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

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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.

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 & Pudijuniarto, 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](https://example.com/figure1.png)

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.

![Survey Form Screenshot](image)

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

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.

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%).

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:

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.
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:

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.

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:

![Survey Result - Opinion](image)

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 sport activity performance, and the respondents used environmental information before the sports activities began.

REFERENCES


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