Javanese Language Phonemic and Lexicon Variations in Pekalongan City: A Dialectological Study

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ABSTRACT

This study aims to investigate the phonemic and lexicon variations of the Pekalongan Javanese dialect appearing in Pekalongan City, Central Java, Indonesia. It utilizes a qualitative descriptive study adopted by Creswell and Creswell as the research design. The data were collected through literature review, auditory perception, and data recording techniques. The interactive data analysis model proposed by Miles and Huberman consists of data collection, data reduction, data display, and conclusion. The results reveal that lexicon variants present in the Pekalongan Western and southern regions have resemblances in phonemic variants of the Javanese language with the linguistic dialects employed by the inhabitants of Pemalang and Banjarnegara. The Arabic vocabulary that Middles Eastern immigrants adopted has a major influence on the linguistic variances in the Northern area. Conversely, no noteworthy linguistic variants were detected in the Eastern portion of Pekalongan City. An implication arising from this research is the necessity for more examination and classification of the morphology and phonology of existing Javanese dialects in Central Java. These results serve as material for further studies related to linguistic studies/ socio-dialectology of the Javanese language and contribute to preserving the cultural richness and diversity of the local language in Pekalongan City.

Keywords: Dialectology, Phonological analysis, Isogloss

1. Introduction

Language is carried out as a limited system consisting of components and limitations that enable individuals to construct sentences to fulfil specific communication objectives. Combining words creates new words that express the statement (Nurjanah, 2023). In this case, effective communication can occur when all participants agree and follow the assumptions and intentions for conveying and obtaining the relevant information (Averina, 2023). The Javanese language is one of the local languages in Indonesia that is still alive and developing in society. The Java ethnicity and some other ethnicities utilize the Javanese language as a practical means of communication on Java Island. The Javanese language is ranked 11th out of 6,703 languages worldwide based on the number of speakers. Language development and shifting can occur due to several factors, including geographical location, social order, and the profession of each group of speakers within the boundaries of mutual understanding (Parera, 1991). The vast area of use, balanced with the relatively large number of speakers, causes the Javanese language to have variations that raise the peculiarities of the language owned by society, which distinguishes it from other communities. Furthermore, other extralinguistic factors, such as cultural exchanges, economic activity, politics, religion spreading, assimilation, the

nature of the supporting community, and migration, also affect how new linguistic variants are formed. They ascertain the extent of language variations that occur to form certain dialects, which become special characteristics of that society. Thus, a society that is heterogeneous concerning the language used also always shows various internal variations because of the diversity of cultural backgrounds of its speakers.

Language variations determined by language variations defined by geographical location are called dialects. It is a specific form of language spoken in a particular region and based on a related standard form of the language (Kulkarni-Joshi, 2023). The criteria of dialects are (1) forms of language that are different but can be understood by their speakers without special training, (2) forms used in politically united territories, and (3) forms spoken by speakers with the same writing system and a similar set of written literature. In addition, dialect is a reflection of the speaker's everyday life and serves as a manifestation of the local culture of the individuals who use it (Kurniadi, 2018). Jones et al. (2017) have researched the perception of a sociolinguistic variable known as regional dialect. They examined how listeners' capacity to detect regional dialect differences in American English develops over time, and they showed that sociolinguistic knowledge influences people's acquisition of the societal importance of linguistic variation. In phonology, Sari (2023) investigated the phonological phenomenon of the suffix -/əm/ in the Kudus Javanese dialect. This investigation utilized the transformational generative theory and a distinctive feature analysis system to explain the rules governing this phonological process and its associated features. She revealed that the phonological process observed in the Kudus Javanese dialect involves using affixation, specifically the suffix -/əm/, to indicate second-person ownership. When the base word ends in a consonant, the suffix -/əm/ is added. However, when the base word ends in a vowel, the sound /n/ is added before the suffix -/əm/ to express second-person possession. Besides, there is a relationship between morphological phenomena and dialects in a specific location, which has been investigated by Al-Rubaat (2022). He identified the presence of the male regular plural, the dual, the feminine plural, and the irregular plural, along with their respective instances in Modern Standard Arabic (MSA) or other Semitic languages nearby. The study demonstrates that the transition between regional standard and dialect varieties can be achieved using an interpolation function that relies on Hidden Markov Models. This function enables the creation of intermediate varieties. Pucher and Moosmüller (2022) found that it is possible to automatically combine models of several language varieties at a sub-phonemic state level to produce speech representing intermediate varieties. They examined the shifts to regional Standard Austrian German and a typical sample of these synthesized dialect/standard interactions for four speakers of the Innervillgraten Austrian dialect and demonstrated that the synthesizer generates input-switch-rules and phonological processes at the formant level by a linear interpolation at the Mel-cepstral feature level and provided an explanation for this phenomenon.

Certain places exhibit a notable level of diversity among individuals regarding dialect usage. Upon evaluating this variation, it became apparent that speakers adjust their utilization of dialect and standard traits to suit their conversational partners (Nilsson, 2015). In Java, Uhlenbeck (2012) divided the Java dialect of the Yogyakarta and Solo regions into four dialects and 13 subdialects. These dialects are the Coastal dialect, Banyumas dialect, Surakarta dialect, and the East Java dialect. The subdialects are North Banten, Cirebon, Purwokerto, Tegal, Pemalang, Semarang, Kebumen, Rembang, Surakarta (Solo), Yogyakarta, Madiun, Surabaya, and Banyuwangi sub-dialects (Rizal et al., 2020). Meanwhile, the Central Java Provincial Language Hall in the Language Map of Central Java (2008) categorized the Javanese language in Central Java into five dialects. They are Tegal dialect (Tegal and Brebes Districts, Pekalongan City dialectic (Pekalongan City, Batang, and Pemalang Districts), Semarsuradupati dialect (Ex-Semarang Residency, ex-Pati Residency, ex-Surakarta Residency, and former Kedu Districts), Wonosobo dialect (Wonosobo District), and Banyumas dialect (Banyumas, Cilacap, and Kebumen Districts).

Research on dialectology is becoming relatively sparse, especially in the case of isolatics or dialect distribution in a particular area whereas the study areas of dialects are typically determined by analyzing the geographical distance between various geo-linguistic images that exhibit variances in linguistic categories (Boberg et al., 2018). Here are some similar studies that Indonesian researchers have conducted that have encouraged the researcher to research the isogloss of the Javanese dialect in Pekalongan City. Rozeline and Fauzan (2020) argue that dialectology analyzes languages to find different words. The dialect can be created due to area conditions, social communication, or marriages in a particular society. Yahya (2023) studied variations in the phonology of the Javanese language spoken by the Javanese dialect speakers in Garung District, Wonosobo Regency, Central Java. The study results show various Javanese language speech variations by Javanese speakers in Garung District, Wonosobo. These speech variants involve the transformation of the vowel sound [ɔ] to [A], the vowel sounds [u] & [ɔ] to [o], the vowel sound [e] to [A], and the vowel sounds [A] & [ɛ] to [e]. Lestari and Munawarah (2021) analyzed the usage of the Javanese language in the Kendal Regency, Central Java. The study examined data collected from the region, including dialectometry, to quantify the extent of variations and interviews to ascertain the perspectives of native speakers. They offer conclusive proof regarding the usage of Javanese by individuals in the Weleri region, so resolving any remaining ambiguity about its status. Muljani and Anwar (2022) carried out research to describe variations in phonology and lexicon in the use of the Pemalang dialect as well as the implications of the research results for Indonesian language learning in high school. This research reveals submissions, offers, agreements, and closings in oral or written negotiation texts in Indonesian language learning in high school. Kustriyono (2023) identified the dialect forms used by fishermen in fish buying and selling transactions at the Jambean fish auction place. He discovered that the languages employed by fishermen during commercial transactions featured the *ngoko* and *krama* dialects of the Javanese language, as well as Indonesian. Additionally, they also used a hybrid language combining Javanese and Indonesian for communication. Jeszenszky et al. (2021) performed Cluster analysis to determine the most representative survey sites from a given set of original survey sites. In the paper, they outlined a comprehensive approach for identifying suitable locations to conduct a study, which could be used for any dataset related to dialects or linguistic differences. This methodology involves utilizing the quantitative steps outlined in the "Linguistic Atlas of Japan" (LAJ). Magidow (2021) performed research on the subject. The study of Arabic historical dialectology has traditionally relied on a historical methodology to establish connections between past population migrations and current linguistic patterns. The article posits a prominent inclination to simplify and assign the concept of language conservatism to communities with antiquated characteristics.

Pekalongan City exhibits regional variances in the usage of Javanese. Like some of the aforementioned areas, Pekalongan City also has differences or variations in the vocabulary or phonemics in the Java language that distinguish it from other areas. Instances of research examining the geographic distribution of local language dialects in a particular area are uncommon, and it needs to be performed based on the phoneme and lexicon isogloss maps that will assist in understanding the genesis of phonological processes. Hence, this study provides an analysis of the regional distribution of phonological phenomena in Pekalongan City, as well as an examination of phonemic and lexical variations found in Pekalongan City. It is very important to investigate the phonological processes to see how individuals acquire the phonetic structure of their mother tongue. Analysis helps identify and document the language's sound patterns. Dialectical studies rely on phonology to accurately describe how sounds in a language are formulated and patterned to form meaningful units of sound (McMahon, 2002), so it is crucial for understanding how speech sounds are used in a particular community.

Driven by the significance of undertaking dialect studies in Pekalongan City, the purpose of this study is to identify the variations of the Javanese language in Pekalongan City, which includes the aspects of phonemes and lexicon, to describe the geographical distribution pattern of the Javanese

dialect of Pekalongan City using isogloss distribution maps, and to elucidate the directional distribution of phonemic and lexicon variants, as well as the underlying the factors contribute to linguistic variants occurring in the Javanese language within Pekalongan City. This research contributes to the preservation of the Javanese dialect in Pekalongan City since it facilitates documenting the existence and lingual variations of this distinctive language from gradual extinction.

2. Methodology

The methodology employed in this study is a qualitative approach. A qualitative research methodology generates a fundamental lexicon comprising written or spoken terms for text or image analysis (Creswell & Creswell, 2017). The study utilized qualitative descriptive approaches to depict the findings. Specific variances can be identified when examining the differences in how Javanese language vowels and consonants are pronounced in Pekalongan City. This descriptive research does not consider the accuracy or incorrectness of language usage by its speakers, thereby presenting the language data in its raw form. This strategy ensures that the research data obtained accurately corresponds to the real-life conditions in the field (Nassaji, 2015). The comparative method is also used to compare one data with other data because, with comparisons, it can be seen whether there are relationships of similarities and differences.

This research constitutes a study within the domain of dialectology that examines distinct variations by seeing them as a cohesive unit (Mahsun, 1995). The investigations included phonology and lexical morphology, so the research is specifically focused on the domains of phonemes and lexicons. Utilizing these two components is grounded on the postulations proposed by Lauder (2007) who asserted that lexicon elements are autonomous components in all languages. In addition, it argued that variations in vocabulary and phonology are the primary factors that distinguish one dialect from another. These two components can be used to ascertain disparities in applying the Javanese language across various dialects. This study only focuses on using the Javanese language among Javanese communities residing in Pekalongan City.

The researcher employed many methods to gather information, including literature review, auditory perception, and data recording techniques. This study focuses exclusively on data derived from sampling outcomes, specifically the variances observed in the *Ngoko* Javanese dialect throughout the designated research area. The obtained data consists of the speaker's ordinary conversation pronunciations of words and the Swadesh vocabulary list. The research instrument used in this study is a vocabulary listing table consisting of 25 glosses. Informants were interviewed with a list of questions contained in the glosses. The speaker articulated the Swadesh vocabulary list in the Pekalongan City Javanese dialect, adhering to the pronunciation commonly employed in ordinary communication. The researcher transcribes the speech into phonetic writing using the International Phonetic Alphabet (IPA) standard. The researcher used a combination of library research and comparative study approaches to examine the disparities and variances in the phonemics of the Pekalongan City Javanese dialect compared to the standard Surakarta-Yogyakarta Javanese language (Creswell & Creswell, 2017). The writer documented the pronunciation of the Swadesh list lexicon by a proficient speaker of the typical Pekalongan Javanese dialect. The data were categorized according to phonological criteria that account for the observed differences in Javanese language speech between the two dialects and their respective phonemic processes. The researcher utilized recorded data from conversations among native speakers as empirical evidence in their research. After completing these procedures, the researcher elucidated the ultimate findings of the study using qualitative descriptive approaches and presented them in the form of textual descriptions and tabulated data. The researcher conducted the analysis using approaches that involved establishing a relationship between equal and differential appeals. The researcher elucidated

the conclusive findings of the investigation through the utilization of informal methodologies. The informal approach to presenting research results refers to the process of expressing the analytical findings using everyday language (Sudaryanto, 1993).

The researcher determined the observation point and visited the observation point. The researcher observes the observation points in question and determines one informant at each observation point based on predetermined informant criteria. The chosen research focus is the villages and urban villages of Pekalongan City, Central Java, Indonesia. Pekalongan City was selected due to the distinctiveness of the Javanese language spoken in this region. This language has evolved in a multicultural environment. It serves as a reflection of the Javanese language spoken in neighbouring areas such as Batang and Pemalang, which are adjacent to Tegal. Before the diachronic analysis, synchronous investigations were conducted to examine the language system to identify linguistic connections in different regions.
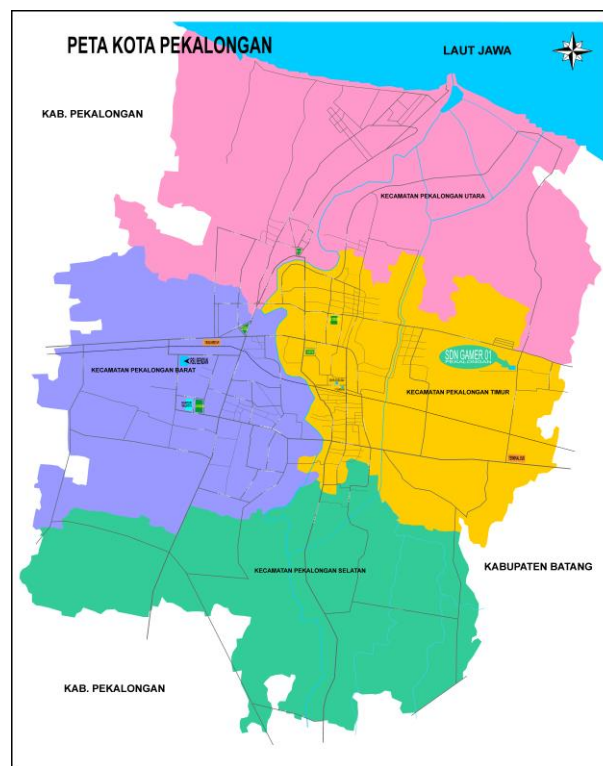

Figure 1. Pekalongan City Map Taken from dpmptsp.pekalongankota.go.id
(*Geographical Location*, n.d.)

The research used a diagonal numbering sequence, commencing from Medono in West Pekalongan City and extending to Panjang Wetan in the North Pekalongan City region. The researcher considered twelve villages as the focal points for observation. These villages are located within the township's jurisdiction, including Medono, Sapuro Kebulen, and Tirto, which represent West Pekalongan City, Poncol, Gamer, and Setono, which represent East Pekalongan City, Banyurip, Buaran Kradenan, and Jenggot which represent the South Pekalongan City, and Krapyak, Kandang Panjang, Panjang Wetan which represent the North Pekalongan City. Those locations were chosen since they serve as the focal points for the Javanese language user community presumed to have altered their linguistic variations along with the social interaction that can be monitored for this research. The twelve settlements were

selected carefully, considering the literature and the first surveys conducted among the early settlers of Java who arrived and established themselves in the vicinity. Subsequently, a representative sample was determined from a set of informants, with each informant selected to represent an observation point. The samples were taken in public places from predetermined areas, such as traditional markets, residents, or schools. Research has established several criteria for informants, including (1) possessing a well-functioning speech organ or having proficient speaking abilities; (2) being in good bodily and mental health; (3) exhibiting positive personality traits; and (4) having completed high school education or below. The researcher also contributed intuitive data to this study due to proficiency in the Pekalongan Javanese dialect as the native speaker, particularly in the Southern region of Pekalongan City. Here is the designated nomenclature and corresponding identification number for the field of study.

Table 1. The Villages/Urban Villages of the Researched Areas

Number	Village/Urban Village	Sub-District
1	Medono	West Pekalongan City
2	Sapuro Kebulen	West Pekalongan City
3	Tirto	West Pekalongan City
4	Poncol	East Pekalongan City
5	Gamer	East Pekalongan City
6	Setono	East Pekalongan City
7	Banyurip	South Pekalongan City
8	Buaran Kradenan	South Pekalongan City
9	Jenggot	South Pekalongan City
10	Krapyak	North Pekalongan City
11	Kandang Panjang	North Pekalongan City
12	Panjang Wetan	North Pekalongan City

At the data analysis stage, the researcher divided the realization into four stages of work in the interactive data analysis model (Miles & Huberman, 1994). It started with data collection by transcribing and identification, followed by data reduction by classifying, mapping, and comparing among the observation point areas. The data were validated through documentation and audit trails. The validation stages were conducted through security-focused recording and accounting of the data, allowing for traceability to their origin. Therefore, it provides tangible evidence of the acts executed at any given moment inside a certain procedure or occurrence. Under Kennedy and Judd's theory (2007), the research object is only focused on a specific activity or occurrence. The interviews were transcribed into individual utterances and then sorted and classified according to the categories of morphological and phonological phenomena. Therefore, the data obtained in the interview process were transcribed phonetically and phonemically. The observations were conducted in an unsystematic manner for six

months whenever it was feasible and were finished on 15 February 2023. The primary observations occurred during the direct engagements with the participants. The observations were recorded and evaluated using the same annotation symbols as the interviews. Each word was presented in a particular display according to phonological and lexical aspects. Afterwards, the researcher identified any differences in phonology and lexical phrases to see variations. Next, the researcher transferred the identified data into a map with an isogloss depiction to obtain the words map used in the area. Isoglosses have a crucial role in dialectological research by visually representing the boundaries of language use. In the study, they help identify differences in words and phonemes, which indicate changes in a language that may eventually develop into distinct dialects. This process creates a model for a specific language (Burridge, 2017). After that, the data were analyzed to see the types of linguistic variants in the Pekalongan Javanese dialect, including the phonemes and lexicons, together with the distribution pattern and direction. The results of data analysis are presented using informal methods and formal methods. The informal method is realized by describing words, while the formal method is formulated using signs and symbols (Sudaryanto, 1993). Then, the researcher drew a conclusion.

3. Result and Discussion
3.1 The Lingual Phonemic and Lexicon Variants of the Pekalongan Javanese Dialect

According to Parera (1991), each individual in a language society has their characteristics in the language in terms of pronunciation, word selection, preference for the use of language forms, and a language pattern called idiolect. Dialect and idiolect belong to the study of dialect geography. As for Guiraud (in (Ayatrohaedi, 1979), every variation of language is used in a particular area and later forms various languages, among them in spelling, grammar, and interpretation. Each variation uses a particular form. Linguistic and non-linguistic factors, including social and situational factors, determine the language usage. Language has a characteristic of arbitrariness, so it has many variations in its usage. In the geolinguistic theory, Mackey (1973) showed that language distribution can be measured by several indicators, including demographic (related to the number of speakers), spread, economic, ideological, and cultural. Language contact is one of the factors causing a language's lexical change, both in the change of semantic forms, changes/additions due to new concepts, replacement of original words with borrowed words, and sometimes changes in overall vocabulary. Isogloss comes up to indicate that a line drawn across a territory can be divided into two regions with some aspects of different linguistic usage (Chambers & Trudgill, 1998). It shows the existence of differences in the use of the elements of gravity between the areas of observation.

A description of the lingual phonemic variants that occurred in Pekalongan City based on the correspondence of sounds that covered the phonological differences of the four areas of reference of the site can be explained as follows:

- The gloss "baby" has two variants, *bayi* [bAyI], and *beyi* [bəyI]. The variant *bayi* was found at the observation point 1, 2, 3, 4, 5, and 6. The variant *beyi* was discovered at observation points 7, 8, 9, 10, 11, and 12. The phonological code of the variation obtained is /A/ → [ə] / [b] - [y].
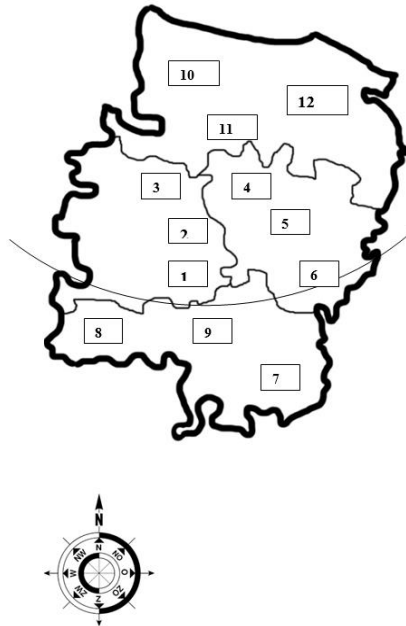
Figure 2. The Phonemic Isogloss of the Javanese dialect of "baby" in Pekalongan City

- The gloss "only" has two variants. They are *bae* [bAɛ] and *wae* [ωAɛ]. The variant *bae* was found at observation points 1, 2, 3, 7, 8 and 9. The variant *wae* was found at observation points 4, 5, 6, 10, 11, and 12. The phonological principle of the variation of the variant obtained is /b/ → [ω]. Based on this principle, the sound /b/ and /ω/ is an allophone of the same phoneme that is /b/, in which the pronunciation of [b] was changed to [ω] in West Pekalongan Sub-district.
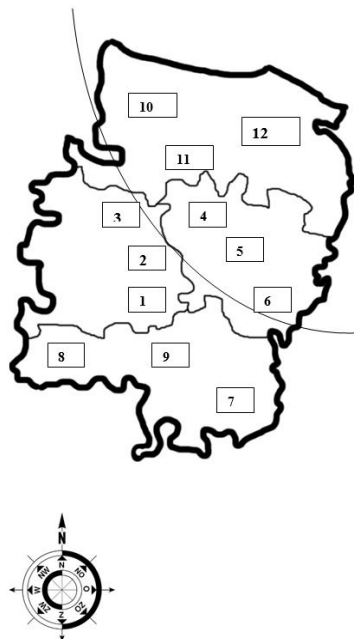

Figure 3. The Phonemic Isogloss of the Javanese dialect of "only" in Pekalongan City

- The gloss *"same"* has two variants. They are *padha* [pAdʰA] and *podho* [pɔdʰɔ]. The variant *padha* was found at observation points 1, 2, 3, 7, 8 and 9. According to these variations, it is known that there is a difference or variation of sounds [A] and [ɔ], which are allophones of the same phoneme /A/. The phonological code of the variation obtained is /A/ → [ɔ] / - #. The sounds /A/ and /ɔ/ are allophonic variants of the same phoneme. The phoneme /A/ undergoes a phonetic change to [ɛ] when it occurs in the of a word in the West Pekalongan Sub-district community.
- The gloss *"from"* has two variants. They are *saka* [sAkA] and *soko* [sɔkɔ]. The variant *saka* was found at points of observation 1, 2, 3, 7, 8 and 9. The variant *soko* was found in points of observance 4, 5, 6, 10, 11, and 12. According to these variations, a distinction or divergence exists in sounds [A] and [ɔ], which are alternative pronunciations of the same phoneme /A/. The phonological code of the variation obtained is /A/ → [ɔ] / - #. According to this principle, the sounds /A/ and /ɔ/ are allophones of the very same phone. In the West Pekalongan Sub-district, the speakers convert the sound [A] to [ɛ] when it occurs at the end of a word.
- The gloss *"face"* has two variants. They are *rupa* [rupA] and r*upo* [rupɔ]. The variant *rupa* was found at points of observation 1, 2, 3, 7, 8 and 9. The variant *rupo* was found at observation points 4, 5, 6, 10, 11, and 12. According to these variations, a distinction or divergence exists in sounds [A] and [ɔ], which are alternative pronunciations of the same phoneme /A/. The phonological code of the variation obtained is /A/ → [ɔ] / - #. According to this principle, the sounds /A/ and /ɔ/ are allophones of the same phoneme /A/, with [A] being realized as [ɛ] when it occurs at the end of a word in the West Pekalongan Sub-district.
- The gloss *"that"* has two variations, *kue* [kuɛ] and *kae* [kaɛ]. The variant *kue* was found at observation points 1, 2, 3, 7, 8 and 9. The variant *kae* was found at observation points 4, 5, 6, 10, 11, and 12. Based on these variations, the sounds [A] and [u] are allophones of the phoneme /A/. Thus, the phonological code of the variation obtained is /A/→ [u]. According to these, the sounds /A/ and /u/ are allophones of the same phoneme, /A/, where [A] is realized as [o] by the West Pekalongan City community.
- The gloss *"old"* has two variants. They are *tua* [tuA] and *tuo* (tuɔ). The variant *tua* was found at observation points 1, 2, 3, 7, 8, and 9. The variant *tuo* was found in observation points 4, 5, 6, 10,11, and 12. Based on these variations, there exist different sounds, [A] and [ɔ], which are considered allophones of the same phoneme /A/. The phonological code of the variation of the variant obtained is /A/ (ɔ) / - #.
- The gloss *"what"* has two variants. They are *apa* [ApA] and *opo* [ɔpɔ]. The variant *apa* was found at observation points 1,2,3,7,8 and 9. The variant *opo* was found at observation points 4, 5, 6, 10, 11, and 12. According to these variations, the sounds [A] and [ɔ] are allophones of the phoneme /A/. The phonological code of the variation obtained is /A/→[ɔ] / - #. According to this principle, the sounds /a/ and /ɔ/ are allophones of the phoneme /A/. However, when this phoneme is found at the end of a word in the West Pekalongan Sub-district, it changes to [ɛ] according to the local community.
- The gloss *"there is/are"* has two variants. They are *ana* [AnA] and *ono* [ɔnɔ]. Variant *ana* was found at observance points 1,2,7,8 and 9. According to these variations, there is a recognized distinction or divergence in sounds [A] and [ɔ], which are considered different ways of pronouncing the same phoneme /A/. So, the phonological code of the variation obtained is /A/→ [ɔ] / - #.
- The gloss "first" has two variants, *dhisit* [dhIsIt] and *dhisik* [dʰIsIk]. The variant *dhisit* was found at observation points 1, 2, 3, 7, 8, and 9. The variant *dhisik* was found at observation points 4,5,

6, 10, 11, and 12. Based on these variations, it is known that there are differences or variations of sounds [t] and [k] which are allophones of the same phoneme /k/. The phonological rule of the variation of the variant obtained is /k/ → [t] / - #. This formula reveals that there are differences in the sounds [t] and [k], which are allophones of the phoneme /k/. In the West Pekalongan Sub-district community, the phoneme /k/ is replaced with the sound /t/ when it is uttered at the end of a word. According to this principle, the sounds /A/ and /ɔ/ are allophones of the same phoneme /A/. Phoneme /A/ is shifted to /ɛ/ when it occurs at the end of a word spoken by the people in the West Pekalongan Sub-district.

In addition, the description of the language differences that occur in Pekalongan City based on the vocabulary correspondence that covers lingual lexicon variants of the four regions of the region can be explained as follows:

- The gloss "(drinking) water" has two variants. They are *wantah* [ωAntAh] and *moyah* [mɔyAh]. The variant *wantah* is found at observation points 1, 2, 3, 4, 5, 6, 7, 8, and 9, while the variant *moyah* was found at observation points 10, 11 and 12.
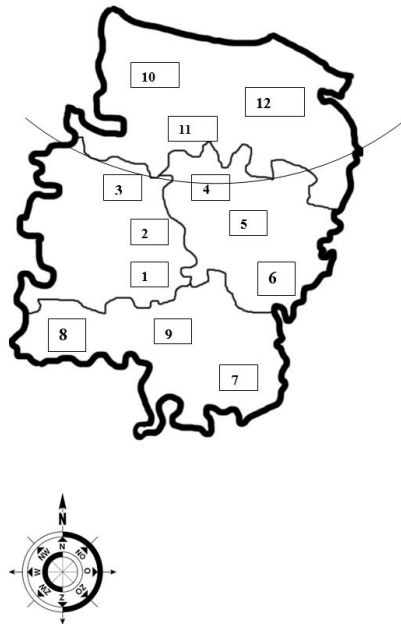

Figure 4. The Lexicon Isogloss of Javanese dialect of "(drinking) water" in Pekalongan City

- The gloss "crowded" has two variants, *rame* [rAmɛ] and *rahat* [rAhat]. Variant *rame* variants are found at observation points 1, 2, 3, 4, 5, 6, 7, 8 and 9, while the variant *rehat* was found at observation points 10, 11, and 12.
- The gloss "shy" has two variants, *isin* [IsIn] and *khay*a [khAyA]. The variant *isin* was found at observation points 1, 2, 3, 4, and 5, while the variant *khaya* was found at observation points 3 and 5.
- The gloss "marry" has two variants, *mbojo* [mbɔjɔ] and *juwa*j [juwAʤ]. The variant *mbojo* was found at observation points 1, 2, 3, 4, 5, 6, 7, 8 and 9, while the variant *juwaj* was found at observation points 10, 11, and 12.
- The gloss "rare" has two variants. They are *jupuk* [φυπʊκ] and *jukuk* [jukuk]. The variant *jupuk* was found at the point of observation 4, 5, 6, 10, 11, and 12, while the variant *jukuk* was found

at observation points 1, 2, 3, 7, 8 and 9.

- The gloss *"drink"* has two variants. They are *ngombe* [Nɔmbɛ] and *srob* [srɔb]. The v*ariant ngombe* is found at observation points 1, 2, 3, 4, 5, 6, 7, 8, and 9, while the variant *srob* was found at observation points 10, 11 and 12.
- The gloss *"I"* has two variants. They are *aku* [Aku] and *inyong* [iɲɔŋ]. The variant *aku* was found at observation points 4, 5, 6, 10, 11, and 12, while the variant *inyong* was found at observation points 1, 2, 3, 7, 8, and 9.
- The gloss *"(under)pants"* has two variants. They are *cawet* [cAωət] and *sruwal* [sruωAl]. The variant *cawet* was found at observation points 1, 2, 3, 4, 5, 6, 7, 8 and 9, while the variant *sruwal* was found at observation points 10, 11, and 12.
- The gloss *"sit"* has two variants, *lungguh* [luNguh] and *jlis* [ʤlIs]. The variant *lungguh* was found at observation points 1, 2, 3, 4, 5, 6, 7, 8, and 9, while the variant *jlis* was found at the point of observance 10, 11 and 12.
- The gloss *"hungry"* has two variants, *ngelih* [NəlIh], and *kencot* [kəntʃɔt]. The variant *ngelih* was found at observation points 4, 5, 6, 10, 11, and 12, while the variant *kencot* was found at observation points 1, 2, 3, 7, 8, and 9.
- The gloss "this" has two variants, *iki* [IκI], and *kiye* [κIψE]. The variant *iki* was found at observation points 4, 5, 6, 10, 11 and 12, while the variant *kiye* was found at observation points 1, 2, 3, 7, 8, and 9.
- The gloss *"work"* has two variants, *kerjo* [kərɔ] and *sughul* [sugʰul]. The variant *kerjo* was found at observation points 1, 2, 3, 4, 5, 6, 7, 8 and 9, while the variant *sughul* was found at observation points 10, 11 and 12.
- The gloss *"eat"* has two variants, *mangan* [mANAn] and *kul* [kul]. The variant *mangan* was found at observation points 1, 2, 3, 4, 5, 6, 7, 8 and 9, while the variant *kul* was found at observation points 10, 11, and 12.
- The gloss *"will"* have two variants, *arep* [Arəp] and *repan* [rəpAn]. The variant *arep* was found at observation points 4, 5, 6, 10, 11, and 12, while the variant *repan* was found at observation points 1, 2, 3, 7, 8, and 9.

These findings indicate that Medono, Sapuro Kebulen, and Tirto, representing Pekalongan City in the West, and Banyurip, Buaran Kradenan, and Jenggot, representing the city of Pakalongan in the South, have a dialect that closely resembles that of Tegal/Pemalang and Banjarnegara. The inhabitants of Poncol, Gamer, and Setono, representing the eastern towns, predominantly employ the standard Javanese language. Javanese speakers generally are unable to add vowel-sounding affixes to fundamental words that also feature vowel phonemes (Sari, 2023). Despite their varied cultural backgrounds and the influence of linguistic contact, there are no noticeable variations in phonemics or lexicon in the spoken language among the three villages. Krapyak, Kandang Panjang, and Panjang Wetan are areas in North Pekalongan City. The majority of the people living there have Middle Eastern ancestry, which has impacted the local Javanese language. It shows that the physical proximity of the other cities and regencies to the surrounding city impacts the dialects found in each Pekalongan City Sub-district. For instance, the Javanese dialect in West Pekalongan resembles the Javanese dialect spoken by indigenous speakers of Pemalang and Tegal on the West and Banjarnegara on the South of Pekalongan City which also influences the use of the Javanese language in Pekalongan Regency around the areas. It is comprehensible that natural features such as mountains, rivers, or oceans could limit the interaction between human groups by establishing boundaries. This leads to linguistic isolation and divergence over time. This corresponds with the statement delivered by Prochazka and Vogl (2017), who systematically calculated the relationship between the topographical area of a region and the spread

of a language, that mountain chains are one of the factors that can hinder language movement from one region to another.

Regional dialects frequently encompass border regions with characteristics common to both adjacent locations. These mixes occur due to the uneven spread of innovations from both sides. The uneven spread of mixed dialects within a region can also be attributed to the population blending resulting from migrations. Physical proximity facilitates frequent communication and interaction between neighbouring communities. This proximity allows for the easy spread of language features, as people from one area may marry into or move to another, bringing their language with them. The closer physical proximity enhances the frequency of contact and engagement among adjacent groups. Communities nearby frequently exhibit congruent cultural customs, traditions, and lifestyles. It facilitates the gradual merging of dialects. This aligns with Made et al.'s assertion (2017) that cultural disparities might lead to linguistic transformations, facilitating the emergence of diverse varieties in a community. The presence of a common culture can impact how language is used and contribute to the emergence of similar dialects. The close location facilitates the effortless dissemination of linguistic characteristics, as individuals from one region may intermarry or relocate to another, so introducing their language. Due to the scarcity of notable geographical features between the villages in the East Pekalongan Sub-district and the neighbouring city, the employment of Javanese language differences in this region is not quite considerable.

On the other hand, the Arab community, who are immigrants from Middle Eastern countries, mostly live in the Northern region. As one of the large port cities on Java, many *ulama* and traders come to buy and sell commodities in Pekalongan City or to broadcast Islamic teachings on the island of Java. Then, assimilation occurred. In the North Pekalongan Sub-district, the prevalence of Arabic-derived vocabulary is greater than the phonemic variation of terms in standard Javanese. Javanese people, in particular, are accustomed to speaking in the *Ngoko* variation in everyday communication. The presence of borrowing words gives rise to a language variation that is unique and distinctive in terms of the region and its speakers (Kustriyono, 2023).

People who have frequent contact with each other through trade, migration, or warfare can exchange linguistic features and influence each other's dialects. As the dominant language in a specific region grows more prevalent, the minority language will gradually diminish and may eventually be displaced from that area (Prochazka & Vogl, 2017). Trade-oriented regions frequently adopt a lingua franca, which is a shared language that aids communication among individuals with diverse native languages. It led to linguistic convergence and borrowing over time. The absence of findings on Javanese language variations in the North and East Pekalongan Sub-districts can be attributed to the lack of data collected during field sampling. In the Northern and Eastern parts of Pekalongan, language shifts as specific communities gradually abandon their native languages and switch to using other languages introduced by people outside the region (Trudgill, 2020). Some places may have fewer dialects because they have fewer of these factors or because they have unifying influences, such as a standard language and a dominant culture. Resilient social networks facilitate the interconnection of adjacent populations, enabling the transfer of linguistic characteristics.

3.2 The Phonemic and Lexicon Variants Distribution Pattern in the Pekalongan Javanese Dialect

The distribution pattern of phonemic and lexical variants in the Pekalongan Javanese dialect is categorized into four sections, each corresponding to the Pekalongan City Sub-districts. Distribution of pattern A phonemic variations corresponds to the mapping for giving *bayi*. This variant is used from the east of Pekalongan, which borders the Bandar and Warungasem of Batang Regency around the

Setono and Gamer villages to the north and west, bordering Pemalang, which is called Tirto village. A distribution pattern encompasses the *wae, podho, soko, rupo, dhisik, opo, tuo, kae*, and *ono* distribution patterns. These variants originate from the Eastern region of Pekalongan, specifically the areas adjacent to Bandar and Warungasem in Batang Regency. It is found in the Setono and Gamer villages to the East, the coastal areas bordering the Java Sea to the North, and the Pekajangan and Kedungwuni areas to the south in the Banyurib village of Pekalongan City.
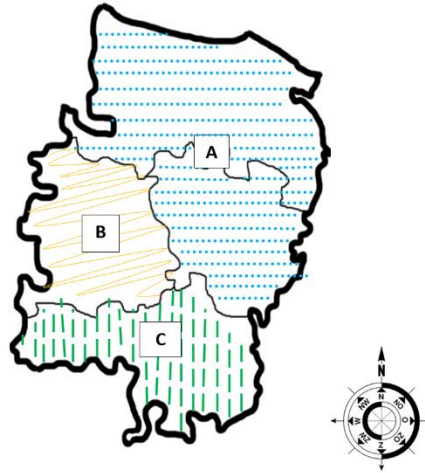

Figure 5. Distribution Patterns of Phonemic Variations

The map in Figure 5 displays the B distribution pattern of *bae, padha, saka, rupa, dhisit, apa, tua, kue,* and *ana*. These variants are sourced from the Western region of Pekalongan, which shares borders with the city of Pemalang Regency to the South and the Pekajangan and Kedungwuni areas in the Pekalongan City. The C distribution pattern refers to the map representing the distribution pattern of *beyi*. These variants are exclusively utilized within the vicinity of the Southern region of Pekalongan, which shares boundaries with the Pekajangan and Kedungwuni areas in Pekalongan City.

In terms of the distribution pattern of lexicon variants of the Pekalongan Javanese dialect, it is shown in Figure 6 that the A distribution pattern comprises maps for *wantah, rame, arep, isin, mbojo, jukuk, ngombe, mangan, cawet, kerjo, aku,* and *ngelih*. These variants originate from the Eastern region of Pekalongan, specifically the districts next to Bandar and Warungasem which still have similarities to the standard Javanese language as pronounced by Javanese language people in common. They were found in the Setono and Gamer villages near Pemalang in the Western Pekalongan region.
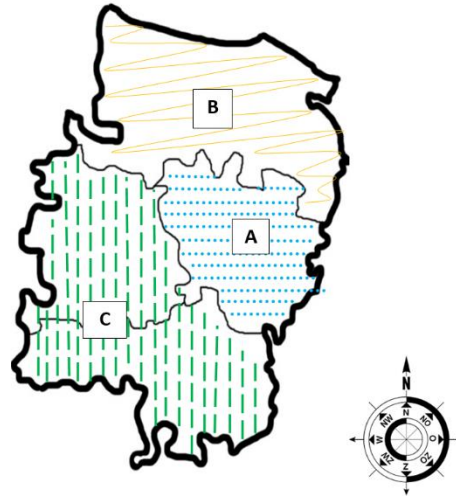
Figure 6. Distribution Patterns of Lexicon Variations

Meanwhile, the B distribution pattern encompasses *kohwah, juwaj, rahat, haya, sruwal, syrob, moyah,* and *sughul* distribution patterns. These variants are exclusively utilized within the vicinity of the Northern region of Pekalongan City, which shares a boundary with the Java Sea. The C distribution pattern refers to the map that represents the distribution of the variable for *kencot, kiye, inyong,* and *repan.* These variants come from the Western region of Pekalongan, which shares borders with Pemalang to the South and the Pekajangan and Kedungwuni areas in the Pekalongan district. This is in line with the results of the analysis carried out by Mahfud et al. (2022) that Arabic linguistics and Islamic culture have influenced the emergence of the diversity of languages in Indonesia. Among these are lexical borrowings that are localized in the researched area.

The phonemic and lexicon diversity in Pekalongan City is closely linked to the geographical proximity to neighbouring cities. Batang Regency is located in the Eastern region and sections of the Northern area. Most of the Batang Regency is characterized by hills and mountains, apart from a minor portion in the Northern area (Hakim, n.d.). As a result, local people mainly engage in social interactions with both Javanese language native speakers and a significant number of immigrants from the Middle East. This hinders the significant influx of individuals from outside the region from engaging with the indigenous Pekalongan population in the Eastern area, resulting in a limited presence of diverse Javanese language variants in that locality. The primary determinant of the expansion and decline of a language is the interaction among individuals who speak the same language (Prochazka & Vogl, 2017). The primary determinant of the expansion and decline of a language is the interaction among individuals who speak the same language. On the other side, Pemalang City is situated in the western region. It has a low-laying and suburban landscape (admin, n.d.), which leads to a higher probability of more human activity and social engagement. Social activities and the participation of numerous people with diverse cultures led to linguistic variations and shifts, including the Javanese language used by the locals for communication.

3.3 The Direction of Pekalongan Javanese Dialect Distribution

3.3.1. The Distributional Direction of Phonemic Variations

The sequence commences with the phonetic representation of the voiced bilabial plosive [b], and then the nasal consonant [ŋ] follows. The direction of distribution of this phoneme variant is from West Pekalongan towards South Pekalongan. The further South you go from West Pekalongan to the border of Pekalongan City, the less common this sound variation is. Meanwhile, people who live in the West and Southern Pekalongan Sub-districts tend to have similar sounds to the Tegal dialect of Javanese, where the sound /A/ at the end of a word is always the same as the orthographic form "a", by giving more significant stress or known as '*medhog*.' So, it is different from other Pekalongan Sub-districts. The people ranging from the Northern and Eastern regions of the Pekalongan Sub-district utter the sound /A/ at the end of words as [ɔ], with a reduced emphasis on sound intensity. The variety in question arises from geographical considerations in the West Pekalongan region, which is the section of Pekalongan City that is closest to the Pemalang City area and exhibits dialects comparable to those of Tegal. Pekalongan is exclusively next to the Comal River in the western direction, serving as the delineating border with the Pemalang district. Due to population growth and the utilization of surrounding land regulated by regional autonomy government policies, the propagation of Tegal dialect-style phonetic variants has expanded to the Pekalongan region despite the traditional use of rivers as regional boundaries. A study conducted in Bali also showed a strong correlation between ethnic variety and the frequency of ethnic interaction among immigrants whose villages are situated along the border of two areas (Made et al., 2017).

In addition, the ancient coastline in the Pekalongan, Pemalang, Tegal, and Brebes regions was to the south, and the Central Java coastal plain had a maximum width of 40 km south of Brebes in the Pemali river valley and narrowed to 20 km south of Tegal and Pekalongan. For this reason, as in the West Pekalongan Sub-district, the distribution of phonemes in the Tegal dialect also reaches the Southern part of Pekalongan. The phoneme variant is distributed from the southwestern area of Pekalongan and extends southwards. Long-lasting interactions between residents of several adjacent areas span several generations of intergenerational transmission, resulting in the gradual formation of a new culture or habit that distinguishes this location in Pekalongan City from others through the use of Javanese language variants for communication (Fishman, 1991). This is different from the results of research conducted by Kustriyono (2023) that the dialect used by fishermen at fish auction sites in Jambean is more influenced by social factors related to fishing activities in the area, such as expressions related to the type and size of fish, as well as expressions commonly used in price negotiations.

3.3.2. The Distributional Direction of Lexicon Variations

The inhabitants of the Northern region of Pekalongan employ a considerably distinct lexicon in contrast to those of the Western, Eastern, and Southern regions. From the historical perspective of the population, this lexical variation results from the acculturation of two distinct cultures among the ethnic populations comprising indigenous ethnic Pekalongan and immigrants from Middle Eastern countries. Based on data collected from interviews with a sample of residents from North Pekalongan, it is apparent that a significant portion of the population in this region has Middle Eastern ancestry. As a result, numerous Arabic terms are commonly used, often in combination with Javanese words, to facilitate daily communication among the residents. This linguistic blending leads to a shift in language usage. Comprehensive research has been conducted on the existence of language shifts due to

immigrants, and the result shows the significance of refining established language maintenance and shift models in ways that correspond to current developments in communities and in migration itself. From this, it is assumed that foreigners in a community have a significant role in language shifting and maintenance (Tawalbeh, 2019).

Variations in the utilization of the Arabic lexicon in the North Pekalongan region have their roots in the historical events surrounding Islam's expansion on Java Island. Many individuals from Middle Eastern nations travelled to Java in the past to propagate Islam. Some from Gujarat, Persia, and Arabia arrived in Java via the Java Sea maritime route. Initially, the migrants arrived via the coastal route (a portion of North Pekalongan), where they established themselves to evangelize and ultimately established families. Numerous renowned Habibs from Pekalongan originated in this region. In the North Pekalongan region, notable prominent households of Middle Eastern heritage consist of Al-Basyaiban, Al-Attas, and Al-Yahya. A member of the community who participated in interviews for this study is an Al-Basyaiban descendant. Therefore, the Arabic lexicon's distribution trajectory, which originated from the Northern coast of Java, traverses the Northern region of Pekalongan before veering southward. Upon entering the Southern region of Pekalongan, these Arabic lexicon items diminish in frequency and become less significant in colloquial discourse.

The predominant topography in Pekalongan City consists of plains, with only a small portion being hilly. Pekalongan City is in a low-lying region, with an elevation ranging from 0 to 2 meters above sea level (admin, 2021). This condition allows for intensive social interaction between residents and immigrants, resulting in cultural mixing. Population migration between adjacent regions might result in the amalgamation of dialects. As individuals migrate and establish themselves in different regions, they bring their language customs along, enriching the area's linguistic variety. This phenomenon can result in linguistic diversity and the emergence of novel language features, such as code-switching, as time progresses. Code-switching arises from cultural interactions between two groups of speakers who use distinct languages for political, religious, commercial, and economic reasons (Wulandari & Susylowati, 2021).

In the same way, the lexicon of the inhabitants of the Western region of the Pekalongan subdistrict is typically distinct from that of the other regions. The lexicon utilized in the Western and Southern regions of Pekalongan is identical to that of the Javanese language in the regions of Pemalang and Banjarnegara. Geographical factors in West Pekalongan, which is the portion of Pekalongan City and Regency closest to the two cities, are responsible for this; as a result, the lexical distribution of West Pekalongan travels Southward from the West. As one descends further south, the Tegal-style Pekalongan Javanese dialect vocabulary exhibits greater diversity. An increasing number of speakers in that area utilize it more frequently in everyday discourse. It is readily apparent that the geographical conditions of a culture attribute the language variations, dialects, or even shifts that occur in particular areas. Nevertheless, the Javanese language is still spoken in the eastern, central, and northwest regions of Java, though there are significant regional variations (Mahfud et al., 2022).

4. CONCLUSION

Based on the data analysis described above, it can be concluded that regional vernaculars frequently display linguistic characteristics that are absent in standardized languages. Javanese language variants in the Northern region of Pekalongan City experienced a shift to the use of the understanding adopted from Arabic due to acculturation with immigrants who had stopped on the north coast of the island of Java centuries ago, including in the North Pekalongan Sub-district. As a result, there are more words borrowed from Arabic terminology spoken in the area. The variation of the Javanese language

with the phonological code of the variation mostly found in the West and South Pekalongan Sub-districts is /A/ → [ɔ] / - #. This variant shared a similar dialect as the people who live in the cities of Tegal, Pemalang, and Banjarnegara due to the topographical conditions, which allow for much interaction to occur among the people around the area, especially in border areas. Meanwhile, within the East Pekalongan Sub-district, no notable Javanese language variations were identified. Due to the geographical conditions outside the city that intersect with this area, most of which consist of mountains, there is little interaction or cultural exchange, including language. This study can be developed further concerning other linguistic aspects of the Javanese language dialect in Pekalongan City, especially in the different aspects of the Pekalongan Javanese language lexicon in standard Javanese. Moreover, the investigation of the variances in Javanese language pronunciation among speakers in Pekalongan City might be further elucidated through a sociological perspective. Examining these characteristics is valuable for future linguistic investigation for offering new perspectives on sociolinguistics or the study of local language shifting and maintenance in society. It contributes to the broader area of linguistics and facilitates categorizing languages into distinct language families.

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