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Utilization of WEB based Technology Through the Sepak Takraw Sports Match Administration System Application

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Abstract

This research generally aims to produce a Web based match administration system application product. This study uses the development model from Borg and Gall which is adapted into a simple model, namely: determining research potential and problems, gathering information, needs analysis, product design and design validation, media expert testing, IT expert testing, takraw expert testing, trials small group, revise the results trials, trials large group, revise the results trials, final product development. The research results show from the results. Phase I trials were conducted on 15 sports science faculty students. Phase II trials were conducted on 30 people athlete and takraw administrators in North Sumatra who are classified as active. Of the 15 small group trial samples with a total score of 3.80 divided by the maximum score resulting in a presentation of 79.45% with the criteria Worth it. The results of large-scale trial data (stage II) against athlete and takraw administrators in North Sumatra who are classified as active, it can be seen that with an average percentage of 92.65% in the category So Worth it. The researcher concludes that the application product for the administration of a web-based Sepak Takraw sports match is already worth using the foresee match administration system. The use of application products is a new way for stakeholder and takraw sports activists in North Sumatra in carrying out drawing matches and when you want to chart matches.

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INTRODUCTION

Science and Technology (Science and Technology) is currently experiencing very rapid development. According to (Setiawan et al., 2019), technological developments change various sectors of world life that are present to facilitate human work in carrying out their daily tasks. Technology is increasingly advanced accompanied by the rapid development of knowledge creating creative and innovative works (Harahap et al., 2023). Almost all aspects of society and science have been affected from the rapid development of science and technology. The development of science and technology is very influential in the political, economic, social and cultural fields. In addition, the development of science and technology also has a big influence in the field of sports. According to (Nurkadri et al., 2023a) Science and technology, which has experienced rapid progress in recent years, has made humans build various kinds of equipment as tools to carry out various activities to support their productivity. According to (Imran Akhmad, 2017), the progress of science and technology has helped many human activities, especially in the field of sports both in various matters regarding training and also competitions and contests. The existence of science and technology support will help and improve the quality of all components involved in a match or competition. Efforts to improve sports are always followed by the latest technologies.

Technological developments in sports are very fast, as evidenced by the many changes ranging from infrastructure, information, match systems, refereeing. Furthermore, (Supriadi & Mesnan, 2022) Various examples of technology in sports are the deep hawkeyes football matches, digital scoreboards in basketball matches and badminton, ball throwing tools in volleyball practice and others. Even so, in other sports fields, systems are still found matches that do not support such as the respective scoring system classified as manual. The presence of a match system that utilizes technology will certainly make it easier for judges/referees to determine the winner. Apart from that, it will make it easier for the audience to find out the score between the competing teams (Zulyaden et al., 2022).

The technology that is now widely used by consumers is the smartphone. Smartphones have various conveniences to offer. According to (Sinaga et al., 2022) Smartphones or in Indonesian can be called smart phones are developments from previous mobile phones which only had a few functions such as SMS or telephone. However, smartphones. For now it already has several multi-functional advantages that can help human work and facilitate the desired activities on one hand (Aprilianto, 2021). According to (Marpaung & Al Amzah, 2022) a smartphone is a device that allows for communication (calling or texting) but also includes a PDA (Personal Digital Assistant) function and has computer-like capabilities. Currently around 1.7 billion smartphones are used worldwide, while the total world population is 6 billion (Ajayati, 2017). Smartphone users in Indonesia are also growing rapidly. Digital marketing research institute Emarketer estimates that by 2018 the number of active smartphone users in Indonesia will be more than 100 million people.

In the development of the sport of takraw, it is a sport that prioritizes science and technology, one of which is the development of a detecting eagle eye full service which was developed by (R. Wulandari, 2020) which explains that the product development tools and

applications for eagle eye detection foul service on service circle can facilitate the performance of the referee in determining violations in the implementation of service and to provide evidence of violations committed by tekong in the form of video recordings. Regarding the development of eagle eye tools and applications, it is hoped that they will begin to be applied in the sport of takraw and bring up new ideas for the development of eagle eye tools and applications. From this research it can be explained that the development of technology-based eagle eye applications is urgently needed for the game of sepak takraw, especially to see foul errors from athletes. Sepak Takraw is a sport that is played by a team and has cultural elements in it, one of which was often played among coastal people in the early afternoon. With the previous research that the researcher put forward, it can be seen that the game of takraw has begun to utilize technology in its development. Using technology is felt to be able to increase the efficiency and effectiveness of excessive use of paper, because the application of technology is felt to be able to reduce the effect/dependence on paper and can be converted into appropriate technology that is able to solve problems that occur.

Sports are currently developing along with technological advances in today's modern era. Many matches use sophisticated and automated support tools (Arifin et al., 2023). The development of the game of takraw has begun to mushroom among the public at this time, as evidenced by the fact that there have been many takraw matches held both at the regional, national and international levels, but in the development of the game of takraw so far there has not been the use of the technology that is felt necessary in this game. Technological developments always encourage people to find new innovations, one of which is in terms of data processing (Hutagalung et al., 2023)

The rapid development of technology makes the authors want to develop a technology-based match system application where the technology designed by researchers makes it easy to record and operate match charts, an application-based match administration system designed to make it easier for committee/participants to draw matches, because the results of the draws are done online and the system randomizes each chart. The design of an application-based match administration system is designed to develop a match organization system and a digital scoring system, namely in the automatic charting process in the form of software (software) hereinafter referred to as the application. In addition, the designed application also provides settings for making match schedules and administering match data such as inputting player data and match results. "In order for an application to be effective, efficient and able to provide satisfaction to users, the application must be able to provide opportunities for users to complete their activities on the application as best as possible. If the match system that was created can be developed to this point, the match organizers will be greatly helped by the existence of this application.

The results of observations made by researchers during the tournament Sepak Takraw match at the North Sumatra level, the making of the match system is still using the manual method using paper and other writing instruments, this has become an anomaly in the midst of an increasingly rapid technological onslaught, especially since the use of science and technology is expected to be able to minimize the use of paper which is now an issue that is very much discussed in the world, besides that

the organizers also have difficulty making match schedules if the number of matches and participants registering is relatively large, besides that charts written on paper are still posted in several corners of the place to make it easier for officials to see match schedules.

To strengthen the background of the problem that the researcher put forward, the researcher tried to do a needs analysis to see the need for the application that the researcher developed, a needs analysis that the researcher made through a questionnaire, then the researcher gave it to several national takraw referees and match officials during the takraw which was held at the Multipurpose Sport Hall, Jalan Willem Iskandar. From these results it is known through the following percentages: 100% of referees and administrators do not know that there is an application-based match administration system that is able to randomize manually, 100% of referees and administrators say that an application-based match administration system is needed, 100% of referees and administrators have never seen and carried out an application-based match administration system, 100% of referees and administrators need a match system application android based to maintain transparency, 100% of referees and administrators want to get the match system application android based.

Based on the description of the background of the problem, innovation is needed to develop an application model that can accommodate notes or data on the implementation of takraw competitions. The product specifications developed in this study are in the form of a computerized competition-based match organization system application model that is packaged in a form file Microsoft Excel or Spreadsheet. The product to be produced is in the form of a file folder that contains guidelines for using the application and contains an explanation of the results of the development carried out, to make it easier to understand the application. Theoretically, this research is expected to be useful as a reference or reference for developing further research. As a reflection for the PSTI management to develop a computerized match organization system application model.

METHODS

The approach used in this study according to (Sugiyono, 2010) is a process or steps to develop a new product or perfect an existing product, and can be accounted for. Meanwhile, according (Endriani et al., 2022) development focuses not only on needs analysis, but also on broad issues regarding initial-end analysis, such as contextual analysis. Development aims to produce products based on field test findings. From the explanation above it can be concluded that development is a conscious, planned, directed effort to make or improve, so that it becomes a product that is increasingly useful to improve quality as an effort to create better quality.

Furthermore, the final result of this research and development is the development of an application for the administration of a web-based sepak takraw competition system. This study used the development model from Borg and Gall which was adapted into a simple model, namely: determining research potential and problems, gathering information, needs analysis, product design and design validation, media expert testing, IT expert testing, takraw expert testing, small group testing, revising trial results, large group testing, revising trial results, final product development.

Research and development in this process uses a quantitative approach and uses a research design Research &

Development (R&D) from Borg and Gall which consists of ten steps, among others.

1) Research and Information Collecting
2) Planning
3) Develop Preliminary of Product
4) Preliminary Field Testing
5) Main Product Revision
6) Main Field Test
7) Operational Product Revision

The techniques used for data collection in this study used questionnaires, interviews, documentation, and observation. Questionnaires are used to determine the opinion of respondents to web-based match administration system application. Observations are used to see the needs needed in the field. The questionnaire is a data collection tool that contains a number of questions or statements that must be answered by research subjects. Based on its shape, questionnaires can be open and closed.

RESULT

This development research aims to produce a product For researchers who are based on innovation by utilizing WEB-based applications, innovation is needed to develop an application model that can accommodate records or data of a takraw competition. The product specifications developed in this study are in the form of a computerized competition-based match organization system application model that is packaged in a form file Microsoft Excel or Spreadsheet. The product to be produced is in the form of a file folder that contains guidelines for using the application and contains an explanation of the results of the development carried out, to make it easier to understand the application. Theoretically, this research is expected to be useful as a reference or reference for developing further research. As a reflection for the PSTI management to develop a computerized match organization system application model.

WEB-Based Sepak Takraw Match Administration System Application Design

The rapid development of technology makes the authors want to develop a technology-based match system application where the technology designed by researchers makes it easy to record and operate match charts, an application-based match administration system designed to make it easier for committee/participants to draw matches, because the results of the draws are done online and the system randomizes each chart. The design of an application-based match administration system is designed to develop a match organization system and a digital scoring system, namely in the automatic charting process in the form of software (software) hereinafter referred to as the application. In addition, the designed application also provides settings for making match schedules and administering match data such as inputting player data and match results. "In order for an application to be effective, efficient and able to provide satisfaction to users, the application must be able to provide opportunities for users to complete their activities on the application as best as possible. If the match system that was created can be developed to this point, the match organizers will be greatly helped by the existence of this application.

So from the results of the discussion/analysis and problem solving above carried out by the researcher, the researcher is interested in conducting research with the title "Development of Android-Based Match Administration System Applications" where the tool is expected to be able to answer the problems that have been expressed by researchers and it is hoped that the tool to be developed will be able to advance

technology, especially in treasury and become a trigger for sports people, especially at Medan State University in developing applications that are in accordance with their respective functions. The following is a display on the product that the researcher developed

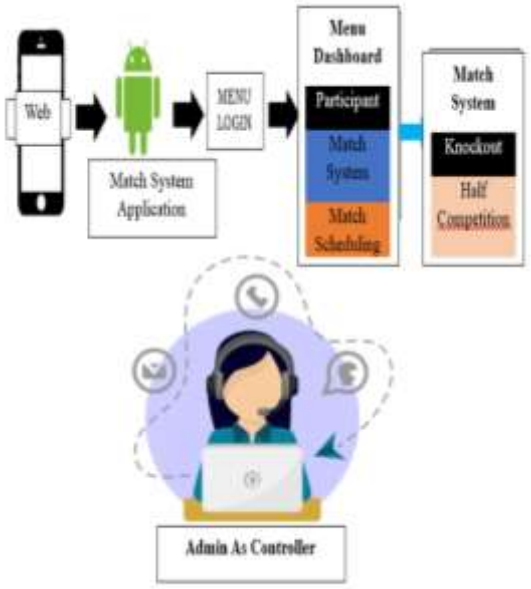

Figure 1. WEB-Based Match Administration System Application Model

Implementation Method

Login via the Web (Web-based application), then enter on the menu dashboard, and in that menu there are several menu options: Participants, Match System (1. Knockout System, 2. Half Competition System) and Match Scheduling. The product being developed is also equipped with a narrative that contains instructions for use and work systems. It is hoped that this narrative will serve as a guide for program users so they can recognize, understand and be able to use the application software "that the researcher developed" properly and correctly. The following shows the final product display for the preparation of a computerized-based match system application model in the sport of takraw as a model for the preparation of a computerized-based match system.

Small Scale Trial Results

Phase I trials were carried out on 15 sports science faculty students. The aim was to provide input and evaluate the results of trials conducted on samples to see the level of usefulness of the application and the effectiveness of the application of the web-based Sepak Takraw sports match administration system, so that it meets the theoretical and empirical eligibility criteria.

The data obtained is then used as a basis for efforts to make revisions at a later stage. Results obtained in the field after carrying out Phase I trials is web-based football match administration system application that is used can work quite well but must have a good internet network so it doesn't take too long to log in to the application. From the results of trials conducted by researchers on 15 sports science faculty students, it can be seen that they have been classified in the form of a questionnaire, by grouping them into 3 aspects, namely, clarity of material, material aspects so that a total of 12 questions, the results of the answers are grouped into 5 categories, namely SS (Strongly Agree), S (Agree), SD (Moderate), TS (Disagree), STS (Strongly Disagree) with an assessment of 5,4,3,2,1. The results of the phase 1 trial of 15 sports science faculty students who took the takraw course were outlined through the formula for the percentage of the number of answers/maximum score x 100% with the following results. Of the 15 small group trial samples with a total score of 3.80 divided by the maximum score resulting in a presentation of 79.45% with the criteria Worth it. During the phase I trial, the researcher found findings in the field regarding the web-based application of the takraw sports match administration

system which the researcher poured into a table1.

Table 1. Research Findings

No	Research Findings
1	To login to the application menu, you must use the internet network, so that the application responds quickly
2	We recommend that when accessing web applications it would be better if you use a laptop because the display is not cut off
3	The results of the assessment recapitulation should be stored in a pdf file

Product Development Evaluation Web-Based Sepak Takraw Match Administrative System Application by Experts (Validators)

From the results of product trials that have been carried out the experts also provide input and evaluations of the results of observations of web-based football match administration system application which is conducted in the field. The following is the evaluation and input provided by experts:

App Design Expert Evaluation

The following is a brief explanation of the evaluation and suggestions from media experts presented at Table 2. below this:

Table 2. Evaluation Results of Application Design Experts

No	Revised Matters	Revision Results
1	Application should be added feature-feature which is more interesting	Feature on the menu dashboard adjusted to the needs of the match administration system that is in accordance with the match administration system that is often used in tournament football
2	Election Color on the menu dashboard should be adapted to the characteristics of the sport of takraw	Will be adjusted with member input
3	On the menu dashboard should filled by the image of the PSTI emblem	The addition of the PSTI symbol will be adjusted

IT Expert Evaluation Results

The following is a brief explanation of the evaluation and advice from test and measurement experts presented in Table 3. below this:

Table 3. Evaluation of IT Experts

No	Revised Matters	Revision Results
1	The designed application design is easy to access via the HP Web	Applications can be accessed via HP Web with a web page
2	Customizable application menus	The application menu is adapted to the takraw match administration system
3	Application should be easily accessed by anyone, especially for the committee that want to roll out tournament	Socialization will be carried out
4	Color the app and the app name made even more interesting	The color will be adjusted accordingly color characteristic of PSTI

Expert Evaluation of Sepak Takraw Referees

The following is a brief explanation of the evaluation and suggestions from academic experts presented at Table 4. below this:

Table 4. Evaluation Results of Takraw Referee Experts

No	Revised Matters	Revision Results
1	Better explain target use of Web-based match administration system application	The trial was conducted on users and stakeholder takraw sports
2	Results data drawing and matches should be stored in the application	Data stored in the implementation of the application can facilitate processing
3	The clarity of the material aspects is adjusted to the understanding of the tester with a simple language selection	Material aspects are explained through question items
4	Make a manual for using the match administration application	Instructions for use Web-based match administration system application will be designed according to application usage
5	Menu on dashboard made larger to make it easier to see	Will be adjusted with expert advice

Phase II Trial Results

Phase II trials were carried out on 30 athletes and takraw administrators in North Sumatra who were classified as active. This aimed to provide input and an assessment of the results of trials conducted on samples to see the level of usefulness of the tool and the effectiveness of its application for Indonesian National Police members, so that they met the theoretically and empirically feasible criteria.

The data obtained is then used as a basis for efforts to improve the final product of the application for the National Police. Results that got in the field after conducting trials Phase II is work web-based football match administration system application whether it is feasible to use and meet the criteria referred to in web-based football match administration system application. From the results of the trials conducted, it can be seen and classified in the form of questionnaires. The results of large-scale trial data (stage II) against athletes and takraw administrators in North Sumatra who are classified as active it can be seen that with an average percentage of 92.65% by category "Really Worth It" to be used as a new way of doing input data into the takraw match administration system application.

DISCUSSION

Sport is now part of the needs of every person in the world everyday life. Sport is all systematic activities to encourage, foster and develop physical, spiritual and social potential (Akhmad, 2016). Everyone has their own goals in carrying out a sports activity. Exercise can be done as exercise, education, entertainment, recreation, achievement, profession, politics, business, industry, and various other aspects of human culture (Dewi & Verawati, 2021). Achievement sports are sports that are intended as an effort to increase the potential abilities of athletes in order to increase their prestige and the dignity of the Indonesian nation. The progress of a nation in the international world. This can be reflected in the sporting achievements that have been achieved. According to (Rizal et al., 2018), countries where science and technology are developing rapidly, their sporting achievements tend to develop rapidly.

Science and Technology (Science and Technology) is currently experiencing very rapid development. According to (Cahyono et al., 2021), technological developments have changed various sectors of world life that are present to

facilitate human work in carrying out their daily tasks. Technology is increasingly advanced accompanied by the rapid development of knowledge creating creative and innovative works (Mustafa & Dwiyogo, 2020). Almost all aspects of society and science have been affected from the rapid development of science and technology. The development of science and technology is very influential in the political, economic, social and cultural fields. In addition, the development of science and technology also has a big influence in the field of sports. According to (Sugiyani & Amrullah Ritonga, 2015) Science and technology, which has experienced rapid progress in recent years, has made humans build various kinds of equipment as tools to carry out various activities to support their productivity. According to (Nurkadril et al., 2023), the progress of science and technology has helped many human activities, especially in the field of sports both in various matters regarding training and also competitions and contests. The existence of science and technology support will help and improve the quality of all components involved in a match or competition. Efforts to improve sports are always followed by the latest technologies.

Technological developments in sports are very fast, as evidenced by the many changes ranging from infrastructure, information, match systems, refereeing. Furthermore, (Burstiando, 2015) Various examples of technology in the field of sports, namely hawk eyes in football matches, digital scoreboards in basketball and badminton matches, ball throwing devices in volleyball practice and others. Even so, in other sports there are still match systems that do not support such as a scoring system which is classified as manual. The presence of a match system that utilizes technology will certainly make it easier for judges/referees to determine the winner. Besides that, it makes it easier for the audience to find out the scores between the competing teams (Muspita, 2022).

The technology that is now widely used by consumers is the smartphone. Smartphones have various conveniences to offer. According to (Kresnapati et al., 2020) Smartphones or in Indonesian can be called smart phones are developments from previous mobile phones which only had a few functions such as SMS or telephone. However, smartphones now have several multi-functional advantages that can help human work and facilitate the desired activities on one hand (Aditya Gumantan, 2020). (Nurkadri et al., 2023b) smartphone is a device that allows for communication (call or sms) but it also contains PDA (Personal Digital Assistant) functions and computer-like capabilities. Currently around 1.7 billion smartphones are used worldwide, while the total world population is 6 billion. User Smartphones in Indonesia are also growing rapidly. Digital research institute marketing Emarketer estimates in 2018 the number of active Smartphones users in Indonesia are more than 100 million people. With that amount, Indonesia will become the country with the largest active smartphone users fourth in the world after China, India, and America (Ardhana, 2018). This smartphone is equipped with an operating system that supports running very popular device and which most users choose viz Web operating system (Wahyudi & Disetujui, 2022) Smartphone Web that comes with various features according to needs. which operating system underlying the Web is licensed under the GNU General Public License Version 2 (GPLv2), which is often known as a “copyleft” license where each. Third party repairs must continue to fall under the terms (Suprapti et al., 2022). Web Operating System (OS) based device

operating system, namely open platform so that it can be run on various mobile devices and Internet Devices (MID). The popularity of the Web is due to this openness as well as free development to produce a lot application, as (Sintaro et al., 2020) says, "Now the Web system in the electronics market is becoming more and more popular, especially in the smartphone market. Because of the open source, some of the development tools are free, so there are plenty of applications generated". The development of science and technology changed various sectors of world life that were present to make it easier for humans to work in carrying out their daily tasks. According to (Sianturi, 2016), the reason consumers have smartphones is because they are easy to carry everywhere. Everyone's Web-based smartphone can have any desired application. Smartphone this makes it easy humans in carrying out activities of daily needs in a way Download the required features.

In the development of the sport of takraw, it is a sport that prioritizes science and technology, one of which is the development of a detecting eagle eye full service which was developed by (H. Wulandari et al., 2018) which explains that the product development tools and applications for eagle eye detection foul service on service circle can facilitate the performance of the referee in determining violations in the implementation of service and to provide evidence of violations committed by tekong in the form of video recordings. Regarding the development of eagle eye tools and applications, it is hoped that they will begin to be applied in the sport of takraw and bring up new ideas for the development of eagle eye tools and applications. From this research it can be explained that the development of technology-based eagle eye applications is urgently needed for the game of sepak takraw, especially to see foul errors from athletes. Sepak Takraw is a sport that is played by a team and has cultural elements in it, one of which was often played among coastal people in the early afternoon. With the previous research that the researcher put forward, it can be seen that the game of takraw has begun to utilize technology in its development. Using technology is felt to be able to increase the efficiency and effectiveness of excessive use of paper, because the application of technology is felt to be able to reduce the effect/dependence on paper and can be converted into appropriate technology that is able to solve problems that occur.

Sports are currently developing along with technological advances in today's modern era. Many matches use sophisticated and automated support tools (Sinaga et al., 2022). The development of the game of takraw has begun to mushroom among the public at this time, as evidenced by the fact that there have been many takraw matches held both at the regional, national and international levels, but in the development of the game of takraw so far there has not been the use of the technology that is felt necessary in this game. Technological developments always encourage people to find new innovations, one of which is in terms of data processing (Rosita, 2014)

The rapid development of technology makes the authors want to develop a technology-based match system application where the technology designed by researchers makes it easy to record and operate match charts, an application-based match administration system designed to make it easier for committee/participants to draw matches, because the results of the draws are done online and the system randomizes each chart. The design of an application-based match administration system is designed to develop a match organization system

and a digital scoring system, namely in the automatic charting process in the form of software(software) hereinafter referred to as the application. In addition, the designed application also provides settings for making match schedules and administering match data such as inputting player data and match results. "In order for an application to be effective, efficient and able to provide satisfaction to users, the application must be able to provide opportunities for users to complete their activities on the application as best as possible. If the match system that was created can be developed to this point, the match organizers will be greatly helped by the existence of this application.

CONCLUSION

The results of the research that has been done, the researchers concluded that the application product of the web-based sepak takraw sports match administration system This is suitable for use to see the match administration system. The use of application products is a new way for takraw stakeholders and activists in North Sumatra to do it drawing matches and when you want to chart matches. Application product development research makes the sport of takraw more sporty and transparent because the match charts are distributed randomly without any presence intervention from any party. The use of technology and information in supporting the fulfillment of the increasingly growing globalization era is evident from the results study. What has been done shows that the product being developed can be used anywhere, anytime but still has to have an internet network.

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