, notwithstanding, there are other strategies for demonstrating causal connection. Grammatical patterns encompass nouns, verbs, and adjectives within their scope. It suggests that causal markers encompass nouns, verbs, and adjectives in addition to conjunctions and prepositions. Written pragmatic markers include causal markers. Causal markers reveal causal connections (Ament et al., 2020). Causal markers in the Indonesian language include the markers '*sebab, karena,* and *akibat*' in addition to their derivatives and compound forms, including '*disebabkan, menyebabkan, penyebab, dikarenakan, mengakibatkan, diakibatkan,* and *berakibat*' among other related markers. To establish limitations, this study incorporates particular causal markers, namely '*sebab, karena, disebabkan, menyebabkan, penyebab, dikarenakan,* and *mengakibatkan*' due to the vast possibilities that can be derived from the concepts of cause, reason, and effect. Because the markers '*sebab*' and '*karena*' are recognized as markers for their derivations that have a strong connection to other markers (see Fig. 1) and because they are likely to appear frequently in Indonesian articles, these markers were selected.

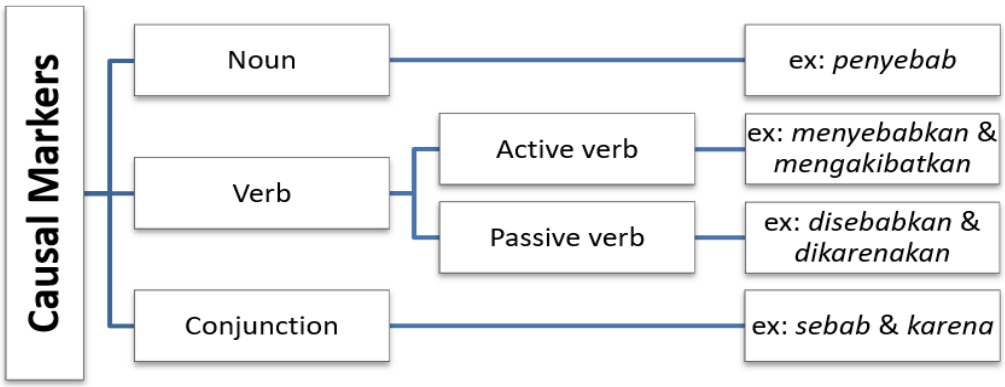

Figure 1. Model of Causal Markers in Indonesian

Development of Causal Pattern

Evidently, all languages employ similar word patterns to discuss fundamental concepts of causality (Comrie, 1976). Various causes and their constructions can be identified within the language spectrum (Comrie, 1976; Dixon, 2000). Causative markers allow certain languages, including English, to demonstrate cause-and-effect. Despite lacking a marker explicitly indicating their causal meaning, these causatives possess semantic attributes that support the notion of causation. Turkish employs morphological causatives alongside verbal causatives to establish cause and effect (Ger et al., 2021a). It is possible for speakers of every language in the world to articulate and discuss the way in which one thing leads to another. The impact of diverse cultures and languages on the causal modeling process and its implications for human cognition as a whole is a subject of interest to researchers in linguistics and cognitive science, as well as in other domains (Ger et al., 2021[a,b]). Causal connections rely heavily on

causal markers and causative complements (Dixon, 2000; Solstad & Bott, 2017; Bardzokas, 2017). The aim of the causality method (Dalman, 2016) is to explain a situation and its outcomes, or vice versa. Studies of causal markers investigate patterns that are potentially able to establish causal connections (Shibatani, 1976; Tomasello, 2003; Yu, 2019). Causality development patterns refer to these recurring themes, such as connecting causality (Wolff & Song, 2003), which establishes a single cause and effect (referred to as the single development of causality), and conveying causality (Shibatani, 1976; Wolff & Song, 2003), which establishes multiple causes and/or effects (referred to as the complex development of causality), which are two specific types of causality statements used in many articles. The data obtained previously from Indonesian articles is used to illustrate a specific pattern of development.

Utang dipakai sebab bunga yang diperoleh bisa mengurangi pajak [Debt is used because the interest earned can reduce taxes]					
Causality pattern =	effect 1	+	*sebab/karena*	+	cause 1
	{main clause}		{conjunction}		{sub clause}
Karena Matematika terkait dengan ilmu hitungan, Matematika sangat berguna dalam berdagang. [As it is related to the science of calculations, Mathematics is very useful in trading]					
Causality pattern =	*karena*	+	cause 1	+	effect 1
	{conjunction}		{sub clause}		{main clause}

Significant Differences in Using Causal Markers

Analyzing the significance of the use of causal markers permits one to investigate their application. This study aims to examine trends in the use of causal markers. For instance, how frequently they are used compared to other markers, or conversely, 'Because, therefore, and because of' comprised approximately three-quarters of the data, according to Povolná (2012), who discovered this while examining master's theses in linguistics, literature, and methods. However, Salam, Mahfud, and Nurhusna (2018) suggest that this may be explicable by looking at the students' writing preferences. Baltaci (2019) found that nouns, verbs, conjunctions, prepositions, and complex prepositions revealed that causal markers were used by Turkish students when composing English causality paragraphs, which means that causal markers derived from nouns appear more frequently in English causal sentences than those derived from other word categories. However, this study may offer different results than previously obtained.

Method

Qualitative and quantitative methods are employed in this study to ascertain the results and explicate their significance. The qualitative method was used to examine patterns in the development of causality, whereas the quantitative method was employed to examine significant changes in the use of causal markers in Indonesian articles. Two categories were applied to the data: individual data and statistical data. The qualitative data were derived from Indonesian sentences that possessed pragmatic traits, including markers of causation. Conversely, the quantitative data were derived from the frequency of causal markers identified in the documents. The markers *sebab, karena, disebabkan, menyebabkan, mengakibatkan,* and *penyebab* were identified in each document and employed to indicate a causal connection. The data collection technique is documentation. The documentation was generated using

Indonesian articles obtained from Sinta 3 and 4 indexed periodicals, which were published between January and June 2023. The articles were accessed at https://garuda.kemdikbud.go.id/. Articles Sinta 3 and 4 were selected as the primary data due to their adherence to the pre-established criteria, such as the viability of the article to the journal's scope, credibility of the publisher, and use of standard language. Additionally, since the articles in Sinta 1 and 2 are composed in English, they fail to satisfy the specified criteria; similarly, Sinta 5 and 6 were considered to not satisfy the established criteria. Seventy-four articles, representing six distinct subject areas, were collected and employed as data (see Table 1). The articles were analyzed during the documentation process, and pragmatic components of causal markers were determined. Subsequently, the quantity of causal markers apparent in each article was employed as quantitative data, while the markers themselves served as qualitative data. Hence, *sebab, karena, disebabkan, dikarenakan, menyebabkan, mengakibatkan,* and *penyebab* were utilized as causal markers in the argument.

Explanatory methods were employed in analyzing qualitative data (Lakens, 2013). The categories of causal markers are identified subsequent to the initial division of the data by type. The subsequent phase entailed the presentation and explanation of the data prior to reaching a conclusion. This study utilized the ANOVA test and the statistical software SPSS as quantitative data analysis techniques to examine the differences in means among causal markers. A significance level (α) of 0.05 was predetermined for the f-test value, and the acceptance or rejection of Ha was determined by comparing the f-test and the f-table.

Table 1. Subject Areas in Scientific Articles

No.	Subject Area	N	Percentage (%)
1	Economics	9	12
2	Education	39	53
3	Engineering	4	5
4	Language & Literature	13	18
5	Social Science	5	7
6	Sports	4	5

Discussion

Patterns of Causality Development in Using Causal Markers at Indonesian Articles.

The pattern of single causality development encompasses both cause-effect and effect-cause progressions. On contrary to the idea of effect-cause, which posits the consequence prior to the cause, the concept of cause-effect entails introducing the cause before the effect. There are two distinct patterns in the development of causality markers in Indonesian articles: single causality development pattern pertaining to interplay between a single cause and effect and complex causality development pattern encompassing interplay between multiple causes, multiple effects, and complex connections. Concerning data provided on causes and effects, the concept of pattern division is applicable. The development of the causal marker pattern in Indonesian articles emphasizes the use of single causality component (see Table 2) distinguished by the existence of hypotactic sentences. The conjunctions *sebab* and *karena* serve as causal markers in these sentences, establishing a connection between clauses. Correlation between effects and their corresponding causes thus signifies this developmental pattern. In (1), the causal factor is expressed as a

complete phrase comprising all elements, such as subject and verb. However, it is imperative to establish a logical connection before discussing specific causal variables, namely S, which has been omitted from the presented data (2). This illustrates that specific causal variables (S/P) can be eliminated when *sebab/ karena* markers are employed to establish causal connection as well as their modification (*disebabkan, dikarenakan*, and *penyebab)*. Compared to the original form, markers *disebabkan* and *dikarenakan* as a causal marker act as the predicate (pattern 2). A connection appears to exist between internal student factors (K) and insufficient student learning motivation (S). The aforementioned internal factors are identified and expressed as phrases as the source of the lack of motivation. A significant correlation exists, according to the findings of the present study, between the use of LinkAja mobile payments and positive results. The outcome is supported by the citation, and the clause-established causal connection is to blame. The manifestation of the concept of causality in hypotactic phrases is observed within the context of data (4).

Pattern 3 incorporates the causal marker, which is positioned in the subject (S) position. The word *sebab* functions as a causality marker within the sentence structure through its placement at the outset of the phrase, thereby establishing the subsequent reference to the effect. The copula is presented prior to the cause. The data (6) clearly indicates that marker *sebab* was referenced prior to the effect. Following this, marker 'copula' is utilized to establish a relationship between the cause and the effect. The developmental trajectory of the effect is evident in patterns 4 and 5. Pattern 4 illustrates that the use of *karena* in conjunction form as a causal marker does not establish causation. When comparing the observed pattern to Pattern 1, the former is inverted. The subordinate clause serves as the antecedent to the primary clause. The condition is discernible in the hypotactic sentence's structure. Pattern 5 illustrates how the transmission of causal relationships through the use of markers results in the formation of causal markers. The letter "O" denotes the consequence, which is provided as an expounding phrase or subordinate clause to the object. The saturated student clause, which denotes the increase in O in data (8), and the phrase, which denotes the decrease in turbine performance, are the consequences of this sentence. Causality is discernible in paratactic sentences within Data 8, while it is discernible in hypotactic sentences within Data 9.

Out of the five patterns of causality, patterns 1, 2, and 3 can be classified as causal patterns, whereas patterns 4 and 5 are denoted as effect patterns. The patterns mentioned above become apparent at the hypotactic level when conjunction markers, specifically *sebab* and *karena*, are employed. Furthermore, hypotactic causation is also expressed through markers, including the derivatives of *sebab* and *karena*, as in *disebabkan, dikarenakan*, and *mengakibatkan*. It occurs when a subordinate sentence is used to convey the consequences of marketing. Sentences are the level at which causal connections within phrases are established. The use of causal markers in Indonesian articles shows the emergence of complex causality, including multi-cause, multi-effect, and hybrid causal connections in addition to single causality (see Table 3).

Six patterns of complex causality can be identified in Indonesian articles. Multicausal development patterns comprise patterns 6 and 7, while multifaceted development patterns comprise patterns 8 and 9.

Moreover, patterns 10 and 11 are discernible as patterns characterized by intricate causal progression. Pattern 6 effectively employs two causal markers to communicate a definitive comparison between the causes that culminated in a specific outcome. The determination of accuracy is achieved by presenting a refutation of the incorrect factor as it is present in the dataset (10). Although students often experience academic failures, this is not due to their own incompetence, which is an incorrect causal marker 1 cause; instead, it is often the result of a conjunction of contradictory causes 1, since causal marker 2 indicates that a lack of motivation to study is the true cause. The writer not only establishes a correlation between the effect and its suitable source (as illustrated in pattern 6), but also offers supplementary insights that expose the fallacy commonly associated with attributing causes to effects. Pattern 7 exemplifies the traditional methodology for establishing causality when multiple causes are involved, wherein the outcome is presented initially, then cause 1, cause 2, and so forth.

Two patterns—effects with causal markers *disebabkan* and *karena*—are applied to generate multi-effects in patterns 8 and 9. While the consequences linked to the implementation of causes are nearly identical to those delineated in pattern 5, the number of effects exceeds one. Pattern 9 is comparable to patterns 1 and 2, with the exception that it encompasses a more extensive array of associated effects. This provides evidence that the progression of single causality determines the development of multi-effect causality. Multiple marker combinations are utilized in Patterns 10 and 11 to aid in the progression of causation. According to data (16) and (17), the current study provides proof that the markers *karena+mengakibatkan* are visible in patterns 10 and 11. Complex patterns are the designation given to the aforementioned patterns on account of the existence of multilayer causality. Pattern 10 comprises the exposition of a causal factor and the ensuing repercussions that ensue from said factor. Pattern 11 entails introducing the consequence before the underlying factor that precipitated the consequence. Therefore, an inequitable allocation of causality exists within this multilevel causal relationship.

It was discovered that the use of causal markers in Indonesian articles followed eleven distinct patterns. These patterns were classified into two categories: single causality development (patterns 1 to 5) and complex causality development (patterns 6 to 11). These patterns are produced both at the sentence level and in the domain of hypotactic structures. It provides further elaboration on Povolná (2012), who proposes the existence of causal markers in hypotactic and paratactic structures. Causal markers comprise various linguistic components, including nouns (e.g., *penyebab*), conjunction (e.g., sebab and karena), and verb (e.g., *disebabkan, dikarenakan, menyebabkan,* and *mengakibatkan*). These markers act to establish a causal connection between two phenomena. In Indonesian articles, causality is established by explicitly stating both the cause and consequence, although specific elements may be omitted at times. The justification for the elimination is evident in data (2) and (7). This is consistent with Suhartono (2015), who proposes that linguistic features observed in Indonesian texts might comprise phrases that have been excluded due to a multitude of factors. Meanwhile, Antony et al. (2012) demonstrates the significant function that markers perform in constructing discourse by means of consistent markers including conjunction, reference, substitution, ellipsis/deletion, and ellipsis.

Table 2. Pattern of Single Causality Development

No.	Pattern	Causal Marker	Notation	Data
1	Causality (effect-cause)	*sebab/* *karena*	Effect 1 + *sebab/karena* + cause1 {main clause} {marker} {subclause}	(1) *Perkembangan bahasa pada anak dinilai sangat penting **sebab** perkembangan bahasa dapat meningkatkan kemampuan anak.*
				(2) *Matematika adalah ilmu yang sangat berguna dalam berdagang **karena** terkait dengan ilmu hitungan.*
2	Causality (effect-cause)	*disebabkan/ dikarenakan*	Effect 1 + *disebabkan/dikarenakan* + cause 1 {S} {P} {K} {Pel –clause/phrase}	(3) *Rendahnya motivasi belajar siswa dapat **disebabkan** oleh faktor baik yang berasal dari dalam diri siswa.*
				(4) *Hal tersebut **dikarenakan** mobile payment LinkAja memiliki kegunaan yang positif.*
				(5) *Pemanfaatan teknologi belum dimanfaatkan secara maksimal **dikarenakan** keterbatasan keterampilan.*
3	Causality (effect-cause)	*penyebab*	*Penyebab* + effect 1 + kopula + cause 1 {S} {P} {Pel}	(6) *Penyebab kriminologi lingkungan **adalah** korporasi.*
4	Causality (cause-effect)	*karena*	Karena + cause 1 + effect 1 {marker} {subclause} {main clause}	(7) ***Karena** kemampuan finansial ini, Iyas merasa menjadi lebih lemah dihadapan suami dan tidak bisa melawan.*
5	Causality (cause-effect)	*mengakibatkan*	Cause 1 + mengakibatkan + effect 1 {S} {P} {O – clause/ phrase}	(8) *Pembelajaran dengan menggunakan metode ceramah **mengakibatkan** kejenuhan siswa*

				(9) *Peningkatan jumlah blade yang berlebih akan **mengakibatkan** penurunan kinerja turbin*

Table 3. Patterns of Complex Causality Development

No.	Pattern	Causal Markers	Notation	Data
6	Multi-causes	*Combination of verb causal marker*	Effect + verb causal marker + ~(cause1) + *tetapi* + verb causal marker + cause 2	(1) *Sering terjadi siswa yang kurang berprestasi **bukan disebabkan** oleh kemampuannya yang kurang, tetapi **dikarenakan** tidak adanya motivasi belajar.*
7		*Karena/ disebabkan*	Effect + causal marker + cause1 + cause2 + cause3 + etc.	(2) *Permasalahan para penghuni lansia di panti jompo **disebabkan** oleh kesalahpahaman, ketidakcocokan watak antar penghuni, rasa iri, dan rasa ingin berkuasa.*
				(3) *Huruf hanzi menjadi unsur bahasa yang sangat penting **karena** setiap kosa kata sudah melambangkan suatu makna dan semua materi juga disajikan dengan menggunakan huruf hanzi.*
8	Multi-effects	*menyebabkan*	cause + *menyebabkan* + effect 1 + additive conjunction + effect 2	(4) *Motivasi belajar yang rendah akan **menyebabkan** tujuan yang akan dicapai menjadi tidak terarah dan kurang bersemangatnya siswa.*
9		*karena* + *dikarenakan*	Effect 1 + effect 2 + causal marker + cause	(5) *Studi ini memakai teknik penelitian kualitatif dan juga menggunakan pendekatan studi kasus **dikarenakan** peneliti melakukan observasi langsung.*

				(6) *Instrumen penilian digital yang dikembangkan terbukti menambah keantusiasan peserta didik dalam mengerjakan soal, tes juga lebih mudah digunakan, tidak membosankan* ***karena*** *terdapat musik saat mengerjakan soal.*
10	Complex Causality	*karena* + *mengakibatkan*	Effect + *karena* + cause1 + cause2 + *mengakibatkan* + effect (cause2)	(7) *Keterampilan komunikasi matematis tertulis masih kurang* ***karena*** *siswa tidak terbiasa dihadapkan pada pertanyaan berupa tulisan, siswa tidak memahami konsep penyebutan simbol matematika yang* ***mengakibatkan*** *kesalahan siswa dalam menyatakan arti pertanyaan .*
11		*mengakibatkan* + *karena*	Cause + *mengakibatkan* + effect1 + *karena* + cause (effect 1)	(8) *Keadaan ini akan* ***mengakibatkan*** *kerja dewan menjadi kurang efektif* ***karena*** *adanya suatu hubungan kekeluargaan dalam manajemen perusahaan.*

Significant Differences on the Use of Causal Markers.

A SPSS ANOVA was performed with a significance level (α) of 0.05 to ascertain the f-test value, which was utilized to validate the initial hypothesis. To draw conclusions, the obtained f-test value is subsequently compared to the critical value from the f-table (see Table 4). The results of the hypothesis test demonstrate a value of 54.251 for the f-test. The significance level indicated that the f-test value of 2.0986 exceeds the critical f-table value of = 0.05. Therefore, the f-test value is found to be greater than the f-table value, supporting the acceptance of the hypothesis (Ha) and the rejection of the hypothesis (Ho). The findings of this study illustrate significant discrepancies in the application of causal markers within articles written in Indonesian. The frequency distributions of the causal markers *sebab, karena, disebabkan, dikarenakan, menyebabkan, mengakibatkan,* and *penyebab* are discernible in the significance test results (see Table 5). Based on the analysis, the causal markers occurred and their mean occurrences as: *sebab* (17 with mean of 0.23), *karena* (337 with mean of 4.55), *disebabkan* (55 times with mean of 0.74), *dikarenakan* (88 with mean of 1.19), *menyebabkan* (31 with mean of 0.42), *mengakibatkan* (24 with mean of 0.32), and *penyebab* (11 with mean of 0.15).

Table 4. Significance of Differences on the Use of Causal Markers

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1094.645	6	182.441	54.251	.000
Within Groups	1718.446	511	3.363		
Total	2813.091	517			

Table 5. Description of Causal Markers in Indonesian Articles

	N	Mean	Std. Deviation	95 Confidence Interval for Mean		Percentage (%)
				Lower Bound	Upper Bound	
Sebab	17	.23	.786	.05	.41	3.02
Karena	337	4.55	4.089	3.61	5.50	59.86
Disebabkan	55	.74	1.405	.42	1.07	9.77
Dikarenakan	88	1.19	1.585	.82	1.56	15.63
Menyebabkan	31	.42	.702	.26	.58	5.51
Mengakibatkan	24	.32	1.008	.09	.56	4.26
Penyebab	11	.15	.459	.04	.25	1.95

According to the data presented in Table 5, it is shown that the Indonesian articles exhibit the highest frequency of use for the marker *karena* at 59.86%. In addition, it is worth noting that the use of the marker *dikarenakan* exhibits a 15.63% increase in comparison to the use of *disebabkan* and *sebab,* despite its non-conventional structure. The employment of the causal marker *penyebab* exhibits the lowest frequency among Indonesian articles, accounting for a mere 1.95% of its use. When compared to Baltaci's (2019) research, the results of this study show discrepancies. Baltaci's study revealed that students employed causal markers across many categories, including nouns, verbs, conjunctions, prepositions, and complicated prepositions, when composing causality paragraphs. The results of this study indicate that Indonesian articles employ three distinct categories of causal markers, namely conjunctions (*sebab* and *karena*) (62.88%), verbs (*disebabkan, dikarenakan, menyebabkan,* and *mengakibatkan*) (35.17%), and nouns (*penyebab*) (1.95%). Further research is necessary to verify and substantiate the results of this study, particularly in relation to the use of causal conjunction indicators such as *sebab* and *karena*. The prevalence of the marker *karena* surpasses that of *sebab* in use. Both indicators are employed in a similar manner within Indonesian articles. In addition to this, the verb causal marker *dikarenakan* appears to be more prevalent compared to other markers, despite its non-standard form. The presence of the marker *dikarenakan* in Indonesian articles should be avoided due to its non-standard form, making it an intriguing occurrence worthy of investigation. From the 74 Indonesian publications examined for this study, six subject areas were identified based on subject area, namely: economic science, education science, engineering science, literacy, social science, and sports science. Table 6 displays the distribution of causal indicators utilized in Indonesian literature, categorized by subject area.

Table 6. Percentage of Causal Marker Use in Indonesian Articles Based on Subject Area

	economics	education	engineering	literacy	social	sports
sebab	7.52	1.20	0.00	3.37	0.00	3.03
karena	53.38	64.66	66.67	49.44	74.29	57.58
disebabkan	12.78	7.23	8.33	12.36	11.43	9.09
dikarenakan	13.53	15.66	4.17	23.60	5.71	21.21
menyebabkan	3.76	5.22	16.67	4.49	5.71	9.09
mengakibatkan	7.52	3.21	4.17	5.62	0.00	0.00
penyebab	1.50	2.81	0.00	1.12	2.86	0.00

According to Table 6, the marker *karena* is used more frequently (53.38%) than the marker *sebab* (7.52%) in economics articles. It indicates that within economics, the prevalent choice for causal markers in the form of conjunctions is the use of the marker *karena*. The disparity between the use of *sebab* and *karena* in economics is substantial. In economics, it is commonly observed that writers and researchers exhibit a preference for employing the marker *karena* over *sebab* while constructing their academic articles and research reports. It is also observable within the domains of educational science, engineering science, literacy studies, social science, and sports science. This indicates that the causal marker conjunctions *karena* rather than *sebab* predominate in Indonesian articles.

In the field of economic research, the marker *dikarenakan* is used more frequently than *disebabkan* (12.78%) when it comes to the use of casual marker passive verbs. In science education, the use of the marker *dikarenakan* accounts for 15.66%, surpassing the frequency of the marker *disebabkan* which stands at 7.23%. Whereas *disebabkan* is used in 12.36% of the area of literacy, *dikarenakan* is used in 23.60% of it. In sports science, the use of the marker *dikarenakan* accounts for 21.21% of occurrences, surpassing the frequency of *disebabkan* which stands at 9.09%. However, different results were found in articles within the areas of engineering and social sciences. In engineering science, the use of the marker *dikarenakan* comes to 4.17%, which is comparatively lower than the frequency of *disebabkan* at 8.33%. Similarly, within social science, the occurrence of *dikarenakan* stands at 5.71%, which is also lower than the prevalence of *disebabkan* at 11.43%. It indicates that the prevalence of passive verbs as causal markers varies among subject areas in Indonesian publications. The use of *disebabkan* and *dikarenakan* as passive verbs signifies that causal markers are employed with distinctive inclinations in respective areas. The frequency of the marker *disebabkan* is significantly greater than that of *dikarenakan* in both engineering and social sciences. In contrast, the frequency of the marker *disebabkan* is considerably lower compared to *dikarenakan* within the areas of economic science, education science, engineering science, literacy, and sports science, meaning that the frequency of use for the marker *dikarenakan* is significantly greater than that of *disebabkan*. This aligns with the Anova calculation used to evaluate the statistical significance of causal markers in Indonesian articles.

In the area of economic science, the use of casual markers of active verbs, specifically *menyebabkan* and *mengakibatkan*, exhibits a prevalence of 7.53% and 3.76%, respectively. Similarly, within the realm of literacy, the occurrence of *mengakibatkan* stands at 5.62%, surpassing the frequency of *menyebabkan,* which stands at 4.49%. In the domains of science education, engineering science, social

science, and sports science, the frequencies of the marker *menyebabkan* are greater (5.22%, 16.67%, 5.71%, and 9.09%, respectively) compared to the marker *mengakibatkan* (3.21%, 4.17%, 0%, and 0%, respectively). This study presents contrasting results arising from the use of passive verbs as causal markers in Indonesian publications. The frequency of employing *penyebab* as a noun serving as a causal marker is somewhat lower than in other categories. The distribution of cause markers in Indonesian articles across different areas of study, namely economic science, education science, engineering science, literacy, social science, and sports science, is as follows: 1.5%, 2.81%, 0%, 1.12%, 2.86%, and 0%. The frequency of use of conjunctions, passive verbs, and active causal markers in Indonesian articles far surpasses that of this particular use. Indeed, the use of causation is not commonly employed in writings pertaining to engineering and sports science. Engineering and sports science writers or researchers may not be accustomed to employing causal variables in the development of causation.

The use of causality markers in Indonesian articles was found to follow eleven patterns. The patterns were divided into two different categories: single causality development patterns, including patterns 1–5, and complex causality development patterns, including patterns 6–11. These patterns are observed at both the single-sentence and hypotactic levels. Povolná (2012) found that causal markers occur at the paratactic and hypotactic levels, which supports the result found in this study. Various markers can be used to establish a causal connection, such as conjunction markers (*sebab* and *karena*), verbs (*disebabkan*, *dikarenakan*, *menyebabkan*, and *mengakibatkan*), and nouns (*penyebab*).

The use of causal markers in Indonesian articles exhibits five different types of causality development. Table 2 illustrates that patterns 1, 2, and 3 can be classified as causal patterns, but patterns 4 and 5 can be categorized as effect patterns. The aforementioned patterns manifest at the hypotactic level through the use of conjunction markers, namely *sebab* and *karena*. In addition to this, causality at the hypotactic level is also conveyed through markers such as the derivations of *sebab* and *karena*, particularly *disebabkan*, *dikarenakan*, *menyebabkan*, and *mengakibatkan*. It occurs when the consequence or antecedent of marketing is expressed in the form of a subordinate sentence. Causal connections are established at the sentence level when it comes to sentences. This result is consistent with the study conducted by Povolná (2012), which suggests causal markers are present at both the paratactic and hypotactic levels, manifesting as conjunctions such as because, cause, hence, and so on. In the context of hypotactic structures, the omission of the causative marker results in the occurrence of the cause, as observed in data (2). The use of this deletion is justified since it aligns with the findings of Antony et al. (2012), who propose a categorization of cohesion markers into five different categories: reference, substitution, ellipsis/deletion, and conjunction. This implies that the inclusion of causes and effects in the exposition of causality in Indonesian articles may be offered in its entirety or partially omitted. The process of developing causality in Indonesian articles also involves discussing the cause or consequence in full, with some parts being omitted. The rationale for the removal may be observed in data sets (2) and (7). It aligns with the findings drawn by Suhartono (2015), which suggest that linguistic characteristics present in Indonesian texts may consist of sentences that have been omitted based on various factors. The results of this study also show that markers like reference, substitution, ellipsis/deletion, and conjunction play a big part in how a discourse is put together (Antony et al., 2012).

In Indonesian articles (6–11), complex causality develops according to six patterns. These patterns include complex development patterns as well as multi-cause and multi-effect patterns. The multicausal development pattern is characterized by the inclusion of both erroneous and accurate causal factors. In addition, general patterns such as effect: cause 1; cause 2; and so forth are also used to construct multi-causal development. Conventionally, conjunctions like *akibat* and *penyebab* are employed as informal markers. The multi-effect development pattern is constructed through the use of verb causal markers and conjunctions, following a sequential pattern of effect 1, effect 2, effect n, marker, and cause. Complex patterns of development are formulated through the combination of several variations, including the use of two or more causal markers within a sentence. In addition to this, the text provides the implications or origins, followed by a comprehensive analysis of the underlying causes and resulting effects. Of course, in order to construct a thorough understanding of causality development in Indonesian articles, more investigation is required to examine patterns of causality development in the use of causal markers in Indonesian articles.

As can be seen from Table 4, Ha acknowledges that the way causal markers are used in Indonesian articles varies significantly. An examination of the frequency distribution of causal markers' use can reveal the distinction between these two. Based on the analysis of variance (ANOVA) results, it was demarkerined that the f-test had a value of 54,251, which was considered to be statistically significant at a significance level of 0.000. This indicates a substantial disparity in the use of causal markers within Indonesian articles. The results presented in this study exhibit disparities when compared to the results from Baltaci (2019). Baltaci's study revealed that students employed causal markers in several categories, including nouns (63 instances), verbs (13 instances), conjunctions (13 instances), prepositions (8 instances), and complicated prepositions (3 instances), when constructing causality sentences. The results of this study indicate that Indonesian articles employ three distinct types of causal markers. These categories include conjunctions such as *sebab* and *karena* (62.88%), verbs like *disebabkan*, *dikarenakan*, *menyebabkan*, and *mengakibatkan* (35.17%), and nouns such as penyebab (1.95%). However, the results of Uluçay and Hatipoğlu (2017) differ from the results of this study in markers of the main categories used in Turkish to convey cause-and-effect connections, particularly nouns and verbs. It indicates that the distribution of causal markers varies depending on the language employed.

Additional research is needed to verify and clarify the results of this study, particularly in connection to the use of causal conjunction markers such as *sebab* and *karena*. The prevalence of the conjunction *karena* surpasses that of the noun *sebab*. Indeed, both indicators are employed in a similar manner in Indonesian publications. In addition to this, the utilization of the marker *karena* has a higher degree of prevalence compared to other markers denoting verb causation. The aforementioned marker is considered a non-standard variant in the Indonesian language. The observed phenomenon is intriguing. The use of non-standard forms should be avoided, as they are not commonly found in certified Indonesian papers in Sintas 3 and 4. In addition to the analysis conducted by Povolná (2012), it is posited that these phenomena may be attributed to factors such as exposure, comprehension, and individual preferences in writing practices. These phenomena may exhibit a correlation with the use of

conjunctions due to their notably elevated frequency of use. Indonesian writers frequently employ the marker *karena* as a means to convey causality. Consequently, within the writer's perspective, the use of the marker *karena*, particularly *dikarenakan*, is deemed a non-standard marker in Indonesian texts. The writer's choice of selecting a particular word is influenced by this desire, despite the fact that the selected word is incorrect in Indonesian.

According to the subject matter, causal conjunction is used far more frequently than cause in Indonesian articles on social science, economic science, education science, engineering science, literacy, and sports science. The prevalence of the marker *karena* in Indonesian articles is significantly higher than the use of *sebab*. It is foreseeable that additional academic disciplines will exhibit analogous instances to the results of this study. The prevalence of the causal marker *dikarenakan* in passive verb constructions is generally greater than that of the marker *disebabkan*. The potential impact of use was potentially substantial in the preceding discourse. In the areas of economics, education, literacy, and sports, the prevalence of the marker *disebabkan* outweighs that of *dikarenakan*, albeit with minimal disparity. In the fields of engineering and social science, the utilization of the marker 'cause' is observed to be more prevalent in comparison to the marker 'because'. The results presented in this study are still dependent on factors like exposure, comprehension, and authorial preferences. The significance of active verb causal markers is comparatively lower when compared to passive verb causal markers. The writer's tendency to employ passive sentence structures in academic writing, such as in papers, theses, dissertations, and scientific articles, is a result of their habitual impact. The use of the passive voice in standard Indonesian language norms is associated with a higher degree of impartiality. In the context of academic writing in Indonesia, there is a tendency for writers to employ passive sentence structures more frequently than active ones, resulting in a larger prevalence of passive verbs, including causal indicators associated with passive constructions.

Conclusion

The data were analyzed, and eleven patterns of causality development were found in the use of causal markers in Indonesian articles. A particular type of pattern was the development of single causality, including effects (cause-effect) and causes (effect-cause); another type was the development of complex causality, including multicausal, multi-effect, and complex patterns. According to the study, each type of marker follows a different trend. Ha, testing on the use of cause markers in Indonesian articles also shows a big difference since the f-test is greater than the f-table. It supports the idea and clearly displays that causal markers are utilized in a very different manner in Indonesian articles. The ANOVA test also showed that the *karena* marker shows up 59.86 times, while the *dikarenakan* marker shows up 15.63 times. It suggests these two markers are used frequently by the writer. However, how to select and use these markers completely depends on the writer's understanding and preferences. Despite this, other causal markers are found, though not very often (below 10%), and the *penyebab* marker is the rarest marker used (1.95%). Compared to other markers (eleven patterns), the causality pattern (effect-cause) shows up more frequently than others, as demonstrated by these results.

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