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COMMUNITY INTEREST IN DEVELOPING TOURIST VILLAGES BASED ON NEUROSCIENCE METHODS

MINAT MASYARAKAT TERHADAP PENGEMBANGAN DESA WISATA BERBASIS METODE NEUROSAINS

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ABSTRAK

Desa Rawabogo merupakan salah satu desa wisata di Kabupaten Bandung dengan perkembangan yang tidak signifikan sejak ditetapkan. Partisipasi masyarakat merupakan hal penting dalam tahap-tahap pengembangan. Umumnya pengukuran konteks tersebut sulit dilakukan secara real-time dan akurat. Neurosains dapat menjadi kontrol validitas dan subjektifitas dari metode kuesioner dan wawancara yang digunakan untuk menguci respon saraf terhadap kondisi pariwisata. Dengan demikian penelitian ini bertujuan untuk mengidentifikasi ketertarikan masyarakat Desa Rawabogo terhadap pengembangan desa wisata berbasis neurosains Hasil analisis data menunjukkan bahwa masyarakat Desa Rawabogo memiliki minat yang kuat terhadap pengembangan desa wisata. Hal tersebut ditunjukkan dengan didapatkannya nilai entropi, hasil skoring kuesioner. Adapun metode neurosains dalam pengembangan desa wisata berperan menjadi metode yang mendukung, melengkapi, dan memvalidasi konsep ataupun metode pengembangan desa wisata yang telah ada seperti Konsep Community Based Tourism (CBT).

Kata kunci: neurosains; minat; masyarakat; pariwisata; pengembangan desa.

ABSTRACT

Rawabogo Village is one of the tourist villages in Bandung Regency with insignificant development since its establishment. Community participation is important in the stages of development. However, measuring context in real time and accurately is generally difficult. Neuroscience can be used to control the validity and subjectivity of the questionnaire and interview methods used to examine neural responses to tourism conditions. Thus, this study aims to identify the people of Rawabogo Village's interest in developing a tourism village based on neuroscience methods. The results of the data analysis show that the people of Rawabogo Village have a strong interest in developing a tourist village. The result is indicated by the entropy value obtained and the results of the questionnaire scoring. The neuroscience method in tourism village development acts as a method that supports, complements, and validates existing tourism village development concepts or methods such as Community Based Tourism (CBT).

Keywords: ***neuroscience; interest; community; tourism; village development.***

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INTRODUCTION

Rawabogo Village is one of the tourist villages located in Bandung Regency. Rawabogo Village is famous for its culture and historical sites, namely the Gunung Nagra Padang site and other potential tourist attractions such as handicraft industries, coffee plantations, rabbit farming, and fisheries. However, the tourist village has not significantly developed [1]. In addition, other problems are related to poor accessibility conditions, inadequate supporting facilities, and lack of community participation due to communication problems between stakeholders [2] [3]. The lack of communication between stakeholders has an impact on the lack of community empowerment and participation, it affects the development of tourist villages in Rawabogo Village.

Meanwhile, community-based tourism is one approach in tourism development that emphasizes the local community either directly or indirectly involved. Then, Sunaryo (2013) added there are several principles in developing community-based tourism, namely community involvement in making a decision, certainty that the local community will benefit, and providing education or learning about tourism to the community. Based on this understanding, community participation is necessary for every stage of tourism village development as a form of community empowerment [5]. Community participation is built through the accommodation of interests, desires, demands, and a sense of community ownership of the developed tourist village. However, identifying cognitive and emotional processes such as happiness, satisfaction, interest, and motivation usually uses general measurement methods such as questionnaires and interviews, which are difficult to measure accurately and dynamically.

Neuroscience, in terms of etymologically, is a neural science that studies the nervous system, especially in nerve cells neurons) with a multidisciplinary approach [6]. Meanwhile, in terms of terminology, neuroscience is a field of science specializing in the scientific study of the nervous system [6]. Then Hertanto & Nurdian (2019) explained that neuroscience is studied to know the biological basis of each behavior and explain that behavior from the point of view of the activities that occur in the brain [7]. The brain produces electrical waves that fluctuate along its nerve pathways, called brain waves. The type of brain wave is determined by the frequency at which it pulses; a certain pulse rate can determine a person's state of mind, and often there is a wave pattern that is seen as a result of the interaction of several waves at one [8] [9].

These brain waves are divided into gamma, beta, alpha, theta, and delta. Each type of brain wave emitted provides different information. Gamma waves are emitted when a person is doing an activity that demands thinking hard or in a very high mental activity and is in full awareness (a state of fear, hysterical, and excessive panic) [8], [10]. Beta waves are emitted when a person is doing activities that require him to be fully awake mentally, such as reading, discussing, thinking, concentrating, and solving problems. Alpha waves are emitted when a person is relaxed, sleepy, daydreaming, or imagining. The next wave is a theta wave emitted when a person is in a state of meditation, sleep, hypnosis, and solemnity, or the person is in his subconscious mind, so it is easy to accept the suggestions given [8] [10].

Then, neuroscience tools and methods such as the electroencephalography (EEG) method and the Event-related potentials (ERP) method can assist in the process of measuring, managing, and monitoring the emotional condition of participants quickly and subtly and able to conclude intentions and predict one's behavior [11]. So, neuroscience is needed in research related to cognitive and emotional processes such as interest and motivation needed in building community participation because it can be a control to increase the validity and reduce the subjectivity of the questionnaire and interview methods which are usually used to examine neural responses to tourism conditions [1], [11]. Thus, the measurement of interest or interest, taste, and other experiences can be done

using neuroscience measurement methods such as EEG, questionnaires, and interviews.

Therefore, the researchers decided to identify the interests of the community of Rawabogo Village, especially the local community, related to the development of tourism villages based on neuroscience methods. The brain waves used in this study are beta waves. The selection of this brain wave is based on the explanation of the beta wave appearance that is emitted when a person is doing activities that require his mind to be fully awake such as reading, discussing, thinking, concentrating, and solving problems, which can indicate a cognitive process in a person [10].

METHOD

The stimulus used in this study consisted of video, sound, images, and text. The four forms of stimulus are combined in a three-minute video. The visualization of the given stimulus can be seen in Figure 1.

Figure 1.
The Visualization of The Given Stimulus
Source: Author (2022)

In collecting data, researchers carried out several activities in the form of EEG measurements with Muse 2, interviews, questionnaires, observations, and documentation. The participants of this study were the people of the village of Rawabogo, a total of 8 people. There are several inclusion and exclusion criteria in the selection of research participants, where the inclusion criteria are criteria that each research respondent must meet. In contrast, the exclusion criteria are respondents' criteria that cannot be used as research samples [12]. The following is a detailed tool for participant criteria.

For the assessment of the questionnaire, Likert Scale was applied consisting of Strongly Agree (SS), Agree (S), Neutral (N), Disagree (TS), and Strongly Disagree (STS). The alternative answer of Neutral (N) used in this study was determined by Azwar's statement that positive and negative responses are equally useless when done without belief or arbitrarily chosen by the participants [13]. Then, the interest variable used in this study was divided into four sub-variables, cognition, emotion, conation, and external, which have their respective indicators. More details about the variables of interest for psychological measurements or questionnaires can be seen in Table 1.

Table 1.
Variables and Indicators

Variables	Indicators
Cognitive	• Knowledge • Attention • Interest
Emotion	Happiness
Conation	• Willingness • Ability
External	• Stakeholder role • Education • Economic benefit

Source: Ahmadi (2003); Kartono (1996); and Sunaryo (2013)

In the questionnaire processing, the answer scores are grouped based on the indicators listed in the table and there must be a measure of interest from each participant to define categorized into very high, high, sufficient, low, and very low [13]. Details regarding the classification of interest measures, along with the percentage range for each classification, can be seen in Table 2.

Table 2.
The Classification of Interst Measures

Classification	Measures (%)
Very High	81-100
High	61-81
Sufficient	41-60
Low	21-40
Very Low	0-20

Source: Furqon (2015)

RESULTS AND DISCUSSION

Community Interest in Developing of Tourism Village

The interest of the community of Rawabogo Village in this study was identified based on the analysis of brain wave feature extraction supported by the results of psychological measurements through questionnaires, and interviews. Feature extraction is a means or method for filtering signals according to the required signal frequency to get the characteristics of the signal (Ramli et al., 2018). In this study, the required wave is a beta wave with a frequency of 13-30 Hz, and the characteristic of the required signal is the entropy value of each channel, namely AF7, AF8, TP9, and TP10.

Entropy in the field of informatics is explained as a measure of information in data in the form of the level or degree of randomness obtained through data observation [14], [15]. Meanwhile, in thermodynamics, entropy is a thermodynamic quantity related to changes in each state due to the addition of some energy [16]. So, entropy can also be said to be a form of energy because the calculations involve joules and kelvins. The beta wave entropy values for each channel of each participant can be seen in Table 4.

Table 4.
The Beta Wave Entropy Values for Each Channel of Each Participants

Participants	Entropy channel AF7	Entropy channel AF8	Entropy channel TP10	Entropy channel TP9
1	0,4531	0,4523	0,4535	0,4532
2	0,4730	0,4707	0,4755	0,4755
3	0,4598	0,4608	0,4609	0,4640
4	0,4638	0,4633	0,4637	0,4632
5	0,4612	0,4618	0,4617	0,4609
6	0,4591	0,4592	0,4070	0,4599
7	0,4515	0,4516	0,4519	0,4516
8	0,4621	0,4626	0,4626	0,4583
9	0,4392	0,4398	0,4403	0,4381
10	0,4716	0,4724	0,4724	0,4723

Source: Data Analysis (2022)

The feature extraction analysis results show that each channel's average entropy value is 0.4594 for AF7 and AF8 channels, 0.4549 for TP10 channels, and 0.4597 for TP9 channels. The presence of entropy values in channels AF7 and AF8 can indicate a thought process, the emergence of attention, and even motivation from the respondent to the given stimulus. At the same time, the entropy values in TP10 and TP9 can indicate an episodic memory process and even the emergence of emotional valence from the respondent to the given stimulus. In addition, the entropy results in the table can indicate differences in responses between respondents. Respon-

dents 2,3,4,5 and 8 have entropy values higher than the average value for each channel, while respondents 1,3,6 and 7 have entropy values slightly lower than the average value for each channel. The results of respondents 2,3,4,5 and 8 indicate that some of the people of Rawabogo Village are highly interested in developing tourist villages in Rawabogo Village.

In contrast, others have a low interest in developing tourist villages in Rawabogo Village. The questionnaire results also show that all respondents know that Rawabogo Village has been designated as a tourist village, and there are other tourist villages in Bandung Regency and Indonesia. Respondents are also interested in the development and information related to the Rawabogo Tourism Village. The neutral assessment of respondent 7 was because the respondent had never seen or had experience with tourism village activities in Rawabogo Village, so he was not sure whether he was interested in or not related to the development of tourist villages. Then, the emotional variable score also shows that all the respondents are happy with making Rawabogo Village a tourist village because the tourism potential in Rawabogo Village can be raised and known by the wider community. Besides that, they also expect that by making Rawabogo Village a village, Tourism can help the economy of rural communities. The indicator scores for the conation variable also show that respondents 1,2,3,4,5 and 6 have the ability and willingness to participate in the development of tourist villages. Respondent 8 gave a score of 3 on the ability and willingness indicator questions because the respondent was still a student and felt unsure that he could fully participate in the tourist village's development.

Meanwhile, the assessment of respondent seven indicated that he was able to get involved but hesitated in terms of willingness to be involved because he did not have experience and had not seen the benefits or tangible evidence of turning Rawabogo Village into a tourist village. Thus, based on the total score and percentage score, the interest measures of respondents 1, 2, and 3 are included in the very high-interest category, while respondents 4,5, 6, 7, and 8 are included in the high-interest category. The difference between the results of the questionnaire and the entropy results is based on the problems in tourism management in Rawabogo Village. Individuals currently manage tourism destinations in Rawabogo Village without coordinating with the village government, tourism village managers, and the community. This makes the community indicate low interest in the development of tourist villages, even though they are willing and able to participate in every stage.

Furthermore, differences in thought processes, forms of attention, emotion, memory, and complexity of the neural system due to different experiences cause different levels of chaos and affect the received or recorded brain wave signals [17]. The following are the details of comparing the entropy values of respondents 2 and 3 to the average value of the channel, as well as details of the results of the questionnaire processing. The spike in the graph in the image is the noise obtained during measurement, namely the noises around the data collection that were not filtered properly during analysis.

Table 5.
The Participants Classification of Interest

Participants	Total score	%	Category
1	75	88.24	very high-interest
2	78	91.76	very high-interest
3	74	87.06	very high-interest
4	64	75.29	high-interest
5	66	22.65	high-interest
6	60	70.59	high-interest
7	61	71.76	high-interest
8	58	68.24	high-interest
9	49	57.65	sufficient-interest
10	47	55.29	sufficient-interest

Source: Data Analysis (2022)

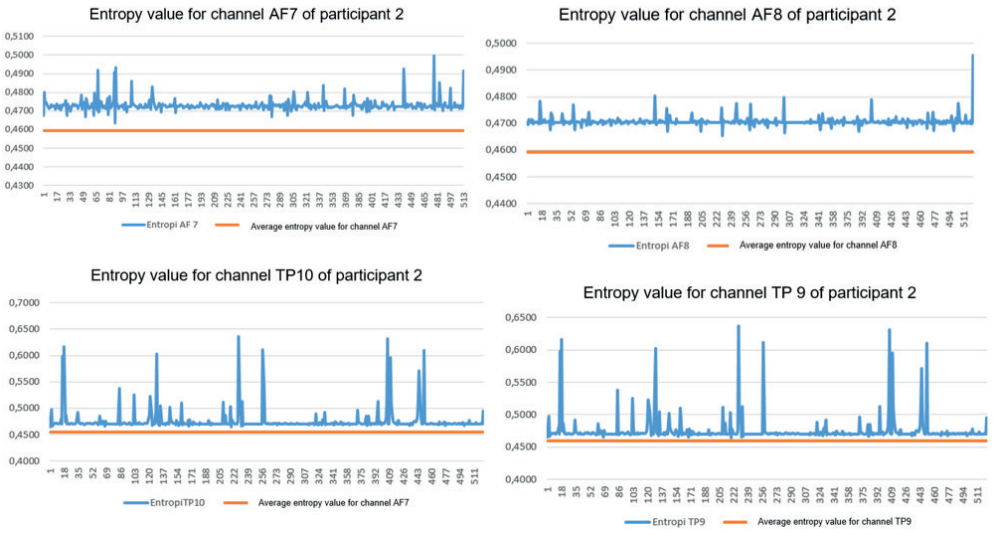

Figure 3
All Channel Entropy Value Diagram for Participant 2
Source: Data Analysis (2022)

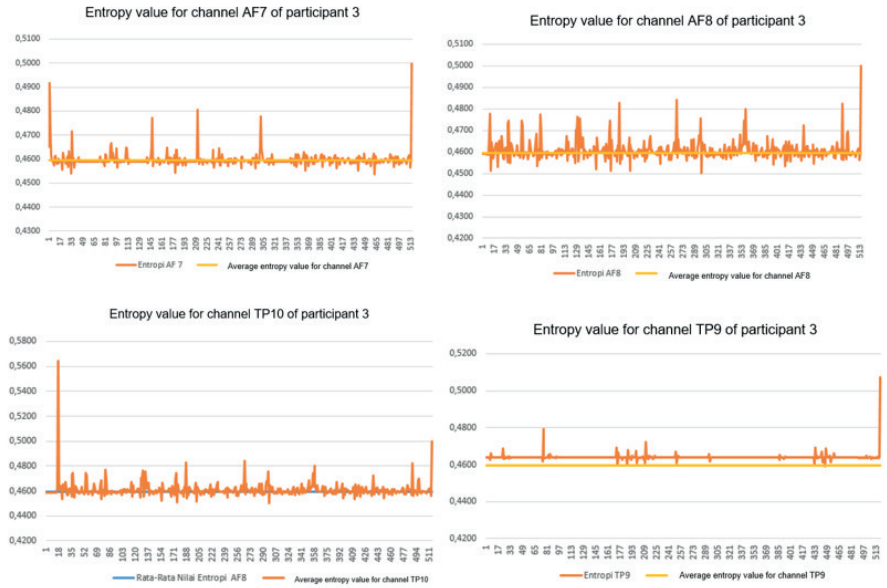

Figure 4
All Channel Entropy Value Diagram for Participant 3
Source: Data Analysis (2022)

Discussion

The analysis results show that the people of Rawabogo Village are indicated to have a high interest in the development of tourist villages. In addition, the results of the weighting of the questionnaire also show that most of the people of Rawabogo Village who are respondents have the willingness and ability to participate in the development of their tourist village. They also believe that with the development of the Rawabogo Tourism Village, their economic condition will also improve and impact the community's welfare. These things become a big capital for Rawa-

bogo Village to develop its tourism village because indirectly, the community is very supportive and able to develop their tourism village together. However, constrained by several problems, such as:

1. tourist destinations in Rawabogo Village which individuals manage without any coordination with the village government, tourism village managers, and the community;
2. communication problems between the village government and traditional community leaders that have an impact on efforts to develop and develop tourist villages, especially in cultural tourism which is the main attraction of Rawabogo Village;
3. the promotion and marketing of tourist villages have not been optimal because they depend on institutions. The promotion and marketing activities carried out by the community are promotional and marketing activities carried out by individuals or certain groups and do not communicate this to the organization and village government so that a group of people only obtains the benefits and benefits;
4. lack of triggers for the community to fully participate in the development of tourist villages due to the absence of physical evidence of tourism village activities.

Related to the neuroscience concept, neuroscience-based self-development strategies and designs can also be applied when developing tourist villages. Neuroscience-based self-development models have developed in Indonesia, especially concerning learning design in education and psychology. Neuroscience-based learning designs focus on character building, creative thinking, influencing emotions and intelligence, and learning effectiveness by optimizing the function of parts of the brain [18]. Examples of strategies and learning designs that can be used in implementing efforts to provide learning and training can use strategies such as the use of media and learning materials that are visual or audio-visual such as videos, images, and sounds, to improve people's imagination skills [19].

Then create a variety of learning methods that involve all the senses and activities of the left and right brain, such as discussing, arguing, studying case studies as if experiencing them directly, and others [20]. Then another strategy is to create challenging and free learning situations to explore and create positive emotional situations in learning to stay awake. Maintaining this emotional situation can be done by giving encouragement and time off, inserting humor, maintaining enthusiasm, and giving rewards or a reward system. Paying attention to participants' emotions in the learning process is very important because emotions greatly influence the quality and quantity of learning. Positive emotions can accelerate the learning process and provide optimal learning outcomes. While negative emotions can slow down or stop the learning process, and the results obtained will be bad or not get results at all [20].

Another strategy in supporting the implementation of providing learning and training to the community is to pay attention to the timing of the material so that participants can absorb the material optimally. The ability of the human brain to absorb material is only the first 20 minutes [20]. So, it is recommended to give a break every 20 minutes so the participants can do physical activities such as moving or standing for a while, because moving has a positive effect mentally and physically, including on a person's cognitive and emotional abilities. Physical activity affects the frontal lobes because it stimulates the release of the hormones norepinephrine, serotonin, and dopamine, renewing brain cells so that participants can receive material and concentrate optimally again [20].

CONCLUSION

The people of Rawabogo Village are indicated to have a high interest in developing tourist villages. In addition, the questionnaire results also show that most of the people of Rawabogo Village who are respondents have the willingness and ability to participate in

the development of their tourist village. They also believe the development of the Rawabogo Tourism Village will improve the community's welfare. These things become a big capital for Rawabogo Village to develop its tourism village because indirectly, the community is very supportive and able to develop their tourism village together. However, this capital is constrained by several problems, such as the lack of coordination between actors in tourism development, marketing and promotion efforts by actors in the development of tourism villages don't optimal.

Therefore, the neuroscience method in tourism village development acts as a method that supports, complements, and validates existing tourism village development concepts or methods, such as the Community-Based Tourism (CBT) concept. This is because, in the end, the recommended efforts remain in the form of physical settlements through various actions. However, these actions pay more attention to the intrinsic aspects of human or community awareness so that the recommended actions can fully empower the community and allow for the development of sustainable tourism villages.

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