
Survey Response Analysis on the Use of Environmental Data for Sports Information Systems Development

Dewi Arianti Wulandari¹, Wandy Wandy²

¹Informatics Engineering, Faculty of Energy Telematics, Institut Teknologi PLN

²Information Systems, Faculty of Engineering and Technology, Sampoerna University

Email: dewiarianti@itpln.ac.id¹, wandy.wandy@sampoernauniversity.ac.id²

ABSTRACT

Sport is primarily a mental and physical activity focused on competition with oneself, others, or the elements of nature—the contribution of sport to the modern world's social development, the nation, and the state. As history has shown, technical advancements have never diminished sports and linked to civilization's advancement in human life. Walking and bicycling are increasingly promoted as active modes of transportation and boosting physical activity levels. The elevated breathing rates in traffic microenvironments have generated worries about increased exposure to ultrafine particles. Amateur half marathoners did detrimental significantly when the temperature, heat index, and ozone levels rise. The athlete or recreational sportsperson can earn environmental information through several channels and devices. There are applications and widgets now embedded or separated from the device operating systems. This research aimed to find appropriate environmental information from recreational sportspeople's understanding and awareness of the environment's effect on sports performance. Walking (77) and running (48) were the most sports activities picked by the respondents. Then 99 (73%) respondents used environmental data before exercising. Weather (118) was the respondents' choice, followed by the temperature (47) and the air quality (30) picked by the respondents. Most respondents (72%) get environmental information from their smartphones, and 27 (18%) get it from the website. Environmental factors may impact sports activity performance, and the respondents used environmental information before the sports activities began. This research will later support the sports information system web application.

Keywords: analysis, data, environment, information systems, sports.

INTISARI

Olahraga pada dasarnya adalah aktivitas mental dan fisik yang berfokus pada persaingan dengan diri sendiri, orang lain, atau unsur-unsur alam. Kontribusi olahraga bagi pembangunan masyarakat, bangsa, dan negara di dunia modern. Olahraga tidak pernah tergusur oleh kemajuan teknologi, seperti yang ditunjukkan oleh sejarah, dan selalu dikaitkan dengan kemajuan peradaban dalam kehidupan manusia. Berjalan dan bersepeda semakin dipromosikan sebagai mode transportasi aktif dan meningkatkan tingkat aktivitas fisik. Tingkat pernapasan yang meningkat di lingkungan mikro lalu lintas, telah menimbulkan kekhawatiran tentang peningkatan paparan partikel ultra halus. Pelari setengah maraton amatir sangat merugikan ketika suhu, indeks panas, dan tingkat ozon meningkat. Informasi lingkungan dapat diperoleh oleh atlet dan/atau olahragawan rekreasi, melalui beberapa saluran dan perangkat. Ada aplikasi dan *widget* yang sekarang disematkan atau dipisahkan dari sistem operasi perangkat. Tujuan dari penelitian ini adalah untuk menemukan informasi yang tepat tentang informasi lingkungan dari pemahaman dan kesadaran olahragawan rekreasi tentang pengaruh lingkungan terhadap prestasi olahraga. Jalan kaki (77) dan lari (48) merupakan kegiatan olahraga yang paling banyak dipilih responden. Kemudian 99 (73%) responden menggunakan data lingkungan sebelum memutuskan berolahraga. Cuaca (118) menjadi pilihan responden, diikuti oleh suhu (47), dan kualitas udara (30) dipilih oleh responden. Sebagian besar responden (72%) mendapatkan informasi lingkungan dari ponsel pintar mereka, dan 27 responden (18%) dari situs web. Faktor lingkungan dapat mempengaruhi performa aktivitas olahraga, dan informasi lingkungan digunakan oleh responden sebelum aktivitas olahraga dimulai. Hasil dari penelitian ini kemudian akan digunakan dalam pengembangan aplikasi berbasis web sistem informasi olahraga.

Kata kunci: analisis, data, lingkungan, olahraga, sistem informasi.

INTRODUCTION

Sport is primarily a mental and physical activity focused on the spirit of competition with oneself, others, or the elements of nature (Pertiwi, 2019) the contribution of sport to the modern world's social development, the nation, and the state. In order to keep his physical condition and health, sport

is essential for every human being (Rahmawati & Rumini, 2020). Technical advancements have never diminished sports and have always been linked to the advancement of civilization in human life (Yoda, 2020).

Walking and bicycling are increasingly promoted as active modes of transportation to lessen traffic congestion and boost physical activity levels. The elevated breathing rates in traffic microenvironments have generated worries about increased exposure to ultrafine particles (Bergmann et al., 2021). Amateur half marathoners did detrimental significantly when the temperature, heat index, and ozone levels rise (Hodgson et al., 2022). In an archery competition, many factors cannot predict an athlete's achievements, both from the physical and psychological aspects. Athletes also often experience fatigue when participating in round 1 or 2 sessions that use a long duration, especially with the sun's heat and wind direction, which changes the rhythm of releasing arrows at athletes (Warjito & Pudjijuniarto, 2021).

The athlete or recreational sportsperson can earn environmental information through several channels (television and radio) and devices (desktop, laptop, tablet, and mobile phone). Some applications, such as widgets (Apple Weather, 2023; nafas | Indonesia Air Quality, 2023; Weather - Android Apps on Google Play, 2023), are now embedded or separated from the device operating systems. Environmental information can support people before, during, and after sports activities.

This research aimed to find appropriate environmental information from recreational sportspeople's understanding and awareness of the environment's effect on sports performance. This research will later support the sports information system web application.

RESEARCH METHODOLOGY

This research used quantitative and qualitative methods with probability, elementary random sampling, and descriptive and primary data. Measurements used statistical analysis.

Research Preparations

Before the research began, some preparations were made to ensure the research processes ran smoothly. Following Figure 1 shows how the research processes happened:

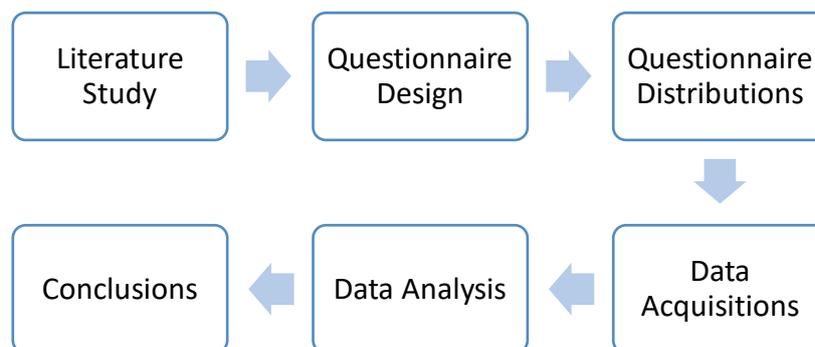


Figure 1. Research Processes

A literature study was conducted in early 2023 in a month. Some literature used was from International journals, national journals, official websites, and a few from formal regulation documents. An electronic-based questionnaire was then designed based on formalized instruments related to this research. After that, a designed questionnaire was distributed through instant messaging channels in a defined time duration and limited respondent domicile for specific results.

Data acquisition processes were made after the electronic form closed; the data was then exported into a spreadsheet format for further data analysis. Conclusions can then be taken based on analyzed data to answer the research question. Details for these steps are explained in the following section.

Questionnaire Design

The questionnaire has been made electronically with Microsoft Form based on former research experience with a similar approach (Wulandari & Wandy, 2023). Microsoft Forms helped gather respondents' data (*Microsoft Forms | Surveys, Polls, and Quizzes*, n.d.). The electronic form was generated in Bahasa Indonesia since the respondents focused more on specific regions (Jakarta-Bogor-Depok-Tangerang-Bekasi) in Indonesia.

The form also has a responsive feature; it can be accessed well in different desktop, laptop, tablet, and mobile phone screen sizes. This responsive feature made respondents easily participate in filling out the electronic form through smaller screen sizes like mobile phones.



Figure 2. Survey Form Screenshot

Figure 2 shows a welcome page form with the theme design provided by Microsoft Form for desktop. Respondents started to fill out the form once they clicked the Start Now button. Questions on the form covered the research related to sports and environment information. Questions used on the form based on the following Table 1:

Table 1. Survey Instruments

#	Question	Type	Option
1	Gender?	Option	Male, Female
2	Age?	Option	10-18 yo, 19-44 yo, 45-49 yo, 60 yo above.
3	Domicile?	Option	Jakarta, Bogor, Depok, Tangerang, Bekasi, Other.
4	Do you regularly exercise in a week?	Option	Yes, No.
5	Your regular sports activities	Option	Running, Cycling, Swimming, Walking, Badminton, Basketball, Martial Arts, Other.
6	Do you use environmental data before deciding to exercise?	Option	Yes, No.
7	Environmental information that you normally use in deciding to exercise	Option	Weather, Ultraviolet Light Index, Visibility, Wind Speed, Humidity, Air Quality, Temperature.
8	Where do you find environmental information before exercising?	Option	Smartphones, Radio, Websites, Television, Other.
9	Give your opinion on the following:	Likert 1-4	Environmental information affects exercise performance, The environmental information provided is accurate.

The first 3 questions were more to find the respondents' profiles based on gender, age, and location. Questions 4 and 5 were more into the respondents' sports activities. The rest of the questions covered how the environmental data related to sports. Likert 1-4 has the following details: 1 = Strongly disagree, 2 = Disagree, 3 = Undecided, 4 = Agree, 5 = Strongly agree.

Questionnaire Distribution

Designed questionnaires and then distributed them through groups via instant messaging. Microsoft Forms provide a shortened link for more accessible distributions. The form was opened a week from May 30, 2023, for a week. All nine questions were shown on a page to make the respondents easier to fill in and finish sooner.

Figure 3. Desktop Survey Form Screenshot

RESULT AND DISCUSSION

One hundred thirty-six respondents participated in this survey. Respondents took around 2 minutes and 11 seconds to fill out and complete the form. These data were exported from the provided feature into Microsoft Excel format (.xlsx) for further analysis. From the following Figure 4, respondents were divided into males and females with distributions of male 83 (61%) and female 53 (39%).

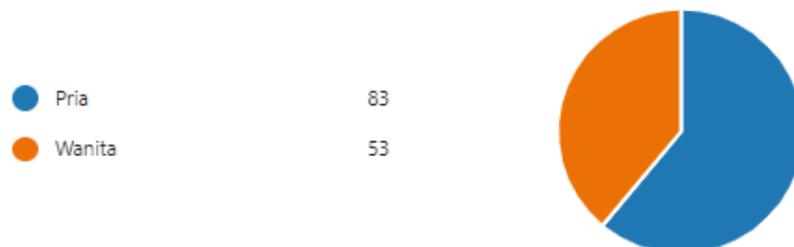


Figure 4. Survey Result – Gender

From the age respondents' distributions, four categories were generated based on (Kementerian Kesehatan Republik Indonesia, 2016) with few modifications on age range. Figure 5 shows the result:

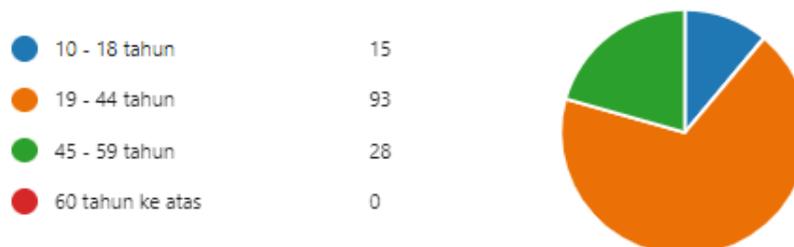


Figure 5. Survey Result – Age

From the four options provided, only one option (60 years above) was not picked by the elderly respondent. There were 15 teenage respondents (11%) aged 10-18. Most respondents were from 19-44 yo with 93 adult respondents (68%). Then 28 pre-age respondents (21%) participated in this survey.

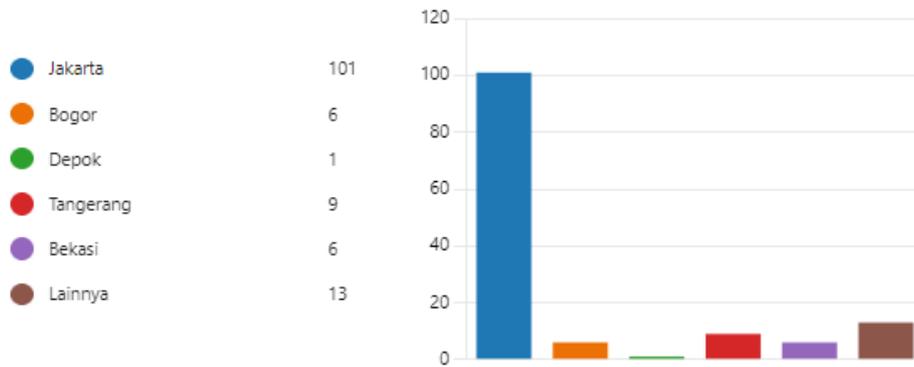


Figure 6. Survey Result – Domicile

Based on the domicile shown in Figure 6, respondents were targeted only from the Capital City of Jakarta and its surrounding (Jabodetabek) with one additional option for another. Most respondents were from Jakarta, with 101 (74%), and the rest were from the surrounding cities (26%). Next, Figure 7 shows the respondents' sports activities:

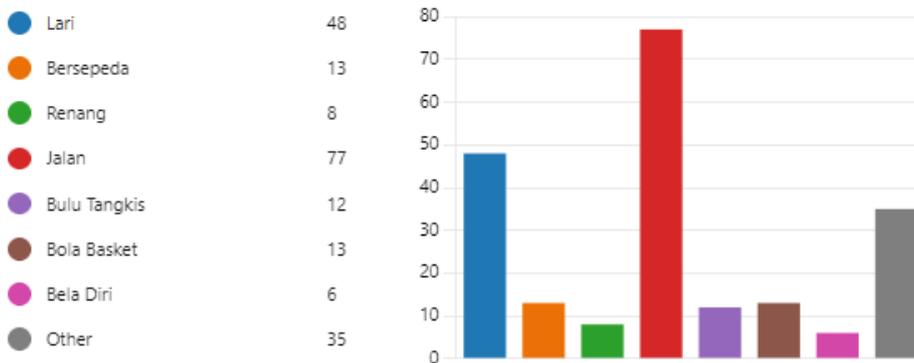


Figure 7. Survey Result – Sport Activities

As shown from the Figure that most of the respondents prefer walking (77), then running (46), and other sports (35). The rest of the respondents picked other sports activities. From question 6, 99 (73%) respondents used environmental data before deciding to exercise, and 36 (27%) were not. Then Figure 8 shows the environmental information.

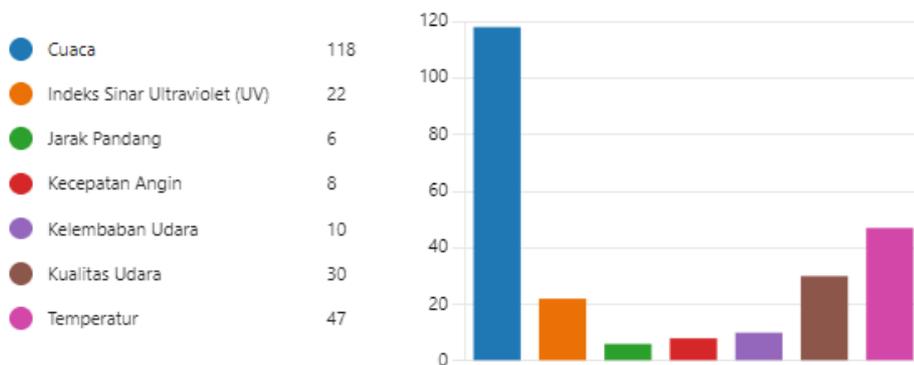


Figure 8. Survey Result – Environment Information

From Figure 8, weather (118) was the respondents' choice, followed by temperature (47) and air quality (30). From here, analysis can be made that respondents understand that the environmental information is helpful for the respondents before doing the sports activities.

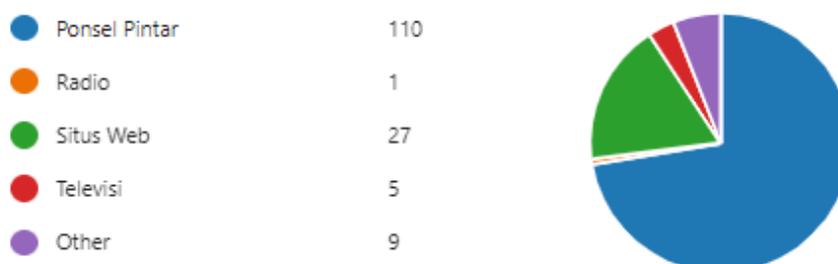


Figure 9. Survey Result – Where to Find the Information

In Figure 9, most of all respondents (72%) get the environmental information from their smartphones, 27 respondents (18%) from the website, and then other sources (6%). This information can be analyzed so the respondents can easily find environmental information from smartphones and websites. Following Figure 10 shows the respondents' opinions based on Likert:

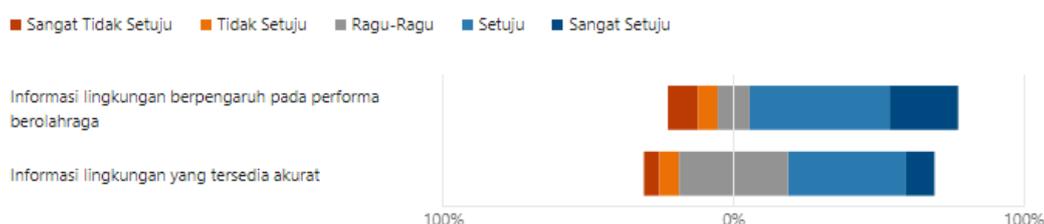


Figure 10. Survey Result – Opinion

The Figure shows that 48.1% of respondents agree and 23.7% strongly agree that environmental information affects sports performance. The rest of the options were chosen in small values. The subsequent opinion was that the environmental information provided is accurate, where 40.6% agree, followed by undecided with 37.6%.

CONCLUSION

Walking (77) and running (48) were the most sports activities picked by the respondents. Then 99 (73%) respondents used environmental data before exercising. Weather (118) was the respondents' choice, followed by the temperature (47) and the air quality (30). Most respondents (72%) get environmental information from their smartphones, and 27 (18%) get it from the website. Environmental factors may impact sports activity performance, and the respondents used environmental information before the sports activities began.

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