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WEB-BASED IMPLEMENTATION OF INFORMATION VISUALIZATION OF MEGALITHIC CULTURAL HERITAGE

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ABSTRACT

Objective: The purpose of this study is to assess the outcomes of developing a megalithic culture web application in Negeri Sembilan, Malaysia, as an information visualization platform for digital heritage documentation of megalithic culture. The application's reliability is evaluated by a pilot study, with an emphasis on the elements of efficiency, ease of learning, ease of use, and user satisfaction.

Method: Pilot testing in this study uses a questionnaire-based approach to collect information involving 33 respondents from around the Malay Nature and Civilization Library, Universiti Kebangsaan Malaysia (UKM). The collected data was analyzed with the Statistical Package for the Social Sciences (SPSS) software version 28.

Results and Discussion: The study's findings indicate that the produced web application has excellent and effective values with a high level of consistency. This means that it can be used as a digital documentation medium to show the community what cultural heritage survives in this state today in order to preserve it. It is hoped that the web application produced will assist in transmitting and sharing knowledge on megalithic culture in Negeri Sembilan to the general public, as part of efforts to dignify cultural heritage remains.

Research Implications: This study adds to the creation of digital documents based on web applications that can be simply and rapidly accessed by all levels of global society. The consequences of these research findings can serve as the foundation for formulating policies to preserve the value of megalithic cultural remnants, promote archeotourism development activities, and assist local community development and economic empowerment.

Originality/Value: This work presents original discoveries on information exploration and mapping existing megalithic sites to a digital platform in an effort to improve information exchange and digital preservation, which are currently below optimal levels. This study also adds to the growth of literature by focusing on one research information source connected to megalithic culture in Negeri Sembilan rather than searching for information through multiple spread information sources. Furthermore, this endeavor represents an innovation in information sharing through the use of GIS technology, which will undoubtedly ensure that records for megalithic site discovery are always kept and accessible to future users and scholars. Through the notion of digital preservation of cultural heritage, this is one endeavor to elevate the remnants of the megalithic cultural heritage as one of the unique heritages not only in Malaysia but also worldwide.

Keywords: Web Application, Pilot Study, Culture, Megalithic, Negeri Sembilan, Information Visualization.

IMPLEMENTAÇÃO WEB DE VISUALIZAÇÃO DE INFORMAÇÃO DO PATRIMÓNIO CULTURAL MEGALÍTICO

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RESUMO

Objetivo: O objetivo deste estudo é avaliar os resultados do desenvolvimento de uma aplicação web de cultura megalítica em Negeri Sembilan, Malásia, como uma plataforma de visualização de informações para documentação digital do patrimônio da cultura megalítica. A confiabilidade da aplicação é avaliada por meio de um estudo piloto, com ênfase nos elementos eficiência, facilidade de aprendizado, facilidade de uso e satisfação do usuário.

Método: O teste piloto neste estudo utiliza uma abordagem baseada em questionário para coletar informações envolvendo 33 entrevistados de toda a Biblioteca Malaia de Natureza e Civilização, Universiti Kebangsaan Malaysia (UKM). Os dados coletados foram analisados com o software Statistical Package for the Social Sciences (SPSS) versão 28.

Resultados e Discussão: As conclusões do estudo indicam que a aplicação web produzida possui valores excelentes e eficazes com alto nível de consistência. Isso significa que pode ser utilizado como meio de documentação digital para mostrar à comunidade qual patrimônio cultural sobrevive hoje neste estado, a fim de preservá-lo. Espera-se que a aplicação web produzida ajude na transmissão e partilha de conhecimentos sobre a cultura megalítica em Negeri Sembilan ao público em geral, como parte dos esforços para dignificar os vestígios do património cultural.

Implicações da Pesquisa: Este estudo contribui para a criação de documentos digitais baseados em aplicações web que podem ser acessados de forma simples e rápida por todos os níveis da sociedade global. As consequências destes resultados de investigação podem servir de base para a formulação de políticas para preservar o valor dos vestígios culturais megalíticos, promover actividades de desenvolvimento do arqueoturismo e ajudar o desenvolvimento da comunidade local e o empoderamento económico.

Originalidade/Valor: Este trabalho apresenta descobertas originais sobre a exploração de informação e mapeamento de sítios megalíticos existentes para uma plataforma digital, num esforço para melhorar a troca de informações e a preservação digital, que atualmente estão abaixo dos níveis ideais. Este estudo também contribui para o crescimento da literatura, concentrando-se numa fonte de informação de investigação ligada à cultura megalítica em Negeri Sembilan, em vez de procurar informações através de múltiplas fontes de informação espalhadas. Além disso, este esforço representa uma inovação na partilha de informação através da utilização da tecnologia GIS, o que irá, sem dúvida, garantir que os registos da descoberta de sítios megalíticos sejam sempre mantidos e acessíveis a futuros utilizadores e estudiosos. Através da noção de preservação digital do património cultural, este é um esforço para elevar os remanescentes do património cultural megalítico como um dos patrimónios únicos, não só na Malásia, mas também em todo o mundo.

Palavras-chave: Aplicação Web, Estudo Piloto, Cultura, Megalítico, Negeri Sembilan, Visualização de Informação

IMPLEMENTACIÓN WEB DE VISUALIZACIÓN DE INFORMACIÓN DEL PATRIMONIO CULTURAL MEGALÍTICO

RESUMEN

Objetivo: El propósito de este estudio es evaluar los resultados del desarrollo de una aplicación web de cultura megalítica en Negeri Sembilan, Malasia, como plataforma de visualización de información para la documentación del patrimonio digital de la cultura megalítica. La confiabilidad de la aplicación se evalúa mediante un estudio piloto, con énfasis en los elementos de eficiencia, facilidad de aprendizaje, facilidad de uso y satisfacción del usuario.

Método: Las pruebas piloto en este estudio utilizan un enfoque basado en cuestionarios para recopilar información que involucra a 33 encuestados de toda la Biblioteca de Naturaleza y Civilización Malaya de la Universiti Kebangsaan Malaysia (UKM). Los datos recolectados fueron analizados con el software Statistical Package for the Social Sciences (SPSS) versión 28.

Resultados y Discusión: Los hallazgos del estudio indican que la aplicación web producida tiene valores excelentes y efectivos con un alto nivel de consistencia. Esto significa que puede usarse como un medio de documentación digital para mostrar a la comunidad qué patrimonio cultural sobrevive hoy en este estado con el fin de preservarlo. Se espera que la aplicación web producida ayude a transmitir y compartir conocimientos sobre

la cultura megalítica en Negeri Sembilan al público en general, como parte de los esfuerzos por dignificar los restos del patrimonio cultural.

Implicaciones de la investigación: Este estudio se suma a la creación de documentos digitales basados en aplicaciones web a los que todos los niveles de la sociedad global pueden acceder de forma sencilla y rápida. Las consecuencias de los hallazgos de estas investigaciones pueden servir como base para formular políticas para preservar el valor de los restos culturales megalíticos, promover actividades de desarrollo del arqueoturismo y ayudar al desarrollo de las comunidades locales y al empoderamiento económico.

Originalidad/Valor: Este trabajo presenta descubrimientos originales sobre exploración de información y mapeo de sitios megalíticos existentes en una plataforma digital en un esfuerzo por mejorar el intercambio de información y la preservación digital, que actualmente se encuentran por debajo de los niveles óptimos. Este estudio también contribuye al crecimiento de la literatura al centrarse en una fuente de información de investigación relacionada con la cultura megalítica en Negeri Sembilan en lugar de buscar información a través de múltiples fuentes de información difundidas. Además, este esfuerzo representa una innovación en el intercambio de información mediante el uso de tecnología SIG, lo que sin duda garantizará que los registros del descubrimiento de sitios megalíticos siempre se mantengan y sean accesibles para futuros usuarios y académicos. A través de la noción de preservación digital del patrimonio cultural, este es un esfuerzo por elevar los restos del patrimonio cultural megalítico como uno de los patrimonios únicos no sólo en Malasia sino también en todo el mundo.

Palabras clave: Aplicación Web, Estudio Piloto, Cultura, Megalítico, Negeri Sembilan, Visualización de Información

1 INTRODUCTION

The preservation of megalithic culture which is a remnant of local cultural heritage is an issue that needs attention. Recently, the physical landscape of megalithic remains is increasingly threatened by the pressure of modern development in the surrounding area. In addition, with the lack of disclosure of information and weaknesses in the delivery of information related to valuable treasures in Malaysia, especially in Negeri Sembilan, information about this cultural tradition is less spread among the community and ultimately threatens its sustainability. Hence, to some extent, this megalithic cultural heritage is increasingly lost and forgotten by the current generation.

Basically, 'megalith' is a combination of two Greek words, 'mega' meaning 'big' and 'lith' meaning 'stone'. Megalithic involves the culture of certain communities in the past that are related to practices that involve the use of large stones. According to Lim et al. (2021), culture is a national identity that characterizes the function of a certain population or society that also involves ethnic groups. Nevertheless, this megalithic culture did not develop on its own or naturally but was the result of the culture and traditions of the ancient people who had practiced it (Masdey, 2021; Ramli et al., 2019).

Although Malaysia does not have huge structures, the likes of Stonehenge in England or Rapa Nui on Easter Island, Malaysian megaliths are unique in that they represent Malaysia's cultural diversity. This unique megalithic cultural information is a treasured treasure that must be conserved and shared with the general public. Notably, there are several strategies for conserving and improving its preservation, one of which is digital documentation to stay up with current technology changes. Although studies on megalithic culture in Negeri Sembilan have been conducted, research into the visualization and sharing of megalithic information in the digital preservation of cultural assets is still underexplored. This shows the need for an effort that not only documents but also visualizes to the present society the remains of cultural heritage that exist in order to maintain its preservation. Accordingly, this study took the initiative to develop a web application that integrates mapping through the Geographical Information System which can be directly accessible by global users in an easy and quick manner.

2 THEORETICAL HIGHLIGHTS

2.1 DIGITAL INFORMATION VISUALIZATION

The existence of digital information in today's modern world has made knowledge more easily and swiftly available, changing the lifestyle of today's society. Information can be conveyed from one party to another in either oral or visual formats. Verbal delivery refers to communication between persons, whereas visual delivery of information comprises an interaction between individuals and visuals using visual media such as print and electronic. Visualization provides cognitive support to the users, and how they see and interpret the visualization influences their knowledge of the data. In the past, the use of visuals was concentrated on brochures and printed materials, but with the transition of technology, today the use of visuals has risen rapidly through digital electronics.

Technology has made possible the delivery of visuals in a more interesting and interactive environment. Correspondingly, Md Ibharim & Mohd Shukuri (2022), Idris & Md Nor (2022), Fabil et al. (2019) and Van Wyk, Q et al. (2019) have stated that Information Visualization is a delivery method that is seen as having potential and helps users improve their ability to understand content through interactive information illustration. Nowadays, visuals have become an important medium in the process of conveying and disseminating information in various fields. It is one of the ways of data representation that allows meanings to be clearly understood (Acedo 2020). Moreover, visuals are not only seen as interesting but simultaneously

help in the process of accessing information in a short time, and thus are easily understood. An attractive visual display supported by good visual features such as the use of shapes, colors, objects, and arrangement can lead to an increase in the ability of the eye to quickly recognize and scan the information that is seen. In other words, visualization in the presentation of information helps humans in analyzing data easily through visual representation of information.

The need for access to megalithic cultural information sources and the visual advantages that are found in the delivery of information prompted this study to create a digital information visualization application that is designed as a source of information related to megalithics, particularly in Negeri Sembilan, Malaysia. In line with Noardo (2018), cultural heritage documentation is considered the main tool to guarantee the conservation and promotion of monuments, and to educate the general public through information sharing.

Apart from that, recent advances in technology, software, and spatial data have allowed spatial information technology, especially Geography Information System (GIS) to be applied in various studies and disciplines (Ahmad et al., 2015; Fauzi, 2015; Masron, 2015). GIS is a computer-based technology that can collect, store, access geographic data and then manipulate and analyze spatial (spatial) data accurately according to the purpose and required demographic translation (Arul Prakash. nd, Elangovan, 2006; Esri. nd, Lateh & Muniandy, 2011). Based on the advantages of GIS, it can be used in this study as documentation to store and display the geographical data of the distribution of megalithic site positions that are found in Negeri Sembilan.

2.2 MEGALITHIC CULTURE OF NEGERI SEMBILAN

Negeri Sembilan Darul Khusus is one of the states in Malaysia that has its unique cultural heritage and one of them is the megalithic culture. The study of megaliths in Negeri Sembilan is not new, in fact, it started as early as 1919 by Evans who conducted studies at Pengkalan Kempas and was followed by other researchers such as Adi Taha, Mahfuz Nordin, and Hasnol Mohamed (Masdey et al., 2019; Ramli et al., 2019). The settlement area where there are megalithic stones shows that the community supports the related customs and cultures; Figure 1 shows some of the megalith settlements in the village area in Negeri Sembilan.

Figure 1

Megaliths in some village areas in Negeri Sembilan

Megalith in Kampung Lanjut Manis, Terachi, Negeri Sembilan

Megalith inKampung Kuala Talang, Ulu Muar, Negeri Sembilan

Recently, a megalithic study in Negeri Sembilan by Masdey (2021) has expanded the megalithic study to site mapping in Luak Tanah Mengandung, which is one of the areas with the most megalithic stone remains in Negeri Sembilan. The study has also explained the meaning and function of megalithic stones based on surveys and opinions of the local community. The study must be able to be used together with the local community and the world at large through the creation of an application that can directly be accessed by all layers of universal users.

Thus, through the highlights of the literature and information that was successfully collected, this study was conducted to develop a web-based visualization of cultural information that utilizes GIS technology in introducing megalithic cultural heritage in a more accessible and understandable way, making it easier for people to access this information quickly. With the availability of GIS applications, the study of megalithic culture nowadays not only describes to its users the existing megalithic stones but also the distribution of megalithic stone discovery locations that can be reached directly through visual topographical maps. It is also a source of access to megalithic information, especially in Negeri Sembilan, in addition to increasing the participation of the general public in improving the sustainability of megalithic cultural heritage.

2.3 RELIABILITY ASSESSMENT OF WEB APPLICATIONS

The production of digital applications through user interface design also needs to be tested for usability before being released to the users. According to Hassan Basri et al. (2023), Zaid (2022) and Jabli (2018), usability testing is an important element before the release of a

product and the monitoring of existing products that can determine and create a more user-friendly and beneficial effect for the end users. This is aimed at determining that the product that has been developed can operate well and smoothly and meet the user's satisfaction. Usability testing of an application is a necessary condition for a website or system to survive (Rusdi et al., 2017) and is an easy, cheap, and fast method to obtain feedback from users apart from being able to identify problems, advantages, and disadvantages of a system (Azmi et al., 2018).

Various measurement techniques can be used to determine the level of usability of an application; according to Nielsen (2012), usability is determined by five quality components including learnability, efficiency, errors, memorability, and user satisfaction. Based on the USE usability evaluation instrument by Lund (2001), usability can also be measured in terms of usefulness (usefulness), satisfaction (satisfaction), ease of use (ease of use), and ease of learning (ease of learning). The quality components that are explained by Nielsen (2012) and Lund (2001) are summarized in Table 1.

Table 1

Application Usability Quality Components

Component Factor	Description
Learnability	How to use it is easy to understand and learn. Users can easily operate the application developed for the first time
Efficiency	Users can easily and quickly use the developed application
Error	The frequency with which users encounter errors, the level of errors and whether the errors are easy to fix
Easy to remember	Users easily remember the design and how to use the application. Users are quick to master the application.
Usefulness	Items are useful to users and make activities effective and productive
Easy to use	Easy to use with clear instructions and simple steps. Consistent applications and flexible interactions.
Easy to learn	Ways of use that are easy to understand, learn and remember.
User Satisfaction	Involves smooth use and good functionality so as to give satisfaction to users using the application

Source: (Lund 2001; Nielsen 2012)

3 RESEARCH METHODOLOGY

Pilot testing was conducted in this study to obtain the validity and reliability of the questionnaire developed. Reliability is the ability of a measuring instrument or research instrument to measure a variable or construct to produce consistency or consistent results every time the measurement is performed (Hussin, 2020; Lebar, 2018; Mohajan, 2017). The 'Cronbach Alpha' method or internal consistency test for each variable is used to observe the

reliability of this research instrument. The questionnaire was distributed through an online form using the Google Form platform. The data obtained was analyzed using the Statistical Package for the Social Science (SPSS) version 28 software.

3.1 QUESTION STRUCTURE

The questionnaire in this study is divided into two main parts, part I covers demographic information while Part II covers the usability aspect of the developed web application. The applied usability component in this study takes into account four components out of the eight that are described in the study highlights based on the suitability of the application that is produced, namely, A. Efficiency, B. Ease of Use, C. Ease of Learning, and D. User Satisfaction. Each section is classified according to different quality aspects that are built as a result of a literature review involving variables that are related to the development of web-based applications. A research questionnaire that evaluates the usability quality of applications by Chang and Hu (2020) and Abdul Sattai (2015) was adapted according to the suitability of the developed megalithic culture web application. The design of a well-arranged and organized questionnaire can influence the respondents' views to easily understand, interpret, and then answer each given question (Jaffar, 2021; Phellas et al., 2011).

3.2 RESPONDENTS

In general, the ideal sample size to be involved in a pilot test is at least 10 to 30 respondents to secure a statistically significant number (Hill, 1998). Obeying Hussein (2020), a minimum sample of 30 is considered a normal distribution; Ibrahim (2017) explains that respondents between 30 to 50 are a reasonable, ideal, and sufficient number. Therefore, taking these factors into account, the pilot test in this study was conducted on 33 respondents. The respondents who participated involved respondents around the Malay Nature and Civilization Library, Universiti Kebangsaan Malaysia (UKM). The respondents were selected because they were individuals who were exposed to information related to Malay customs and culture; according to Kate (2019) the participant or respondent involved must be a realistic user of the product or service being studied, even if the user is not yet an actual user of the product.

3.3 EVALUATION PROCEDURE

The survey was conducted to pilot test the usability of web-based Negeri Sembilan cultural information visualization and megalithic mapping through a 5-point Likert scale range as previously used in content validation evaluation. The selection of online testing is done taking into account factors and current technologies that are growing. The use of online questionnaires also involves lower costs and faster processes (Fielding et al., 2017; Jason, 2021). Respondents were given the URL address of the developed megalithic culture website application to explore and research before the evaluation was conducted based on an agreed Likert scale.

The data obtained from the questionnaire is initially checked to ensure that the processed data is complete, clean, and error-free when entered by the respondent. This is to ensure that the data analyzed is clean and error-free when entered. This is because mistakes when entering data can affect the results of the analysis that will be made (Muijs, 2010). Reliability in a research study instrument refers to the ability of a study to obtain similar values when the same measurement is repeated (Tabachnick & Fidell, 2013). Similar values are obtained if the second measurement is carried out, showing that the research instrument has high reliability. In correspondence, Gaskin and Happell (2014) explain that the reliability measurement value is from empty to one (0-1), and having a value between 0.60 to 0.70 is considered the minimum acceptance limit. The value of CA in assessing the acceptability of research instruments is according to Hamzah and Baharuddin (2018), as shown in Table 2.

Table 2

Interpretation of Cronbach Alpha Scores

Cronbach Alpha Score (α)	Interpretation of Reliability
0.90-1.00	Very good and effective with a high level of consistency
0.80-0.89	Good and acceptable
0.60-0.79	Acceptable
0.40-0.59	Item needs repair
0.00-0.39	Items need to be dropped

Source: Hamzah & Baharuddin (2018)

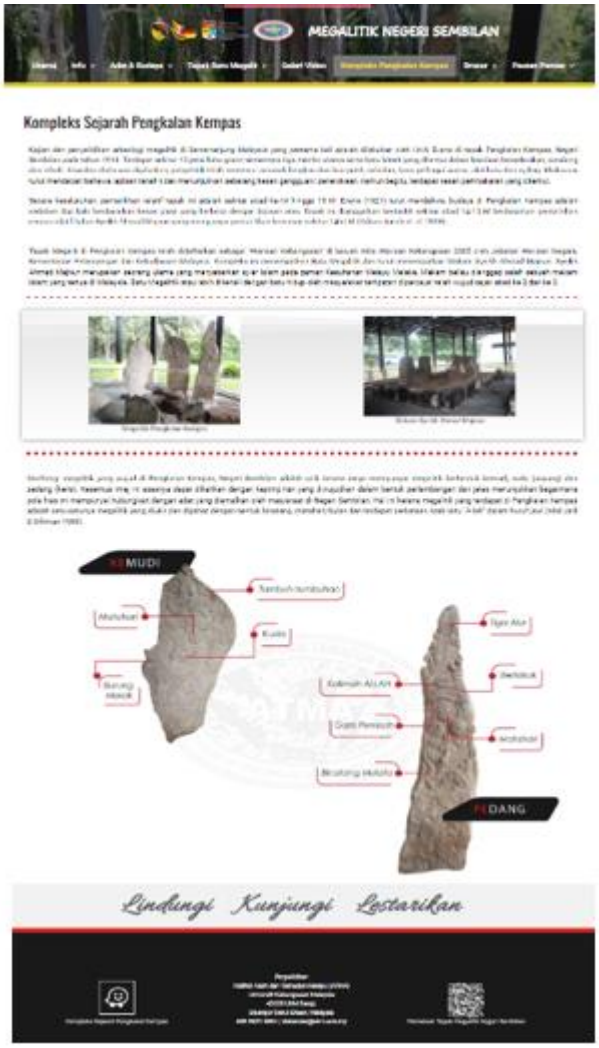
4 RESULTS AND DISCUSSION

Based on the results of the development of megalithic culture information visualization, some of the produced interface displays are shown in Figure 2 and Figure 3. The Megalithic

Site in Pengkalan Kempas, Negeri Sembilan has been registered as a 'National Heritage' under the National Heritage Act 2005 by the Department of National Heritage, Malaysia. Accordingly, information about the Historical Complex is presented to users in the developed application. In addition, the morphology of the megalithic uniqueness that exists in Pengkalan Kempas, which is carved and sculpted with various forms of carving, is also displayed on this page.

Figure 2

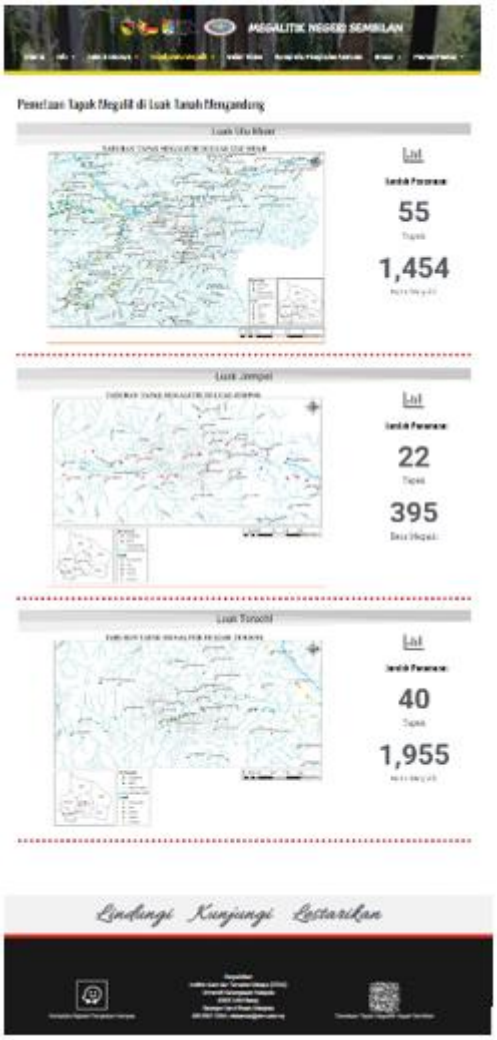
Megalithic culture visualization interfaces



The discovery of megalithic stones at the location site is visualized with a digital map as shown in Figure 3. Through this screen, users can directly see the distribution of megalithic discoveries with the number of sites and the number of megalithic stones that are found in each district in Luak Tanah Mengangdung, whereby the number of discoveries varies according to the area that is involved.

Figure 3

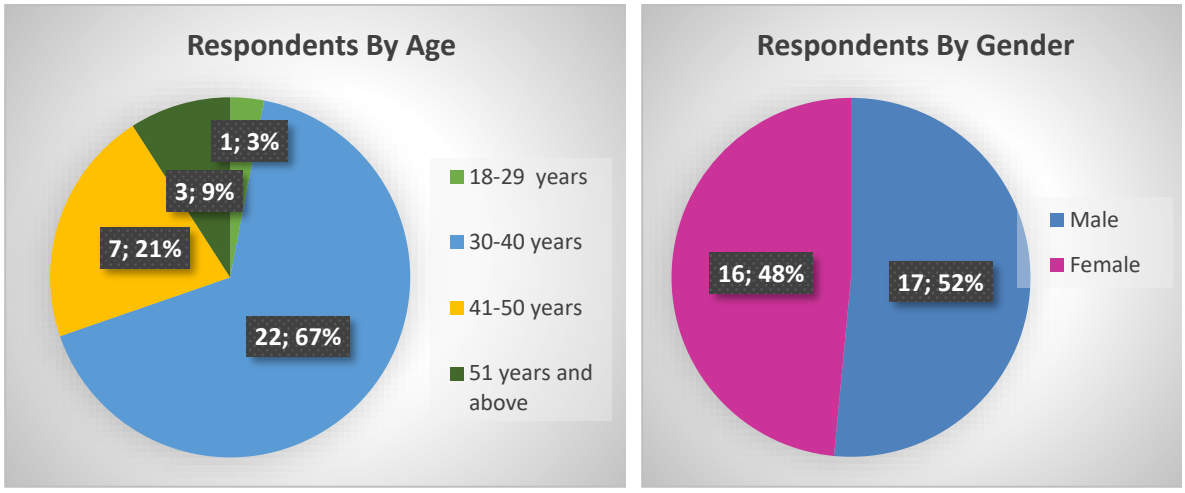
Mapping with the number of site discoveries and the number of megalithic stones



This study also evaluates the pilot testing in identifying the qualities that contribute to strengthening the usability of the developed application. The questionnaire involved 33 respondents from the Malay Nature and Civilization Library, Universiti Kebangsaan Malaysia (UKM). The demographics of the respondents in Figure 4(a) and Figure 4(b) comprise their age and gender. From Figure 4(a), it can be seen that most of the respondents who have participated are those aged between 30 and 40 years old, which is 22 people and is 67% of the total. The second largest number is in the age range of 41 to 50 years, i.e., seven people or 21%, while the age range of 18 to 29 years has the least participation where there is only one person which is a percentage of 3%. As shown in Figure 4(b), this study has an almost equal number of genders, specifically, 17 males at 52% and 16 females at 48%.

Figure 4

Demographics of respondents



a) Respondents by age b) Respondents by gender

Accordingly, the method of estimating internal consistency in the pilot study is through the Cronbach's Alpha (CA) value that is obtained from the analysis results. There are 24 variables measured in this study's reliability statistics, evaluated by component aspects according to section A. Efficiency, B. Easy to Use, C. Easy to Learn, and D. User satisfaction. The obtained CA value is shown in Table 3.

Table 3

CA Reliability Score based on Application Usability Components

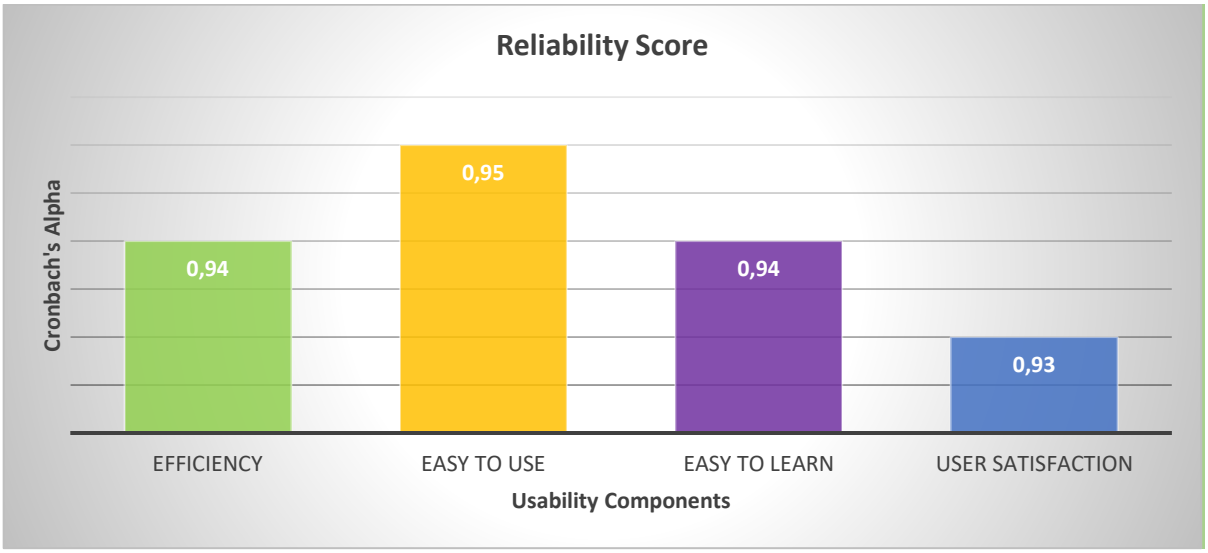
Section	Components	Number of Items	Cronbach's Alpha (α)
A	Efficiency	6	0.94
B	Easy to Use	7	0.95
C	Easy to Learn	5	0.94
D	User Satisfaction	6	0.93

To determine whether each variable is good or otherwise, the value of CA (α) that exceeds 0.5, which is between 0.6-0.9, is considered to be an item that is consistent and reliable (Azman, N.A., 2021; Hussin F, 2020). Through the consistency testing of each variable item, it is found that the CA value (α) that has been obtained by all component constructs is above 0.9 which is high and gives a very good and effective interpretation with a high level of consistency. Part A includes six items that are evaluated through the Competency component giving a value of CA (α)= 0.94, part B, contains seven items in the Ease of Use component giving a value of CA (α)= 0.95, part C, includes five items through the Ease of Learning component giving a CA value (α)= 0.94, and part D, which is the sixth item in the User Satisfaction component gave a

CA value (α)= 0.93. This finding shows that this instrument is ready to be used in further usability. The findings from this pilot study are also visualized through a bar chart, as shown in Figure 5.

Figure 5

CA Reliability Chart based on Application Usability Components



Overall, it was found that the 24 items that were measured gave an overall CA reliability statistical value of 0.97 (α=0.97), as shown in Table 4. Based on the score of Hamzah and Baharuddin (2018), this score shows a very good and effective value with the highest level of consistency. This means that the questionnaire is an instrument that has high internal consistency and is reliable. The value of this coefficient shows good reliability which means that if this questionnaire is used in a real study it will give consistent results every time a measurement is made. This finding shows that this instrument is ready to be used in real usability.

Table 4

Overall Reliability Score

Reliability Statistics	
Cronbach's Alpha (CA, α)	**N of Items**
.97	24

Apart from evaluating the developed application, respondents also have the opportunity to give their comments and suggestions through the provided feedback space. A total of 10 responses were received from a total of 33 respondents who were involved, as shown in Table

5. The responses were then examined and classified into 2 types of responses, namely, responses in the form of compliments and suggestions. A total of 8 compliments were received and 2 of them were in the form of suggestions. All of the feedback shows positive agreement and supports the production of the developed application, while 2 suggestions that have been received lead to improvements toward a more attractive and wider coverage.

Table 5

Feedback received from respondents

No.	Respondent's response		Description
1	The information is clear and easy to understand for the general public.	compliments	Clear, easy to understand
2	The best		Good
3	Clear and interesting.		Clear
4	Can be used through a phone application		Multi-device access
5	This interesting website can be accessed via mobile.		Multi-device access
6	Very good		Good
7	Congratulations because information can be obtained easily and quickly.		Easy, fast access
8	All the best... May this kind of effort continue...		Continued
9	Linked to FB, Twitter, and Instagram	Suggestion	Social media links
10	It is suggested that if you can add interactive content, then it will be more interesting.		Add Interactive content

5 CONCLUSIONS

In conclusion, the respondents provided positive feedback on the web application developed to allow people easy and swift access to Negeri Sembilan's megalithic cultural information online. The pilot test results also reveal that the level of reliability is strong, as evidenced by very good and effective values with a high level of consistency. The development of information visualization through this web application has resulted in the centralization of a research information source that is related to the megalithic culture in Negeri Sembilan, as opposed to users who are searching for information through various distributed information sources. This is an innovation in the sharing of megalithic cultural heritage information with the application of GIS technology, whereby the effort can ensure that records for the discovery of megalithic heritage sites are always stored and available for future users and researchers. This is one of the efforts to promote the megalithic cultural legacy as a unique heritage not only in Malaysia but also around the world, through the concept of digital preservation of cultural heritage. It is hoped that the web application being developed will be able to add more sources of cultural heritage information, especially megalithic culture in Malaysia, and subsequently be

able to achieve effectiveness in conveying information about megalithic culture in Negeri Sembilan to the public, which is in line with efforts to dignify the remains of cultural heritage for the country. Furthermore, web-based information sources are platforms that are conveniently available from any location where there is access to the internet. This study also hopes that this application can be compressed and further enriched with content through other and recent findings, whether by researchers or lovers of the homeland's heritage. In addition, in the future, this study is expected to be expanded further through various other digital platforms in line with current developments.

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