

Linguistic Pattern Analysis and Labeling Compliance of Commercial Product

Gene Rose T. Bocol
Central Philippines State University
bocolgenerose123@gmail.com

Date Submitted:
March 26, 2026

Date Accepted:
May 12, 2026

Date Published:
July 20, 2026

DOI:
10.5281/zenodo.21459680

ABSTRACT

This study examined the linguistic patterns and labeling compliance of eight commercial products produced by a local establishment in Kabankalan City. It employed a quantitative research design and content analysis to identify grammatical errors and assess compliance with the mandatory labeling requirements of the Philippine Food and Drug Administration. Data were gathered through photographs of the product labels and evaluated using a researcher-developed checklist based on basic grammar terminology, Surface Structure Taxonomy, and FDA labeling standards. Frequency distribution and mean percentage were used to analyze the data. The findings revealed three grammatical errors involving subject-verb agreement, linking verb usage, and the proper ordering of

adjectives and adverbs. These errors were classified under misinformation and misordering. Regarding regulatory compliance, only two products met more than 80% of the mandatory labeling requirements, while the overall compliance rate was 34.09%, indicating generally low adherence to FDA standards. Although all products displayed their product names, several labels lacked essential information such as ingredients, manufacturer details, storage conditions, expiration dates, allergen warnings, instructions for use, and nutritional information. The study concludes that commercial product labels require substantial improvement in grammatical accuracy, completeness, and regulatory compliance. A standardized labeling process with grammar checking, compliance review, and quality assurance is therefore recommended to improve label clarity, consumer protection, and product credibility.

Keywords: *linguistic patterns, grammatical errors, commercial product labels, labeling compliance, FDA regulations*

INTRODUCTION

Language is a factor in a consumer's perception and behavior, specifically in commercial product labeling. Basically, the commercial product labelling function as practical marketing tools, integrating linguistic, visual, and cultural components to capture consumer interest, communicate essential details, and meet regulatory requirements. Within the different regions, product labels show the unique linguistic characteristics being influenced by cultural heritage, market dynamics, and regulatory requirements. The worldwide strategy for commercial labeling reflects diverse approaches in wording, syntax, and persuasive methods, balancing local consumer preferences with brand consistency (Bhatia, 2019; Keller, 2013). Also, Gannon, 2001 cited by Achi (2017), the product identity is crucial for market success, as it differentiates product, provides quality information, and ensures safety. Linguistic patterns help create clear, understandable language on product labels, shaping the brand image and influencing consumer purchasing decisions.

Cultural norms, consumer trends, and legal frameworks all have an impact on the linguistic patterns on commercial product labels in Asian markets, which combine traditional aspects with typical marketing strategies to correspond with the market. Additionally, Krishna and M. Ahluwalia's (2019) study looks at how Indian consumers' views and purchasing behaviour are impacted by the use of foreign languages on product packaging labels. It investigates the extent to which package language affects consumers' purchasing intentions. Hosana (2023) analyzes textual and visual components to investigate the persuasive language strategies used in commercial labelling. The study finds that rhetorical tactics like alliteration, analogies, hyperbole, and superlatives are used to make items more appealing.

Additionally, ISO 82079-1 provides the basic guidelines and particular specifications for creating information that enables users to operate items in a safe and efficient manner. This contains resources such as user manuals, caution labels, cautions, and instruction manuals. Making sure that product information is understandable and available to the target market is one of its fundamental components. Regarding language and localization, the guideline highlights how crucial it is to use languages that are appropriate for the target market. To guarantee user comprehension and compliance, instructions must also be culturally appropriate.

Javier C. et al. (2024) draw attention to the paucity of research on the language used on product labels and how it affects Philippine consumers' purchasing decisions. Regulations, consumer behaviour, and design factors that impact purchasing decisions all influence the linguistic patterns on food labels. 19.6% of Filipino adults read food labels, with 16.7% concentrating on nutrition facts, according to ENNS (2021), 2018–2019 data. As a result, giving consumers information about the nutrient composition of food influences their purchasing decisions and acts as a communication tool. In the Philippines, however, its application is still optional.

However, there are no easily accessible studies in the region that identify the language patterns of commercial product labelling. In contrast, national regulations govern product labelling methods in the Philippines. These rules aid in preserving uniformity and safeguarding customers in every area, including Kabankalan City. The nation's labelling and marking regulations are outlined in the Philippine Consumer Act and the Philippine National Standards (PNS). In order to protect consumer interests, these regulations require that product labels provide necessary information, including the product name, ingredients, net quantity, manufacturer data, and usage directions. Naseem et al. (2020) claim that customers' knowledge, perception, and understanding of labelled information affect their purchasing decisions. The goal of the study is to improve word choice and provide more consumer-friendly product labels.

Additionally, since consumers are growing more conscientious and product labelling is essential to their purchasing decisions, the study seeks to ascertain the language patterns and labelling compliance of commercial products. Limited study has been done on how this linguistic pattern corresponds with regulatory labelling compliance in commercial products, based on the numerous studies that have already been done on the linguistic patterns in advertising and marketing communication. This gap in the literature is another goal of this investigation. The results could be used as the foundation for creating a process flow chart for product labelling that the organization can modify. Thus, the goal of this study is to guarantee more precise, trustworthy, and dependable methods of adhering to necessary information requirements while encouraging proper grammar.

Theoretical Framework

This study is anchored on the Grammar Terminology Theory of Azar (1989; A1), the Theory of Surface Taxonomy Classification of Stephen Pit Corder and Lang Sapiaen Dulay, Burt, Krashen in Ellis and Barkhuizen (2005:61), Administrative Order No. 2014 -0030 and FDA (DOH Administrative Order No. 153-2004 “GMP Rules”) and the Consumer Act of the Philippines.

Language plays a crucial role in ensuring effective communication, especially in product labeling, which serves as a key channel for conveying information from manufacturers to consumers. Based on Shuy (2005, as cited in Dacumos, 2017), communication enhances the transmission of product-related information. This study uses the Basic Grammar Terminology Theory to evaluate the structure, clarity, and grammatical accuracy of commercial product labels for effective communication and regulatory compliance.

Corder's Surface Structure Taxonomy (1993), as outlined in *Introducing Applied Linguistics*, categorizes errors in sentence constructions into four types: Omission, Addition, Selection, and Misordering. These errors include missing elements, unnecessary or incorrect additions, incorrect choices of elements, and misarranged elements. This classification is useful for linguistic analysis and labeling compliance, as it helps identify grammatical and structural errors in product labels that may affect consumer understanding and adherence to regulations.

Moreover, the rules and DFA requirements for labeling (DOH Administrative Order No. 153-2004 "GMP Rules). Food manufacturing and packaging in the Philippines are primarily regulated under Republic Act No. 10611, the Food Safety Act of 2013, and its implementing rules and regulations. The Food and Drug Administration (FDA) prescribes its control measures, standards, rules, and requirements for the safety of processed and prepacked foods and verifies these and all requirements of food law related to activities and products, including locally produced and imported processed food products under this category, are met.

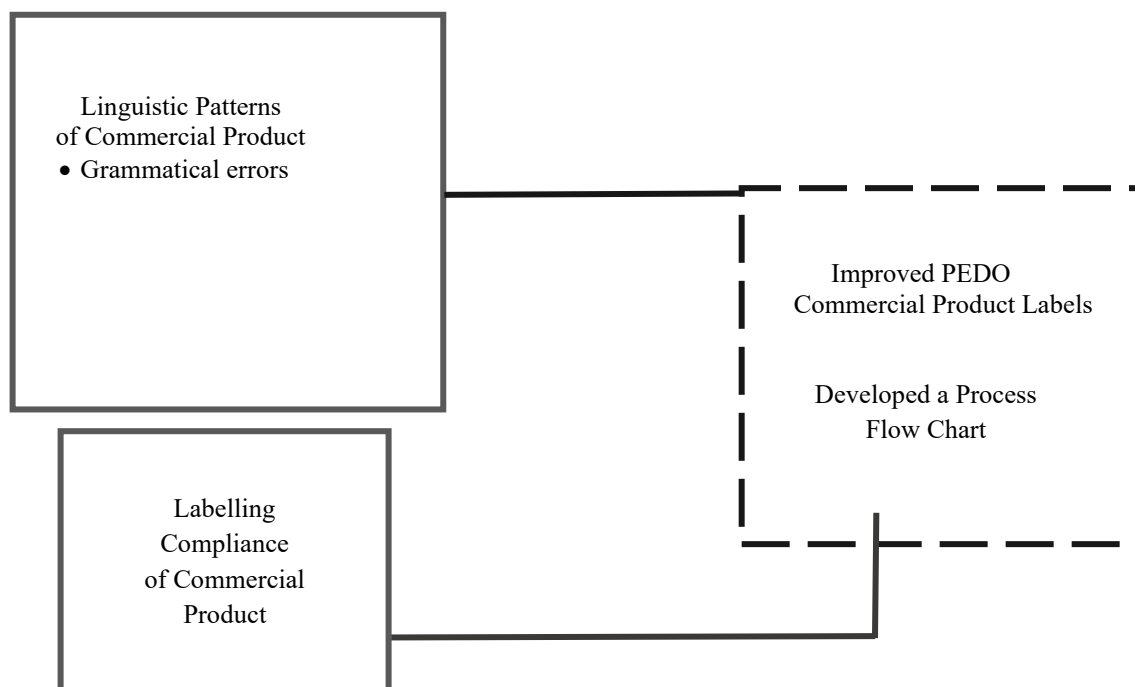
Republic Act No. 7394, or the Consumer Act of the Philippines (The Consumer Act), provides the general standards for labeling requirements on all consumer products (including food) and prohibits the manufacture, import, export, sale, offer for sale, or distribution of any food that is adulterated or mislabeled.

Statement of the Problem

The purpose of this study is to determine the linguistic pattern and labeling compliance of commercial products. Specifically, this research sought to answer the following questions:

1. What is the common linguistic pattern of commercial local products in terms of grammatical error?
2. What is the extent of mandatory information compliance label found in various local commercial product?
3. How do local product labels comply with required information standards while ensuring correctness in grammar?

Schematic Diagram



METHODS

Research Design

The researchers utilized quantitative method and content analysis approach for the study. According to Creswell and Creswell (2018), quantitative research involves the process of collecting, analyzing, interpreting, and writing the results of a study in a systematic, objective, and statistical manner. This study is quantitative research that determines grammatical errors and extent of the mandatory information compliance on eight product labels from a local commercial establishment in Kabankalan City, using numerical data to identify patterns for future research. Moreover, to analyze the product labels comply with required information standards while ensuring correctness in grammar, content analysis approach was used.

Data Gathering Procedure

Prior to the conduct of the study, formal permission sought from the administrators of local commercial products to allow the research focusing on the linguistic patterns and labeling compliance of commercial products produced by the Product Enterprise Development Office (PEDO). During the data-gathering process, the researchers secured an approval from the unit's director to determine and document each local product labels through photographs, then be analyzed, and interpreted. To ensure ethical standards, informed consent was obtained to establish a clear agreement between the researchers and the product representatives, ensuring confidentiality and safeguarding all information from unauthorized access. Furthermore, the results of the study would be presented to the institution's management to promote transparency, strengthen trust, and support informed purchasing decisions among consumers within the institutional community.

Research Instrument

The researchers utilized a researcher made checklist type questionnaire. Part I is to determine the error description and number of grammatical errors found in local product labels based on Basic Grammar Terminology Theory such as subject verb agreement, linking verb, adverb, adjective, punctuation rules, correct tense usage, and proper noun capitalization and Surface Structure Taxonomy such as addition, omission, misinformation and misordering. Part II is on label information compliant checklist following the FDA framework. Part III using rubric draws upon Critical Discourse Analysis (CDA), a framework developed by Norman Fairclough and Teun A. van Dijk was use to ensure correctness in grammar in local product labels.

Ethical Standards

For ethical consideration purposes, informed consent is essential to conduct research to ensure mutual agreement between the researchers and the administrator of the product. For the reassurance of confidentiality and to protect it from unauthorized disclosure. This study on linguistic patterns and labeling compliance in commercial products is highly relevant to the local context, helping ensure that product labels clearly communicate essential information and prevent misleading claims. It also contributes to the limited research on product labeling in the Philippines, particularly concerning student consumers.

Informed consent is essential in the conduct of the research to ensure mutual agreement between the researchers and the school administration and PEDO. The researchers gave an inform consent before gathering the needed data. Using precise and accurate language in product labeling safeguards consumers, ensures regulatory compliance, builds brand credibility, and prevents confusion or legal issues by clearly conveying essential product information.

Data Analysis

To address the research questions, various statistical tools are used to analyze product label compliance. Frequency distribution identifies common grammatical errors, while the mean measures the extent of mandatory information compliance. Pearson's correlation analysis examines the relationship between grammar accuracy and compliance.

RESULTS AND DISCUSSIONS

Table 1. *Frequency distribution of grammatical error found in product labels.*

Name of Product	The Data of Error	Reconstruction	Basic grammar term description	F	%	Surface Structure description	F	%
CPSU PEDOF								
Rain forest Coffee	"The coffee beans used in the product was sourced out from the rainforest s"	The coffee beans used in the product were sourced from the rainforests	Subject - Verb Agreement	1	10	Misinformation	1	25
Kapatiran Muscovado	"Muscovado is called as natural and unrefined"	Muscovado is called a natural and unrefined	Linking verb & subject verb agreement	1	10	Misinformation	1	25
	"natural high energy"	Naturally high energy	Adverb & adjective	1	10	Misordering	1	25
Black Rice	—	—	—			—	0	
Citronella oil	—	—	—			—	0	
Lemon Grass Distillates	—	—	—			—	0	
Lemon Grass Disinfectant	—	—	—			—	0	
Botanical Lotion	—	—	—			—	0	
Massage Blend	—	—	—			—	0	
TOTAL				3	30		3	75

Name of Product	The Data of Error	Reconstruction	Basic grammar term description	F	%	Surface Structure description	F	%
CPSU PED								
Rain forest Coffee	“The coffee beans used in the product was sourced out from the rainforests”	PRODUCTS The coffee beans used in the product were sourced from the rainforests	Subject - Verb Agreement			Misinformation	1	
				1	10			25
Kapatiran Muscovado	“Muscovado is called as natural and unrefined”	Muscovado is called a natural and unrefined	Linking verb & subject verb agreement	1		Misinformation	1	
					10			25
	“natural high energy”	Naturally high energy	Adverb & adjective	1	10	Misordering	1	
								25
Black Rice	—	—	—				0	
Citronella oil	—	—	—				0	
Lemon Grass Distillates	—	—	—				0	
Lemon Grass Disinfectant	—	—	—				0	

Botanical Lotion	—	—	—	—	0		
Massage Blend	—	—	—	—	0		
TOTAL					3	3	75

The number of grammatical mistakes in different local product labels is displayed in Table 1. Three of the eight (8) products on the list—Natural High Energy, Kapatiran Muscovado, and Rainforest Coffee—were discovered to have grammatical problems. Two basic grammar terms and two surface structure descriptions were used to classify the three grammatical faults that were found. There was a subject-verb agreement mistake in Rainforest Coffee. According to the Surface Structure framework, the sentence made a misinformation-type error by using "was" instead of the plural form "were." There were two mistakes in Kapatiran Muscovado: The verb structure was abused in the sentence "is called as natural and unrefined," which resulted to a linking verb and subject-verb agreement problem that is classified as misleading. There was an adverb and adjective misordering issue in the sentence "natural high energy" due to improper adverb use and word order. No grammatical problems were found in the data for Black Rice, Citronella Oil, and Lemongrass Distillates, suggesting that they either followed fundamental language rules or were not thoroughly examined.

In a similar vein, Wang and Liu's (2022) study discovered that grammatical errors in product labels, especially those including false information or incorrect ordering, might damage a brand's trust and perplex customers. Furthermore, according to Ramirez and Santos (2021), in order to effectively convey required information on product labels, proper grammar usage—including subject-verb agreement and modifiers—is essential.

Table 2: *Extent of mandatory information compliance label found in various local commercial product.*

FDA Rules	Rule 1	Rule 2	Rule 3	Rule 4	Rule 5	Rule 6	Rule 7	Rule 8	Rule 9	Rule 10	Rule 11	MEAN
P 1	1	1	1	1	1	1	1	1	1	1	0	90.91%
P 2	1	0	1	1	1	1	1	1	1	1	0	81.82%
P 3	1	0	0	0	0	0	0	0	0	0	0	9.09%
P 4	1	0	0	0	0	0	0	0	0	0	0	9.09%
P 5	1	0	0	1	0	0	0	1	0	0	0	27.27%
P 6	1	0	0	1	0	0	0	0	0	0	0	18.18%
P 7	1	0	1	0	0	0	0	1	0	0	0	27.27%

P 8	1	0	0	0	0	0	0	0	0	0	0	9.09%
											TOTAL	34.09%

LEGENDS:

FDA RULES	Name of Products
Rule 1- product name/name of the food	P1- Kapatiran Muscovado
Rule 2- use of brand name and/or trademark	P2- Rainforest Coffee
Rule 3- complete list of ingredients	P3- Black Rice
Rule 4- net contents and drained weight	P4- Citronella Oil
Rule5- name and address of manufacturer, re-packer, packer, importer, trader, and distributor	P5- Organic Distillates
Rule 6- lot identification	P6- Lemon Grass Disinfectant
Rule 7- storage condition	P7- Botanical Lotion
Rule 8- expiry or expiration date	P8- Massage Blend
Rule9- Food allergen information	
Rule 10- direction/ instruction(s) for use	
Rule 11- nutrition facts/nutrition information/ nutritive value.	

Among the eight commercial products assessed, only P1 and P2 demonstrated high compliance, meeting over 80% of the FDA labeling requirements. In contrast, P3, P4, and P8 showed very low compliance, adhering to only 1 out of the 11 rules, or 9.09%. The overall average compliance rate across all products was calculated at 34.09%, reflecting generally poor adherence to FDA standards. Notably, Rule 1 was consistently followed by all products, suggesting it may be simpler to apply or more strongly emphasized in labeling practices. However, a noticeable drop in compliance was observed across Rules 2 to 11, highlighting significant gaps and the need for improvement in ensuring complete and accurate labeling of product information.

Eskiev (2021) states that a product's name is key to brand development, attracting consumers and creating a positive image, while a lack of identity can hinder acceptance. Similarly, Cooper (2022) emphasizes that ingredient lists and nutrition information are essential for managing health and ensuring consumer safety. Neff (2023) points out that net weight and fluid ounces provide vital details on product quantity. Additionally, Afriyie (2023) stresses the importance of storage information on labels for food security, while Zielinska (2020) notes that "best before" dates help ensure product reliability. Holleman (2021) underscores the need for clear allergen information to prevent health risks, and Schifferstein (2021) points out the role of packaging in conveying safety instructions. Finally, the Philippine Consumer Act (2023) mandates the inclusion of nutritional information on food labels for compliance with safety standards.

How do local product labels comply with required information standards while ensuring correctness in grammar?

The results of this study were derived from a comprehensive review of a sample of local product labels, aiming to identify recurring grammatical errors or inconsistencies. The labels were analyzed and categorized according to the types of errors observed, including issues such as subject-verb agreement, misordering of information, missing mandatory details, and incorrect punctuation. Additionally, the study evaluated how

frequently the labels adhered to required regulatory standards, specifically focusing on the clarity of essential product information like ingredient lists, expiration dates, allergen warnings, and nutritional facts.

The analysis also included an observation of the label creation process, encompassing both the initial design phase and the regulatory review in companies or retail settings. This provided valuable insights into how product labels are developed, revised, and refined to ensure both compliance with legal standards and grammatical correctness.

Furthermore, the research examined the specific steps taken to enhance label accuracy. These steps included proofreading by dedicated teams, the involvement of language experts, and adherence to established guidelines, such as FDA regulations or local labeling standards. By focusing on these processes, the study was able to assess how much effort goes into ensuring that product labels not only meet mandatory information requirements but also communicate clearly and accurately to consumers, avoiding confusion or misinformation.

Thus, it supports the study of Octaviano Jr., Oco, Borra, and Go (2016) identify common grammatical errors among Filipinos, both highlighting how such errors can undermine label clarity and mislead consumers. Additionally, FDA regulations collectively ensure that product labels provide consumers with accurate, consistent, and helpful information, promoting informed decision-making and protecting public health.

Summary

The results of the study revealed that the researchers' total number of products reviewed is 8. With the thorough analysis of the researchers the percentage of labels with correct grammar usage is 30% or 3 out of 8 products has an error on Basic grammar term description specifically on Subject-Verb Agreement, Linking Verb, Adverb and Adjective while 75% or 3 out of 8 products has an error on Surface Structure description with the types of errors found were Misinformation and misordering. Moreover, the compliance rate for mandatory information is 34.09%. These findings emphasized the need for improvements in grammar, label structure, and regulatory compliance.

Recommendations

To ensure compliance with accurate product labeling, the Production Enterprise and Development Office (PEDO) should implement a structured process based on the guidelines of ISO 9001, ISO 22000, and ISO 15223-1. The process begins with the design and drafting of labels, following standardized templates to ensure consistency and accuracy in language, with bilingual labeling (English/Filipino) to avoid confusion. The content should undergo a thorough grammar check, adhering to proper language usage, including subject-verb agreement and correct application of adjectives and adverbs. Mandatory information, such as ingredients, warnings, and usage instructions, must be verified for compliance with ISO 22000 standards and legal regulations. An internal quality assurance (QA) review should follow, where a checklist ensures that all required information is included and structured correctly. After final approval from PEDO, labels can be sent to production for packaging and market distribution. Regular audits should be conducted to ensure continued compliance and address any updates. By implementing these processes, PEDO can enhance the accuracy and clarity of product labels, build consumer trust and support market expansion.

References

- Administrative Order No. 2014 -0030 and FDA (DOH Administrative Order No. 153-2004 "GMP Rules").
- Astuti, D. (2013). English grammatical errors made by first grade students of smpnllasem academic year 2012/2013, 4-6. <https://media.neliti.com/media/publications/147222-EN-english-grammatical-errorsmade-by-first.pdf>
- Creswell, J.W., & Crewell, J.D. (2018). Research design. Quantitative, Qualitative, & Mixed Methods Approaches (5th ed.) Sage Publication.
- Da Silva, A. R. & Savic, D. (2021). Linguistic Patterns and Linguistic Styles for Requirements Specification: Focus on Data Entities Appl. Sci. 2021, 11, 4119.<https://doi.org/10.3390/app11094119>

- Dekany, E. (2017). The position of case markers relative to possessive agreement: Variation within Hungarian. *Natural Language & Linguistic Theory*, Vol. 36, No. 2, pp. 365-401 (37 pages).
<https://www.jstor.org/stable/45095101>
- Dewi, RC. (2021). *Journal of Education and Teaching Learning*. Grammatical Errors on EFL Students' Conversation Practice: Surface Strategy Taxonomy. Volume 3, No 3.
<https://pusdikra-publishing.com/index.php/jetl>
- Elvina, R. (2018). Grammatical Errors Analysis in Students' Writing of Narrative Text at the Second-Grade Students of SMA Muhammadiyah Rambah. <http://repository.uir.ac.id/id/eprint/4339>
- Fang, X., Zhan, J. (2015). Sentiment analysis using product review data. *Journal of Big Data* 2, 5.
<https://doi.org/10.1186/s40537-015-0015-2>
- Guerrero, O. (2023). The importance of Lot numbers in inventory management.
<https://ordersinseconds.com>
- Indrian, R. (2022). *Indonesian Journal of English Language Studies*. A Morphological Analysis of Word Formation Process Used in Mobile Application Names, Vol. 8, No.
<https://doi.org/10.24071/ijels.v8i2.3692>
- Khresheh, A. (2016). *International Journal of Humanities and Social Science Research*. A Review study of Error Analysis Theory. 2, 49-59.
https://www.researchgate.net/publication/299456806_A_Review_Study_of_Error_Analysis_Theory
- Kurniawan, E. (2020). An error analysis on product packaging: A surface structure perspective. *Studies in English Language and Education*, 7(3), 545–556. <https://doi.org/10.24815/siele.v7i3.17658>
- Javier C., Capanzana M., & Gohilde S. (2024). Food and Agriculture Organization, International Food Trade: Food Quality and Safety Considerations. doi: 10.47895/amp.vi0.7207.
- Li, Tongzhe & Messer, Kent D. & Kaiser, Harry M., (2020). "The impact of expiration dates labels on hedonic markets for perishable products," *Food Policy*, Elsevier, vol. 93(C).
<https://ideas.repec.org/a/eee/jfpoli/v93y2020ics0306919220300968.html>
- Martini D., Menozzi D. (2022). Food Labeling: Analysis, Understanding, and Perception. *Nutrients*. 2021 13:268. doi: 10.3390/nu13010268. <https://www.mdpi.com/20726643/13/1/268/htm>
- Meijer G.W., Detzel P., Grunert K.G., Robert M.C., Stancu V. (2021). Towards effective labelling of foods. An international perspective on safety and nutrition. *Trends Food Sci. Technol.* 118:45–56. doi: 10.1016/j.tifs.2021.09.003.
<https://www.tandfonline.com/action/journalInformation?journalCode=gefn20>
- Munzaz, M. (2027). Grammatical Error Analysis on Student's Faculty of Education and Teacher Training the State Islamic University Sultan Maulana Hasanuddin Banten Academic Years 2017. https://www.researchgate.net/publication/366413181_Using_Surface_Strategy_Taxonomy_SST_in_Analyzing_Students'_Errors_in_Conducting_Recount_Paragraph
- Neff, K. D. (2023). Self-compassion: Theory, method, research, and intervention. *Annual Review of Psychology*, 74, 193–218. <https://doi.org/10.1146/annurev-psych-032420-031047>
- Official Gazette, Republic Act No. 7394: Consumer Act of the Philippines [Internet]. 1992. [cited 2020 Dec]. Available from: www.gov.ph/1992/04/13/republic-act-no-7394-s-1992/
- Ramirez, J., & Santos, M. (2021). Language clarity and consumer trust: A linguistic analysis of food product labels. *International Journal of Applied Linguistics and English Literature*, 10(2), 101–108.
<https://doi.org/10.7575/aiac.ijalel.v10n2p101>
- Sato, M. & Sale, S. (2023). Food Safety Regulations in the Philippines (Vol. 2) Asia / Agri-Food Newsletter. <https://www.officialgazette.gov.ph/1975/12/23/presidentialdecree-no-856-s-1975>
- Schachter, J. (2012). An Error in Error- Analysis. *Language Learning*. 24.2, 205-214.
<https://www.academypublication.com/issues/past/tpls/vol02/05/22.pdf>
- Tao, L. (2023). Food Compliance Intelligence & Solutions. Labeling Requirements <https://food.chemlinked.com/foodpedia/labeling-requirement-in-malaysia>
- Wang, H., & Liu, Y. (2022). The impact of grammatical errors on consumer perception in product labeling. *Journal of Business and Technical Communication*, 36(4), 432–450.
<https://doi.org/10.1177/10506519221085231>
- Yu, X.L. (2021). A Study on the Role of Sentence Structure Analysis in English Learning. *Open Access Library Journal*, 8: e7859. <https://doi.org/10.4236/oalib.1107859> Zhao W., Guan

Z., Chen I., Wang Q. (2018). IEEE Transactions on Knowledge and Data Engineering.
Weakly-supervised deep embedding for product review Sentiment analysis, vol. 30, pp.185-197.
<https://www.computer.org/csdl/journal/tk/2018/01/08051113/13rRUyYSWti>