
The Process of Determining an Auspicious Wedding Day in Watukebo Village, Banyuwangi, Within the Framework of Ethnomathematics

Andi Kurniawan¹⁾, Rachmaniah Mirza Hariastuti²⁾, Dzurotul Mutimmah³⁾,
Mufidatul Fauziyah⁴⁾,

Universitas PGRI Banyuwangi^{1,2,3,4)}, SMPK Bakti Rogojampi Banyuwangi¹⁾

*Corresponding E-mail: kurniawanandi557@gmail.com

Abstract. *The purpose of this study was to explore ethnomathematics in the calculation of auspicious wedding days in Watukebo, Banyuwangi. The study was conducted within a qualitative framework with an ethnographic approach. The research area was chosen because it still applies Javanese calendar calculations for wedding traditions. The study involved three informants, purposively selected for their expertise. Data were triangulated through the collection method, participatory observation, and in-depth interviews, supplemented by documentation. Data were analysed qualitatively using the Miles and Huberman model. The results showed that determining auspicious wedding days in Watukebo, Banyuwangi, involves concepts of number operations, implication logic, number congruence, and modulo. These concepts can then be developed into contextual mathematics teaching materials that are expected to make learning more in-depth and meaningful.*

Keywords: *calculation of good days, ethnomathematics, marriage*

INTRODUCTION

Marriage is a part of life that anyone can experience. According to Law Number 1 of the Republic of Indonesia of 1974, marriage is defined as a physical and spiritual bond between a man and a woman as husband and wife, to form a happy and eternal family based on the One Almighty God. Nita (2021) explains that marriage is part of a society's culture, a structured and regulated practice that follows developments in social life. As part of culture, marriage can encompass diverse processes depending on the society that practices it.

Culture is the result of human thought as social beings, encompassing complexities including knowledge, beliefs, arts, morals, laws, customs, and various other abilities (Wahyuni & Pertiwi, 2017). Java is one of the islands in Indonesia with a diverse culture. This diversity gives rise to various rules that can be followed or assimilated, further diversifying the culture. One example of cultural diversity in Java is the wedding procession.

Javanese wedding culture involves various preparations and rules that must be followed, especially by the bride and groom and the families hosting the wedding. Violating these cultural rules can result in sanctions, generally borne by both partners. One condition that has consequences for violating the wedding tradition is the choice of the wedding day (Syamsuri & Effendy, 2021).

Initial interviews with traditional elders in Patoman Village revealed that Javanese people consider the wedding day one of the most sacred days in a person's life and that it can have a lifelong impact. Therefore, it is important to determine an auspicious day to ensure the wedding runs smoothly and that the bride and groom enjoy a happy marriage throughout their lives. Javanese people believe that choosing the right day can bring blessings, happiness, and a smooth marriage. The process of determining an auspicious day often involves considering local traditions passed down through generations. In this way, Javanese people strive to ensure that this historic moment takes place in a blessed and harmonious atmosphere.

Determining auspicious wedding days demonstrates the connection between culture and mathematics. The application of mathematics in this culture is often overlooked by society. This demonstrates that mathematics is not merely a subject taught in schools and confined to the classroom, but also grows and develops within cultural practices (Nasution et al., 2025; Putri & Pujiastuti, 2022).

Mathematics that grows and develops within various cultural practices is known as ethnomathematics. Ethnomathematics is a field of study that examines how certain societies understand, organize, and apply mathematical concepts in their daily lives (Nasution et al., 2025). Ethnomathematics is not only understood as the application of mathematical formulas and calculations, but also as a way for a society to view time, space, and luck, grounded in social and cultural values (Anggraeni & Hakim, 2024). Ethnomathematics can also be defined as a field of study that explores and discusses mathematical ideas within a society's culture (Sulaiman, 2021). These opinions show that ethnomathematics is an important part of mathematics to explore for greater contextualization, especially in cultural contexts.

Ethnomathematics studies related to the wedding process have been conducted in several previous studies. Research by Suraida et al. (2019) on determining an auspicious wedding day in Tanjung Sari Village, Pati, found that there is a calculation rule: add the neptu of the two prospective brides and grooms, and the neptu of the day and the market for the wedding, then divide by 2. The remainder of the division is interpreted by five provisions, namely: 0 (*pati*), 1 (*sandang*), 2 (*pangan*), 3 (*papan*), and 4 (*lara*). The study concluded that there is a modulo concept and number patterns in the process of determining an auspicious wedding day.

Maryani and Setialesmana (2022) found in their research in the Pulo Garut Traditional Village that weddings and other activities are prohibited on Wednesdays. Determining an auspicious wedding day begins with determining the compatibility of the bride and groom. This calculation is done by adding the birth dates of both prospective brides and grooms and then dividing by 5. The remainder is then interpreted using five terms: 1 (*sri*), 2 (*lungguh*), 3 (*dunya*), 4 (*lara*), dan 5 (*pati*). The sum of the bride and groom's birthdays is then added to the chosen wedding day and then divided by 5. The remainder is used to determine the appropriate wedding day. The wedding month is determined using kala calculations. The research concludes that there are concepts of modulo, addition, and division operations, as well as line segments.

Many other studies have explored ethnomathematics in the process of determining auspicious wedding days in various regions. This study explored ethnomathematics in the process of determining auspicious wedding days in Watukebo Village, Blimbingsari, Banyuwangi. What distinguishes this study from previous studies is the research area and the informants, which yield diverse results. This research is crucial for enriching contextual mathematics learning resources and providing in-depth learning for students.

METHOD

This research was conducted within a qualitative framework with an ethnographic approach. The purpose of this study was to obtain a clear, factual

picture and information on the process of calculating auspicious days in the Javanese calendar to determine wedding events, which was then studied ethnomathematically. The research was conducted in Patoman Hamlet, Watukebo Village, Banyuwangi, which was purposively selected because the area still uses Javanese calendar calculations for wedding traditions, and similar research has not been conducted there.

Informants were also purposively selected: three community leaders who understand/are experts in Javanese calendar calculations and are trusted by the people of Watukebo Village as Javanese calendar calculation figures. The three informants are a traditional elder of Watukebo Village, one community leader of Watukebo Village, and one resident of Patoman Hamlet, Watukebo Village. Informants were selected based on experience, knowledge of and ability to calculate the Javanese calendar, and community recognition of their credibility, as evidenced by respondents' participation in every wedding ceremony.

The data were triangulated methodically through a passive participant observation process and semi-structured in-depth interviews, supplemented by documentation. The indicators used as the basis for the observation and interview process were: (1) the source of knowledge for determining an auspicious wedding day; (2) the conditions for carrying out the calculation; (3) the calculation process/steps; (4) reference sources for determining an auspicious wedding day; (5) specific factors as considerations for determining an auspicious wedding day; (6) solutions if the results are not good.

The data was analysed qualitatively referring to the Miles and Huberman model (Sugiyono, 2023) with the following steps: (1) data reduction in the form of summarizing and sorting out the main and relevant data, (2) presenting the data in the form of narratives and images regarding determining an auspicious day for a wedding, and (3) concluding the form of identifying the mathematical concepts in the process of determining an auspicious day for a wedding.

RESULTS AND DISCUSSION

This research aims to explore ethnomathematics in the culture of determining auspicious wedding days in Watukebo Village, Banyuwangi. The majority of the population in this area is Javanese and Balinese. The Javanese community in Watukebo Village still strongly believes in the importance of determining auspicious days before performing cultural rituals such as weddings.

The first informant was Mr. K, a traditional elder in Watukebo Village, who is skilled at determining auspicious days for various activities. He had studied directly with a Kejawen tradition teacher, enabling him to perform more in-depth Javanese calculations. The second informant was Mr. S, a community leader in Watukebo Village, who is often asked to help calculate auspicious days for celebrations such as weddings, planting crops, and building houses. The third informant was Mr. M, a resident of Patoman Hamlet in Watukebo Village, who was skilled at calculating using *weton*.

The three informants used daily and market day benchmarks to determine a person's *weton*. Each day and market day have predetermined, traditionally used values known as *neptu*. *Neptu* is a specific numerical value assigned to each of the seven days of the week and market days in Javanese culture (Aryanto, 2023). The seven days of the week are Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, and Saturday. Javanese market days are the days when traditional markets are open: *Wage*, *Kliwon*, *Legi*, *Pahing*, and *Pon*.



(a)



(b)



(c)

Figure 1. Interview Process with (a) Informant 1, (b) Informant 2, and (c) Informant 3 (Researcher Documentation)

Each day and each market has its own patterns for determining the time. The *neptu* for the days and markets in question are described in Table 1 below.

Table 1. Day and Market Values

Day	Value	Market's Day	Value
Sunday	5	<i>Wage</i>	4
Monday	4	<i>Kliwon</i>	8
Tuesday	3	<i>Legi</i>	5
Wednesday	7	<i>Pahing</i>	9
Thursday	8	<i>Pon</i>	7
Friday	6		
Saturday	9		

The determination of day and market values is similar to the Javanese calendar system used in the Javanese primbon in Sambeng Village, Cirebon (Sulaiman, 2021), and in the community on Mount Srandil (Mauliyana et al., 2025).

In the Javanese calendar, people use the *weton* (birthday) calculation system. *Weton* is a combination of the market day when a baby is born. This calendar system has been used since the era of the Mataram Sultanate and its various kingdoms, as well as kingdoms influenced by that culture (Nofriyanti, 2024). *Weton* is used to calculate an auspicious wedding day by adding the *neptu* (number of days).

Exploration Results of Determining Auspicious Wedding Days from the First Informant

The first informant (hereinafter referred to as I1) gained insight into the calculation of auspicious days according to the Javanese calendar from his teacher, Resi Kusumo Dewo, from Madiun, who was knowledgeable about Javanese traditions. He studied this calculation from a young age (he is now 74). To learn how to determine this auspicious day, he has a handbook entitled *Weddo Djojo Sampurno*.

Before calculating an auspicious wedding day, I1 must consider the prospective *bibit*, *bebet*, and *bobot* from the bride and groom. This was conveyed in the following interview between the researcher (P) and informant 1 (I1).

- P : *Damel perhitungane, nopo mawon sing diperlukan dugi calon pengantin?*
 I1 : *Syarate wong mbojo iki sing pertama bibite sopo. Kudu ditakoni wong tuwane sopo, nek wis genep wong 2 iku jenenge nasabe. Sing kedua iku bebet, yoiku sopo sing iso mempertimbangkan diantarane calon pengantin 2 iku mau, wis cocok opo ora. Terus nek bobot iku keduekan (kepunyaan) iku tergantung sing ngelakoni. Kadang-kadang wong mbojo iku kepengen lek ga sugih iku emoh.iki yo perlu dipikirno.*

Bibit can be defined as the prospective partner's origins, expected to come from a good family. Bebet is someone considered a suitable potential partner. Bobot

is the sufficiency of each prospective partner's assets for marriage. If these three factors are compatible, the calculation can proceed.

The calculation of an auspicious wedding day is done by adding the neptu of the two prospective brides and grooms. The result is divided by 5, which is the number of indicators used. The remainder is interpreted according to the indicators used. These indicators are:

1. *Sandhang*

Informants believe Sandhang to be a good thing, which they interpret as meaning that, during their marriage, both partners will receive blessings.

2. *Pangan*

This indicator suggests that, during their marriage, both partners will find it easy to earn a living.

3. *Begja*

This indicator serves as a middle ground between good and bad. It means that if both partners can live a good married life, they will receive abundant blessings, but the temptations will be great. However, if they do not live it well, it will mean *Lara* or *Pati*.

4. *Lara*

This indicator means less good, which shows that in their household, one of the two partners will always experience misfortune or difficulties.

5. *Pati*

This indicator means death, indicating that in a marriage, one of the partners will die. If not, then the fortune of both partners will "die". Thus, *pati* is considered an unlucky event.

If the neptu calculation results above are inconclusive, another solution is to add the values of the first and last letters in the Javanese script of both prospective partners. The letter values in the Javanese script are determined as follows.

<i>Ha</i> : 6	<i>Da</i> : 5	<i>Pa</i> : 1	<i>Ma</i> : 5
<i>Na</i> : 3	<i>Ta</i> : 3	<i>Dha</i> : 4	<i>Ga</i> : 1
<i>Ca</i> : 3	<i>Sa</i> : 3	<i>Ja</i> : 3	<i>Ba</i> : 2
<i>Ra</i> : 3	<i>Wa</i> : 6	<i>Ya</i> : 8	<i>Tha</i> : 4
<i>Ka</i> : 3	<i>La</i> : 5	<i>Nya</i> : 3	<i>Nga</i> : 2

This determination is similar to that used by the Baduy people, known as *Cacarakakan*, but with different values (Putri & Pujiastuti, 2022). Based on the Javanese script values above, the calculation results match those of the Neptu calculation. This is done by adding the script values of both partners and dividing by the number of indicators used by the informant. The remainder is then interpreted according to the following indicators:

1. *Nata* (authoritative)

This indicator means that during their marriage, both partners will have a positive outlook on their environment.

2. *Marto*

This indicator means that during their marriage, there will be periods when both partners will receive abundant or insignificant fortune.

3. *Kasiya*

This indicator means that both partners frequently quarrel.

4. *Laba*

Laba has the same meaning as *lara*, meaning that both partners will constantly experience calamities or misfortunes.

5. *Taka*

Taka has the same meaning as *pati*, meaning that both partners will have difficulty earning a living.

If the two calculations above still yield a negative meaning, another solution is to change the name of one of the prospective partners until a positive result is obtained. The prospective couple can conduct the name change process by holding a joint prayer event known as *selametan jenang abang* (a thanksgiving ceremony using red porridge).

An example of a calculation conducted by I1 is: if there is a per (with the same bibit, bebet, and bobot) with the birth dates of the man and woman both being on Sabtu *Wage*. The *numbers* of the day and the market are 6 and 7, respectively, so the sum of the two is 26. Furthermore, 26 divided by 5 gives a remainder of 1, which corresponds to the *sandhang* indicator (good). This means that the two partners can get married on any day.

The second example is if the prospective male partner is named Sembaga with the *weton* Ahad *Legi* and the prospective female partner is named Saniyem with the *weton* Kamis *Pon*. The *Neptu* from Ahad *Legi* is 5 and 5, while the *Neptu* from Kamis *Pon* is 8 and 7. The sum of the numbers is 25. Then 25 divided by 5 gives a remainder of 0. This remainder corresponds to the position of the fifth indicator, mainly *pati*, which means 'bad'. For this reason, a solution is to calculate the sum of the letter values of the first and last names of both couples.

Sembaga has the first letter "sa", which has a value of 3, and the last letter "ga", which has a value of 1. Saniyem has the first letter "sa," which has a value of 3, and the last letter "ya," which has a value of 8. The sum of the values of these letters is 15. Furthermore, 15 divided by 3 leaves a remainder of 0, corresponding to the fifth indicator (*taka*). Both calculations still show unfavourable results for the prospective couple, so it is recommended to change the name of one of the prospective couples until a favourable calculation result is found. However, I1 has not found any prospective couple willing to change their names, so the calculation is not continued.

Exploration Results of Determining Auspicious Wedding Days from The Second Informant

The second informant (hereinafter referred to as I2) was chosen for his credibility in the area of calculating auspicious days for weddings. He studied auspicious days in the Javanese calendar from a young age (he is currently 62) under the guidance of teachers from Jember and Magelang. During his studies, he committed to fasting (*mutih*) and abstaining from sexual desires for the 36 days (*selapan*), so that the knowledge gained would be blessed. His primary goal in studying Javanese calculations was to preserve Javanese cultural traditions.

I2 determines an auspicious wedding day by adding the *neptu*. The *Neptu* is selected based on the wedding ceremony's day and market date. The resulting *neptu* is then ranked repeatedly based on numerous indicators of the wedding calculation. The indicators referred to by I2 are:

1. *Tiba Begja*, meaning good.
2. *Tiba Lara* means 'less good' and should be reconsidered.

3. *Tiba Pati*, meaning the wedding cannot be held on that day.

If the final ranking result falls on an inauspicious day, it is recommended to change the wedding ceremony day until a favourable calculation result is obtained.

The following interview was conducted by the researcher (P) with informant 2 (I2) regarding an example of calculating a good wedding day.

- P : *Pak, cobu njenengan padosaken contoh perhitungan damel dinten acara hajatan calon pengantin.*
- I2 : *Ning kene petunganku njumlahno bijine dino lan pasaran, le. Terus lek wis ketemu digatukno karo begja, lara, karo pati. Pokok petungan mengko ojo sampe tibo pati, soale maknane elek.*
- P : *Sing begja kaliyan lara niku sae, pak?*
- I2 : *Iya, le. Lek lara iku asline isek ngambang, antara apik karo elek. Contone koyok tonggo ngarep iki njaluk tulung kongkon ngitungne pilihan dinone Ahad Pon karo Senin Pahing. Dino Ahad iku bijine 5, Pon iku 7, dadi 12. Begja-lara-pati-begja-lara-pati-begja-lara-pati-begja-lara-pati. Akhire tiba pati, ojo dilakoni ndek dino iku. Coba saiki ning dino Senin Pahing mau. Senin bijine 4, Pahing bijine 9, total e 13. Lek diurutno begja-lara-pati-begja-lara-pati-begja-lara-pati-begja-lara-pati-begja. Akhire begja, dadi iso dilakoni akad ning dino iku.*

The example above shows that I2 determines the auspicious day of the wedding by the process that mentions the three indicators in sequence and repeats until the calculation results are in order.

Exploration Results for Determining an Auspicious Wedding Day from the Third Informant

The third informant (hereinafter referred to as I3) was chosen because he is believed to be skilled at Javanese calendar calculations. He learned Javanese calendar calculations from a young age (he is currently 70 years old) from his uncle, an expert in the field. He uses the calculation basis from the book *Primbon Betaljemur Adammakna*, which he inherited from his uncle.

Before the calculation process, I3 stipulates that both candidates must consider their partner's background, such as: coming from a good family, being ready to settle down, and being able to support the family during their marriage (*bibit, bebet, bobot*). Once everything is ready, the calculation can be conducted.

The process of determining an auspicious wedding day by I3 involves adding the neptus of both prospective couples. The total *neptu* is divided by 7 according to the many indicators used by I3, namely:

1. *Wasesa Segara*, meaning the marriage will appear dignified.

2. *Tunggak Semi*, meaning the marriage will have abundant fortune.
3. *Satria Wibawa*, meaning the couple will have dignity in their marriage.
4. *Sumur Sinaba* means the couple is knowledgeable and often asks for help.
5. *Satria Wirang*, meaning the marriage will often endure embarrassment.
6. *Bumi Kapetak*, meaning the couple will be strong in enduring trials.
7. *Lebu Ketiup Angin*, meaning the couple will always experience misfortune during their marriage.

If the total of the couples' *neptu* is unfavourable, I3 provides a solution by adding the *neptu* of both prospective partners and the *neptu* of the chosen day for the marriage ceremony. This total is then divided by 7, depending on the number of indicators used. If this solution still yields an unfavourable result, the couple will be asked to reschedule the marriage ceremony until a favourable result is obtained.

The following is an interview conducted by the researcher (P) with informant 3 (I3) regarding an example of calculating an auspicious day for a wedding.

- P : *Pak, cobilah njenengan padosaken contoh perhitungan damel dinten akad niki.*
 I2 : *Yo umpomone calon lanang arane Supri nak akad karo Rini. Wetone Supri kuwi Selasa Legi, lan Rini kuwi Kamis Legi. Selasa kuwi 3, Legi kuwi 5, dadi neptune Supri kuwi 8. Lek neptune Rini kuwi 13, mergo Kamis kuwi 8. Teko hasil neptu kono mau ditemukne, dijumlahne, totale 21. Teko 21 kuwi diporo 7 unenan mau, dadi tiba lebu ketiup angin. Kuwi artine ala, dadi petungan ora iso dilanjutne.*

The above results indicate the need for alternative calculations. Therefore, I3 uses the couple's chosen wedding date. For example, the couple chose January 10, 2025, which falls on a Friday Pahing (*neptu* 6 and 9). To do this, the *neptu* of both partners and the chosen wedding day are calculated. The sum of the *neptu* of both prospective bride and groom's *wetons* and the chosen day is 36. Then, 36 divided by 7 gives a remainder of 1. This remainder corresponds to the *Wasesa Segara* indicator, which is auspicious, allowing the wedding to be held on that day.

Ethnomathematics for Determining an Auspicious Wedding Day

I1 and I3 determine an auspicious wedding day by adding the birth dates of both prospective spouses, while I2 adds the dates of the planned wedding day. The result is divided by the number of indicators determined by each informant. The remainder is adjusted according to the indicators to determine the auspicious date.

This calculation process involves adding the *Neptu* dates, summarized in the following table.

Table 2. The Result of the Addition *Neptu*

<i>Neptu</i>	Sunday (5)	Monday (4)	Tuesday (3)	Wednesday (7)	Thursday (8)	Friday (6)	Saturday (9)
<i>Wage</i> (4)	9	8	7	11	12	10	13
<i>Kliwon</i> (8)	13	12	11	15	16	14	17
<i>Legi</i> (5)	10	9	8	12	13	11	14
<i>Pahing</i> (9)	14	13	12	16	17	15	18
<i>Pon</i> (7)	12	11	10	14	15	13	16

Table 2 shows the existence of daily and market *neptu* limits on the universe of natural numbers 3 to 9, which can be denoted as $A_1 = \{3 \leq x \leq 9, x \in N\}$. Meanwhile, the sum of *neptu* is limited to the universe of natural numbers 7 to 18, which can be denoted as $A_2 = \{7 \leq x \leq 18, x \in N\}$.

Not all the results of the calculation of auspicious days have a remainder of division or are interpreted as having a remainder of 0. I1 equates the remainder of 0 with the remainder of 5, while I3 equates the remainder of 0 with the remainder of 7. This means that the remainder of the division of 0 can be converted to the same order as the last indicator used. Meanwhile, I2 does not divide directly by the number of indicators used; instead, it is performed as repeated mentions until the final position is obtained, which equals the remainder of the division. The calculation can be notated in the form. $((a_1 + b_1) + (a_2 + b_2)) \equiv x(\text{mod } p)$, where a_1 and a_2 are the birth day values of the prospective partner, b_1 and b_2 are the market values of the prospective partner, x is the remainder of the division, and p is the number of indicators used by the informant.

The above form shows that calculating auspicious wedding days by adding *neptu* involves addition operations on natural numbers and number congruence. The concept of congruence involves an understanding of modulo, an operation that yields a remainder after division (Sopiah, 2020). Congruence is a statement of integer equality based on division by a certain modulus (Nurhardiani et al., 2018).

The use of indicators in congruence can produce the same remainder from several *neptu*. This is in accordance with the process carried out by I3, using 7 indicators to calculate the *neptu* of the couple pairs 16, 23, dan 30, which have the limits of the universe of natural numbers. $A_3 = \{14 \leq x \leq 36, x \in N\}$. The

universe shows that congruence produces a remainder of 2, so that we can obtain $16 \equiv 23 \equiv 30 \text{ for } \text{mod } 7$. This means that modulo 7 is said to be congruent if and only if it can divide the difference of *neptu*.

Based on the calculations conducted by I3, it can be formulated as $16 \equiv 23(\text{mod } 7)$ or $7 \mid 23 - 16$ or $7 \mid 7$. This formulation can be generalized as the congruence $a \equiv b(\text{mod } m)$, which means that m can divide $b - a$. This statement can be denoted as $a \equiv b(\text{mod } m)$ then $m \mid b - a$. This means that $a \equiv b(\text{mod } m)$ if and only if a and b have the same remainder when divided by m (Handayanto, 2010).

If the calculation results are not satisfactory, each informant provides alternative solutions until they are satisfactory. As done by I1, when the calculation results are poor, an alternative calculation is provided using the first and last letters of the prospective partner's name. Similarly, I2 does the same thing: when the results of the indicator sorting indicate bad, an alternative calculation is performed by shifting the day of the marriage contract until the result is determined to be good. Likewise, with I3, when the calculation results are not good, an alternative is to add the *neptu* of the prospective partner to the *neptu* of the day of the marriage. This demonstrates the concept of implication in logic, which refers to the relationship between two statements that express cause and effect in the form of a compound statement (Sharma et al., 2017). It is further explained that the form of implication is seen in the second statement, which appears as a logical consequence of the first statement. This implication can be denoted as $p \rightarrow q$, where p is the statement of the calculation results that are not good, and q is the alternative calculation solution for each informant.

Based on the description above, the process of determining an auspicious wedding day involves concepts such as number operations, modulo, number congruence, and implication logic. The concept of number operations is part of the number element in the "*Capaian Pembelajaran Kurikulum Merdeka*" (learning outcomes). In contrast, the concept of implication logic is part of the algebraic element. Furthermore, the concepts of congruence and modulo can be obtained,

which are not included in the mathematics learning outcomes but are part of number theory courses at universities.

These results are consistent with the research by Suraida et al. (2019), which explains the existence of modulo concepts and number patterns in the calculation of *weton* (traditional Javanese wedding days). Sopiah (2020) states that in the process of determining auspicious wedding days for the Baduy community in Kanekes Village, Banten, the concepts of addition and modulo operations are obtained. Maryani dan Setialesmana (2022) explain the existence of modulo, addition, division, and line segments in calculating auspicious wedding days for the Pulo Traditional Village community. Pertiwi et al. (2024) also explain the existence of addition and division concepts in the process of calculating auspicious wedding days in Sidareja Cilacap. These four theories demonstrate the novelty of this research, with additional results on the concept of implication logic.

CONCLUSION

Culture is part of the daily life of certain communities that contains various knowledge, one of which is mathematics. Determining auspicious wedding days through *weton* calculations is part of the culture and can serve as a contextual tool in mathematics learning. The exploration of determining auspicious wedding days in Watukebo Village, Blimbingsari, Banyuwangi, demonstrates the concepts of number operations (especially natural numbers), modulo, congruence, and implication logic. Number operations can be identified from the informant's process of adding and dividing *weton* indicator numbers. Modulo and congruence can be identified from the process of determining auspicious day indicators. The implication logic can be identified from the process of determining alternative calculations if the initial results are not optimal. These results can be developed into contextual learning resources for mathematics instruction, enabling students to gain an in-depth understanding.

REFERENCES

Anggraeni, S., & Hakim, A. R. (2024). Literature Review: Kajian Etnomatematika

-
- pada Tradisi Perhitungan Weton dalam Konteks Membangun Rumah. *Himpunan: Jurnal Ilmiah Mahasiswa Pendidikan Matematika*, 4(2), 229–238. <https://jim.unindra.ac.id/index.php/himpunan/article/view/13477>
- Aryanto, A. (2023). Etnomatematika pada Penentuan Hari Baik dalam Tradisi Membangun Rumah Jawa. *Sutasoma: Jurnal Sastra Jawa*, 11(2), 142–152. <https://doi.org/10.15294/sutasoma.v11i2.69594>
- Gunasasmita, R. (2019). *Kitab Primbon Jawa Serbaguna*. PT. Narasi.
- Handayanto, A. (2010). Peranan Sistem Modulo dalam Penentuan Hari dan Pasaran. *AKSIOMA: Jurnal Matematika Dan Pendidikan Matematika*, 1(2), 1–10. <https://doi.org/10.26877/aks.v1i2/Septembe.59>
- Maryani, A., & Setialesmana, D. (2022). Studi Etnomatematika Aktivitas Menghitung Hari Baik dalam Pernikahan Masyarakat Kampung Adat Pulo. *JP3M: Jurnal Penelitian Pendidikan Dan Pengajaran Matematika*, 8(1), 73–84. <https://doi.org/10.37058/jp3m.v8i1.4468>
- Mauliyana, D. N., Nurfitriani, D. A., & Kusuma, A. B. (2025). Etnomatematika pada Ritual Gunung Srandil dalam Penentuan Kecocokan Pasangan. *Jurnal Penelitian Dan Pembelajaran Matematika*, 18(2), 99–106. <https://doi.org/10.30870/jppm.v18i2.30593>
- Nasution, A. N., Batubara, F. A., Hasibuan, R. Y., & Lumbantobing, S. (2025). Etnomatematika dalam Sistem Penanggalan dan Tradisi Pertanian pada Suku Baduy. *Jurnal Pengabdian Masyarakat Dharma Andalas*, 03(02), 134–141. <https://doi.org/10.47233/jpmda.v1i1.517>
- Nita, M. W. (2021). *Hukum Perkawinan di Indonesia*. Penerbit Laduny. <https://media.neliti.com/media/publications/559072-hukum-perkawinan-di-indonesia-c4151f74.pdf>
- Nofriyanti, T. M. (2024). *Etnomatematika Perhitungan Weton dan Implikasinya pada Pembelajaran Matematika Kelas VII Sekolah Menengah Pertama [INSTITUT AGAMA ISLAM NEGERI (IAIN) CURUP]*. <http://e-theses.iaincurup.ac.id/6876/1/Fulltext.pdf>
- Nurhardiani, N., Putrawangsa, S., & Syawahid, M. (2018). *Pengantar Teori Bilangan*. Insan Madani Institute. [https://repository.uinmataram.ac.id/2252/1/Buku Pengantar Teori Bilangan ISBN 978-602-50911-3-1.pdf](https://repository.uinmataram.ac.id/2252/1/Buku%20Pengantar%20Teori%20Bilangan%20ISBN%20978-602-50911-3-1.pdf)
- Pertiwi, B. W., Kusno, K., Gunawan, G., & Jazuli, A. (2024). Eksplorasi Etnomatematika Upacara Adat Pernikahan untuk Pembelajaran Matematika Di Desa Sidareja Kabupaten Cilacap. *Journal of Educational Review and Research*, 7(2), 103–115.
- Putri, N. E., & Pujiastuti, H. (2022). Studi Etnomatematika: Penentuan Tanggal Masyarakat Baduy dan Hubungannya dengan Konsep Aljabar. *Jurnal Ilmiah Pendidikan Matematika Al-Qalasadi*, 6(1), 912–913. <https://doi.org/10.32505/qalasadi.v6i14270>
- Sharma, S. N., Widiastuti, N., Himawan, C., Indrianti, M., Saputra, E. S., & R.K.,

- A. (2017). *Jelajah Matematika SMA Kelas XI Program Wajib*. Yudhistira.
- Sopiah, I. (2020). Eksplorasi Etnomatematika pada Kepercayaan Penentuan Hari Baik Masyarakat Baduy. *Jurnal PEKA (Pendidikan Matematika)*, 4(1), 13–20. <https://doi.org/10.37150/jp.v4i1.805>
- Sugiyono. (2023). *Metode Penelitian Pendidikan (Kuantitatif, Kualitatif, Kombinasi, R&D, dan Penelitian Tindakan)* (A. Nuryanto (ed.); 3rd ed.). Alfabeta.
- Sulaiman, H. (2021). Eksplorasi Etnomatematika pada Proses Penentuan Hari Sakral Desa Sambeng di Kabupaten Cirebon. *JIPM (Jurnal Ilmiah Pendidikan Matematika)*, 10(1), 140–152. <https://doi.org/10.25273/jipm.v10i1.8812>
- Suraida, S., Supandi, S., & Prasetyowati, D. (2019). Etnomatematika pada Perhitungan Weton dalam Tradisi Pernikahan Jawa. *Imajiner: Jurnal Matematika Dan Pendidikan Matematika*, 1(5), 172–176. <https://doi.org/10.26877/imajiner.v1i5.4464>
- Syamsuri, S., & Effendy, I. (2021). Penentuan Hari Pernikahan Menggunakan Primbon dari Sisi Istihsan. *HAKAM; Jurnal Kajian Hukum Islam*, 5(1), 28–43.
- Wahyuni, A., & Pertiwi, S. (2017). Etnomatematika dalam Ragam Hias Melayu. *Math Didactic: Jurnal Pendidikan Matematika*, 3(2), 113–118. <https://scispace.com/pdf/etnomatematika-dalam-ragam-hias-melayu-22g6mrbr4i.pdf>