Development of Athlete's Registration Management and Monitoring System

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Abstract

Now the computer technology is vital. Sports website uses for a market promotion that invites more student-athletes to enroll in the university and vie for athlete's scholarship who want to play in the university engage in sports. The university needs the eligibility for the registration of the athletes such as passing grades, certified a true copy of birth certificate and playing years of residency for both colleges and high school divisions. The system has registration center for the visitors, student-athletes, parents, coaches, officials and school administrators to help eliminate paper works prepare in the high school and college division. In the PE department registration is tedious because it was done manually and has resulted in a number of traditional problems. The purpose of this study mainly focused on developing of athlete's registration management and monitoring system of student-athletes in the PE Department of the University of the East for every season of the UAAP. The student-athletes will be able to monitor their allowances that will be given to them by the university based on their attendance in training. The department is responsible for downloadable PDF files and will be available in athlete's portal for them to know about the fall sports schedules and calendar activities. In the calendar activities, it will show all the extracurricular activities that the department works for safe, effective experienced with all activities and ensures that all programs operate in the UAAP and UNI-games. Thus, communicate through emails. A survey questionnaire was used to gather data from the respondents. The Waterfall Model was used to develop the software. The results showed that the Registration Management and Monitoring System developed is highly favorable to users.

Keywords: Athletes; Monitoring; Sports Performance; Registrations; Management System; Monitoring; Evaluation Sports; Performance; Athletes Sports Marketing.

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1. Introduction

Athletes from different colleges and universities compete annually in different sports to vie for a championship, such as a basketball, volleyball, and fencing. The athletes are not only facing the external demands and pressures of a championship but also the internal demands (e.g., grades, schedule, performance) in their respective schools as well as the expectations from different sources such as media and sports enthusiasts. It is now apparent that colleges and universities are being challenged as never before by the demands of collegiate athletic association's (e.g., UAAP, NCAA) for greater performance. Thus, the need for developing an efficient and effective athlete's registration management and monitoring system for athletes is well understood today in the field of collegiate sports to make the athletes more competitive, especially in the race for championships [4].

There are registrations for the athletes, the parents, the coaches, and the administrators in the department. The athletes must submit their details by profiling in the registration form. This will lessen the tedious work of the department unlike the traditional way of collecting the student athlete's profiles. The parents must register to have an account for them to be able to use the parents portal allows them to view the calendar activities and news pages. The academic progress of the athletes and the graduation success rates.

For the visitors the registration works for the member of a club that is affiliated to UE Athletes. For the affiliation year from January 2017 charge at 1$. The charge is often paid by the club member alongside their membership subscription and many clubs state this when publicising the membership fee. For the fans they can register to claim the tickets for them to watch the game sports type they want to see live. For the students-athletes they can use students ID to access the page.

Management the athletes to provide their games such as venue, transportation, allowances, foods, and uniforms during the season of the UAAP games. The university preparation for the season of the UAAP every year is by joining extracurricular activities to bost their confidence and enhance their skills. Each team looks for the opponents for the tournaments outside the university to practice as counterpart to enhance their skills. The athletes must competes outside the campus to develop their skills snd to adapt the places.

The primary function of monitoring and evaluation system is to provide information on how to do things better through a better understanding of what works and what does not. Access to appropriate data and datasets that can be processed into usable, timely and relevant statistical information is essential for effective monitoring and evaluation [6]. Monitoring is a continuous function that uses the systematic collection of data on specified indicators to provide management and the main stakeholders of an ongoing development intervention with indications of the extent of progress and achievement of objectives and progress in the use of allocated funds. On the other hand, evaluation is the systematic and objective assessment of an on-going or completed project, program, or policy, including its design, implementation, and results. The aim is to determine the relevance and fulfilment of objectives, development efficiency, effectiveness, impact, and sustainability (Organization for European Co-operation and Development (OECD) [3]. For accountability purposes, both monitoring and evaluation may be used. Monitoring can help to confirm whether a planned intervention has taken place while evaluation can help to assess its effectiveness. Both monitoring and evaluation can serve learning purposes [5].

However, traditional monitoring and evaluation strategies are still being implemented to monitor individual athletes (Reyes, 2015). For instance, the monitoring and evaluation of athletes in the University of the East are done using a non-electronic device where athletes are asked to fill out an eligibility form that is analyzed few hours and even days after the information are filled out. After which, the information is encoded by the assigned personnel in the ABS-CBN Sports Website. This method is inefficient in providing timely, trustworthy, and relevant information as well as systematic evaluation of athletes due to a combination of several factors (e.g., time, costs, space, and labor).

2. Review of related literature

Many monitoring and evaluation strategies are implemented to sustain development programs and projects. For example, results-based monitoring and evaluation systems are essential components of the governance structure and are thus, fundamentally related to the political and power systems of government. Monitoring and evaluation systems provide critical information and empower policymakers to make better-informed decisions [3]. Monitoring and evaluation system is also used to track progress in implementing adaptation interventions, and/or how these interventions are reducing vulnerability, improving adaptive capacity, and supporting the overall well-being of populations affected by the impacts of climate change [5]. . The present study explores monitoring and evaluation processes within the context of athletes and collegiate sports. Monitoring and evaluating systems are utilized to track the progress of poverty reduction strategies [6]. An attempt was also made to develop a monitoring and evaluation system for practitioners of budget work (e.g., health, education, livelihoods) [2]. Furthermore, monitoring and evaluation of sports performance are seen as a continuous process monitoring in professional sports at all levels is based on a strict formative assessment and accountability. Assessing, recording, and monitoring is important in the process of designing sports performance. Monitoring an athlete's training program helps ensure they are in the best possible condition to increase performance in sports [4]. To provide meaningful feedback, the coach must somehow observe and evaluate performance. Traditional coaching intervention often involves subjective observations and conclusions based on the coach's perceptions, biases, and own previous experiences. However, a number of studies have revealed that the subjective observations are potentially both unreliable and inaccurate. Human memory systems have limitations and it is almost impossible to remember accurately all meaningful events that take place during an entire competition [7]. The game is watched and the coach will form an idea of positive and negative aspects of performance. Often the results from previous games, as well as performances in practice, are considered before planning and preparing for the next match. After this game is played the process repeats itself [7]. Performance appraisal system for the intercollegiate coach's evaluation is measured by six dimensions such as team athletic outcomes, team academic outcomes, ethical behavior, fiscal responsibility, and recruit quality and athlete satisfaction [8].

However, the use of technology to enhance coaching and performances has been recognized as an important and effective undertaking. However, many of the available tools are not oriented toward the coaches who will be using the technology. Focusing on the user's needs and tasks is not a new idea. Developments that focused mainly on the technology or the machine itself, rather than on the needs and the tasks of the end-users have been criticized by many researchers [9].

Performance analysis is usually thought of terms of providing feedback for the players and coaches to enable improvement in sports performance. This is not necessarily so, as media coverage of sport often adds statistical detail to their reporting of events for the purpose of informing the sports fan [10].

3. Statement of the problem

1. What were the strengths and weaknesses of the manual monitoring and evaluation of athletes that the research would like to address?
2. What features and specifications of the computer program/ software were developed for the athlete's registration management and monitoring system of athletes?
3. How was the developed computer program for the athlete's registration management and monitoring evaluation of athletes appraised in terms of:

   A. Appropriateness
   B. Learnability
   C. Operability
   D. User-Interface Aesthetics?

4. How would the researcher developed program for monitoring and evaluation of athletes in the University of the East be integrated into the present system?
5. How the usability of the athlete's registration management and monitoring system is designed for?
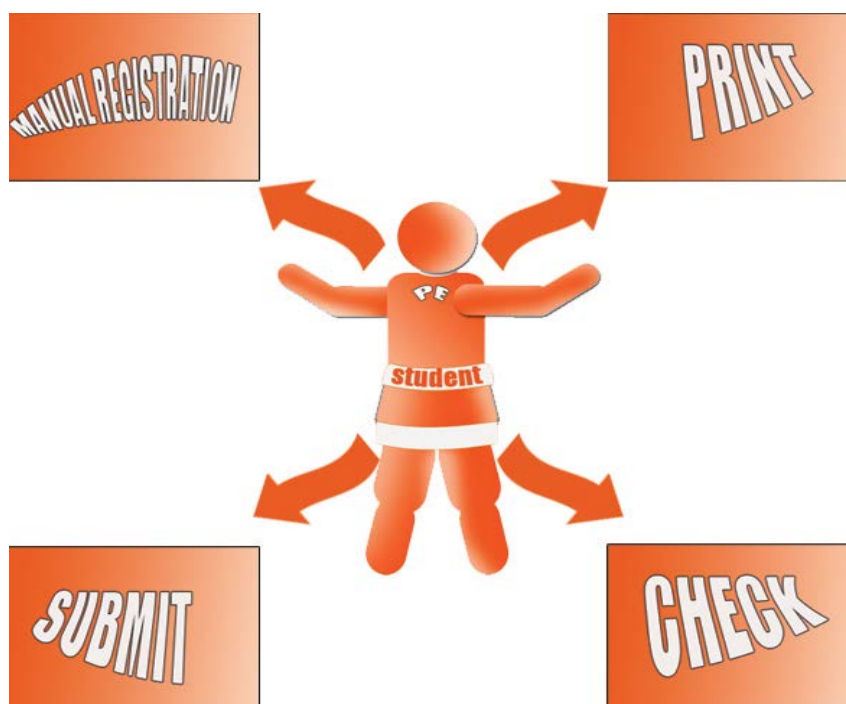
4. Theoretical framework

Figure 1: Theoretical Framework

The University of the East uses traditional registration methods of the student's athletes. The existing system is doing a manual registration, print, check and submit by the staff of the PE Department. These methods are still effective in recommending the athletes in joining the UAAP season and UNI-games.
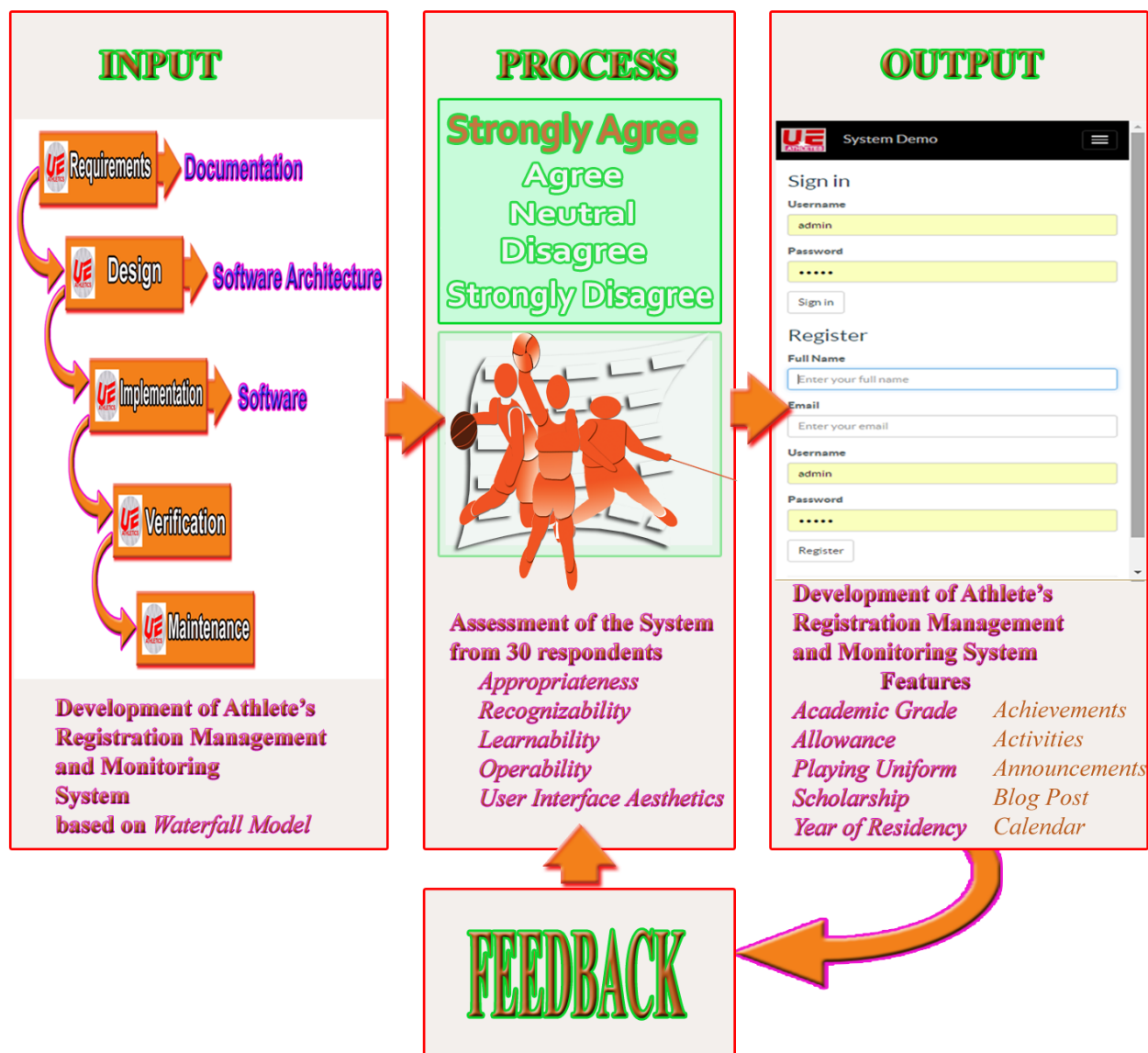
Conceptual Framework

Figure 2: Structural Diagram of the Study

The purpose of this study mainly focused on developing the monitoring system for the database information of student-athletes in the PE Department of the University of the East. **Input**- The *Waterfall Model* was utilized to develop the system. It is a 5-step cyclical process which started with the *requirements* of pooling the gathered data and information to come up with the system contents. This allowed the researchers to estimate the software

development tools needed. Then *design* was drafted to prepare the blueprint of the system. Necessary modifications of the system were noted to fit the needs of the PE department. Once the blueprint was in place, the *implementation* of the working system was done to test the software. *Verification* to check for the system error was also completed after the initial run of the system. *Maintenance* of the system was necessary to update the web contents. **Process**- Prior to the last phase, the researchers developed an assessment tool of the system using a 5-point Likert scale to evaluate its overall usefulness and areas for improvement. Four criteria were included and questionnaires were distributed to 30 respondents. Scores were tallied and survey results were determined. **Output**- The Athlete Coaching Performance Appraisal System will be used by the PE Department.

5. Materials and method

Research Design

Figure 3: Login Page

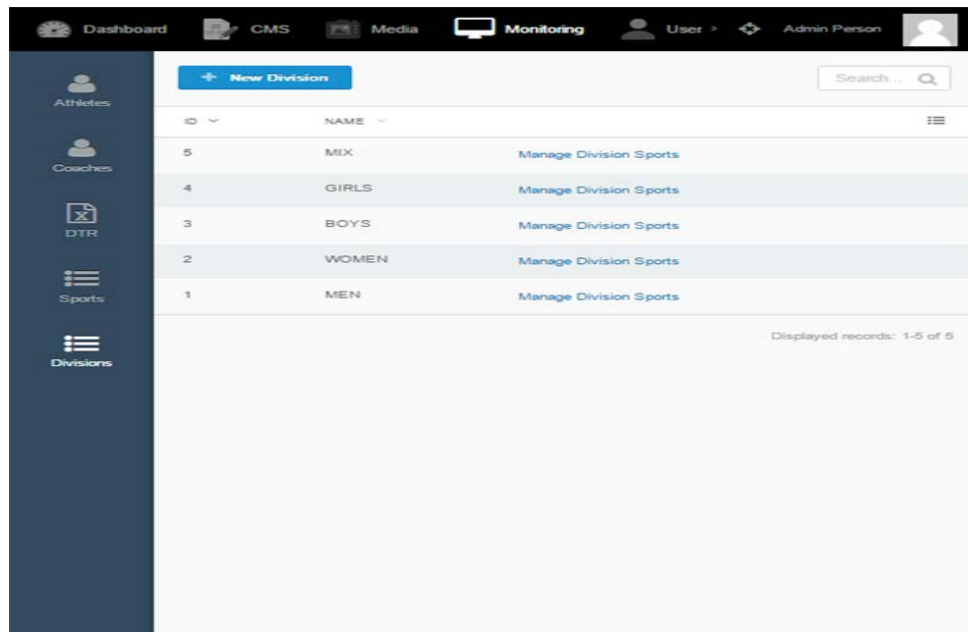The user will register first to the system to see the main page. The features of the system will be displayed.

Figure 4: Manage Division
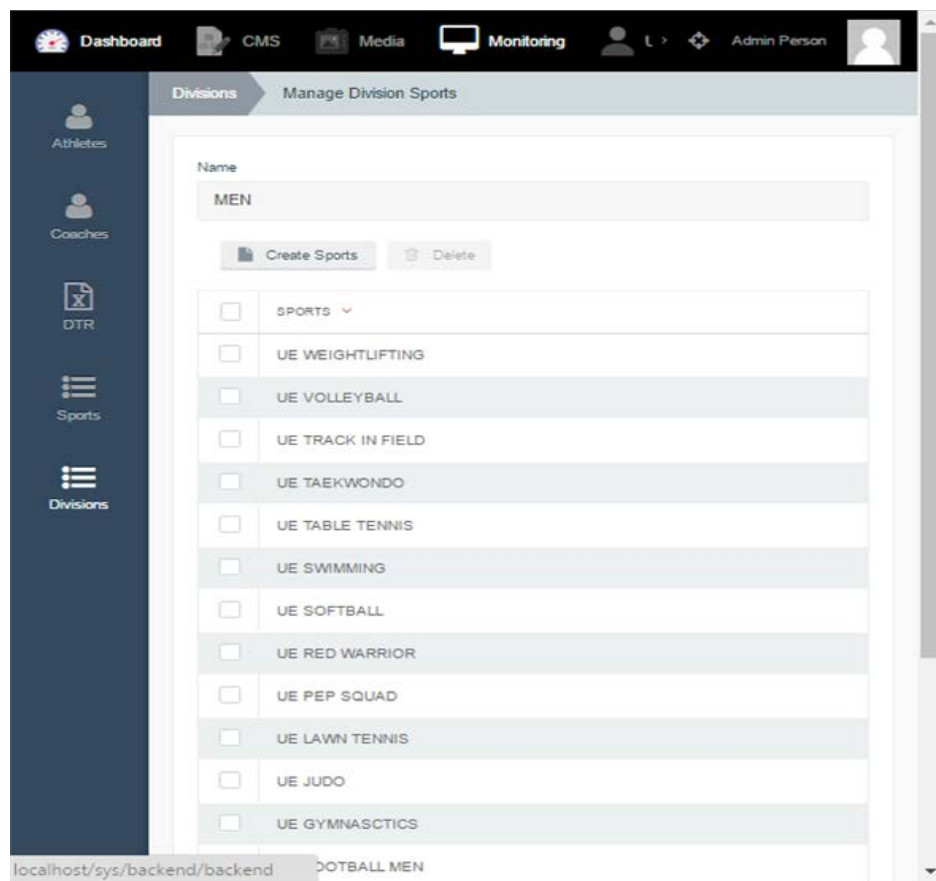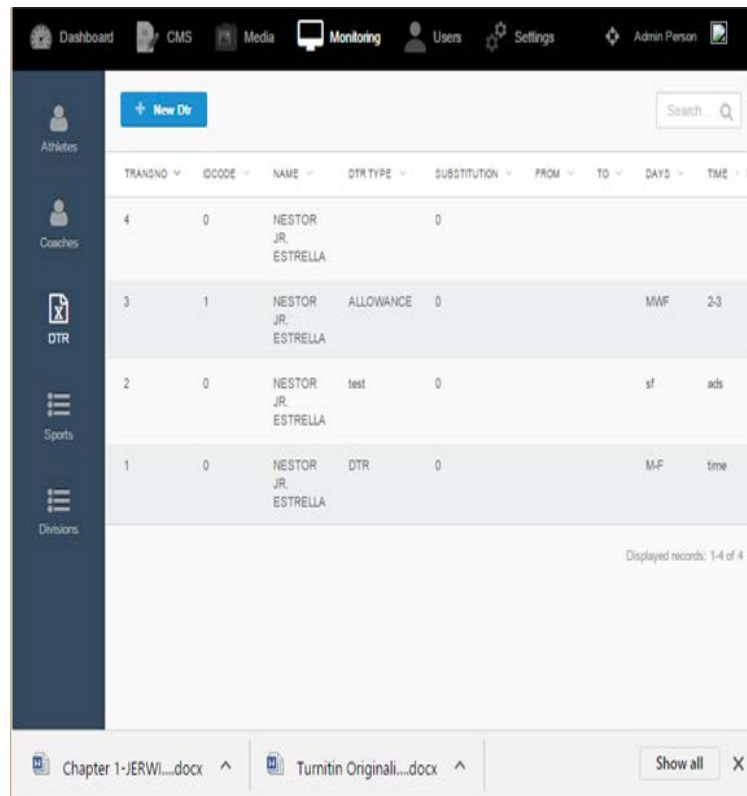
The admin manage the division's list that joins the UAAP.

Figure 5: Manage divisions and sports

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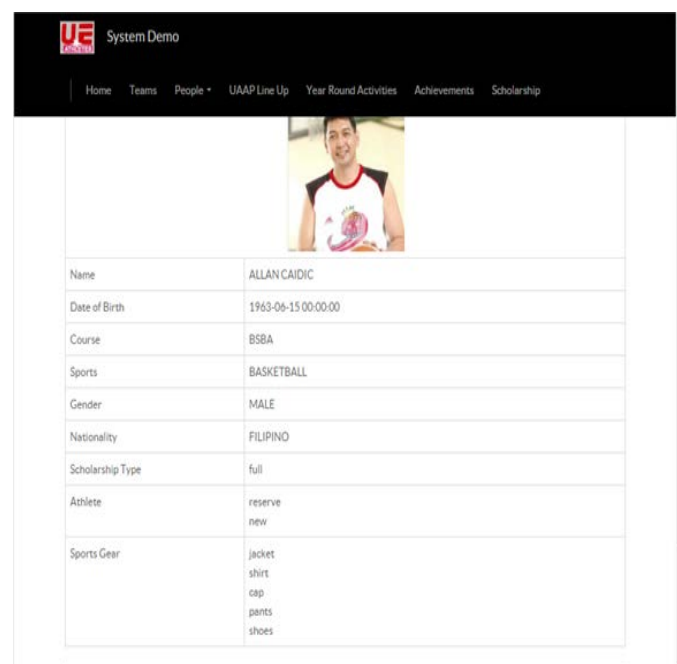The admin manages the divisions and creates sports that belong to their divisions.

Figure 6: Manage Allowances of athletes

The admin or coaches manage the allowances of the athletes by encoding their attendance.

Figure 7: Show athlete's profile

The users can view the profile of the athletes. (The athletes have their own login account to update their profile.)

Research Instruments

The researcher used a survey questionnaire in order to gather the data from the respondents. The respondents were asked to rate the usability of the system after its pilot testing. Questions were posed to the respondents about the system's appropriateness, easy-learning features, ease of operation, and aesthetic presentation. The questionnaire used a 5-point Likert scale level of measurement.

There was a total of 30 respondents for the study. These were composed of 15 students from the different colleges of the university. The student-respondents are composed of both varsity players and non-players. The other 10 respondents are school administrators. The remaining 5 are composed of faculty members, employees, and coaches. All user-respondents were from the University of the East Manila Campus. The proponent opted for a judgment sampling to be able to see the justification of different perspectives of respondents which will be the target users of the system.

1. Appropriateness recognisability

Sports website of PE as a marketing tool

2. Learnability

Creating profiles with specific details for the user.

I easily remember how to use it.

It is easy to learn and use it.

3. Operability

It is easy to use.

It is user-friendly.

Upload picture, audio, and video content

4. User Interface Aesthetics

A feature of the system exposure.

Proper navigational control of the system

The particular button refreshing when changing state.

Table 1: Show the ranking and equivalent

Numerical Rating	Equivalent
5	Strongly Agree
4	Agree
3	Neutral
2	Disagree
1	Strongly Disagree

Table 1 Likert's Rating Scale

Ranking – It will be used by the researchers to assign the order of significance of the variable to another.

Table 2: Measures of Variation

Question	Standard Deviation
1	0.35
2	0.53
3	0.31
4	0.41
5	0.49
6	0.50
7	0.41
8	0.41
9	0.43
10	0.38
Average Deviation	**0.42**

Table 2 provides the measures of variation of the respondent's evaluation of the system.

As presented, the average variation of the scores of the respondents' evaluation is low. The largest variation is 0.53 pertaining Question No. 2 and the smallest is 0.31 pertaining Question No. 3. The average data variation stands at 0.42. This explains that there is the strong consistency of response among the research respondents. No outliers can be seen in the observed data.

6. Method used in developing the system

The respondents of the study were first asked to use the system and test for its usability. Afterward, a questionnaire is given to appraising the program based on their first-hand experience of using the system. After

their assessment, the questionnaires were retrieved from user-respondents. In the development of the system, the proponent used the Waterfall Model. The schematics diagram of the model in Figure 8 is shown below:
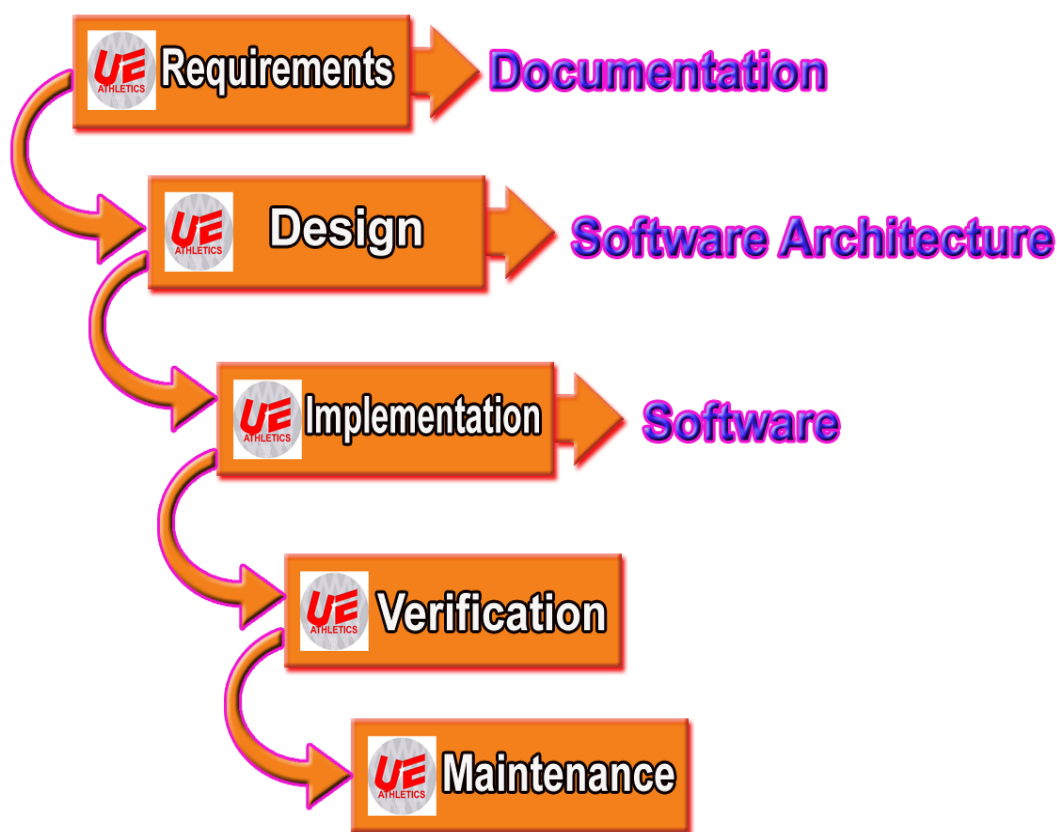

Figure 8: Waterfall Model

The Waterfall Model is a model that repeats its process in creating software until it is complete and ready to be deployed. The model has 5 processes which are the following: (1) Requirements, (2) Design, (3) Implementation, (4) Verification, and (5) Maintenance. The cyclical process takes several cycles until the researcher reaches its completion of the program and it is ready to be used by the company.

The following showed specific processes during the development of the system in line with the model:

Requirements. The researcher gathered data and information to come up with the idea used to improve the monitoring system of the athletes by the PE Department of the University. It allows the researcher to estimate the software development tools that he is going to use.

Design. The design is the blueprint of the researcher that was used on how to improve the system. It allows modification of the system that created an added value to be attractive to the client.

Implementation. With the blueprint, the researcher comes up with the working system that was used in developing and testing the software.

Verification. The researcher conducted verifications to check if the system has errors. In this phase, the system will be determined if it is to be deployed to the company after they fixed the errors.

Maintenance. This time the researcher has identified needs for maintenance of the system as well as enhancement of the product.

Deployment. This is the phase where the software and the documents are being handed to the beneficiaries and ready for use as an additional marketing tool.

7. Presentation and discussion results

The results of the study show that the weighted mean for the criteria "Appropriateness Recognisability: Sports Website as a Marketing Tool" is 4.87 out of 5. This is interpreted as "strongly agree". In terms of category, all 5 respondents from the PE Department, 8 respondents from the professional field, and 13 athletes gave a perfect score. The remaining 2 professionals and 2 athletes gave a score of 4. In terms of frequency according to gender, all male respondents and 11 female respondents gave a perfect score. The remaining 4 females gave a score of 4. In terms of age range, 14 individuals within the age bracket of 17-25, 5 individuals from 26-35, 5 individuals from 36-45, and 2 individuals from 46-55 gave the perfect score. An individual from the 17-25, 26-35, and 2 individuals from the 46-55 gave a score of 4.

Meanwhile, the criteria "Learnability: Creating Profiles with Specific Details of the User" got a 4.70 weighted mean. This is interpreted as "strongly agree". Categorically, 4 respondents from the PE Department, 8 professionals, and 10 athletes answered 5. A respondent from the PE Department, 2 professionals, and 4 athletes answered 4, while 1 athlete answered 3. According to gender, 12 males and 10 females gave a perfect score, while 3 males and 4 females gave a score of 4. Only 1 female answered 3 for this section. According to age range, 14 respondents from the 17-25 age bracket, 4 from the 26-35, 3 from the 36-45, and 1 from the 46-55 gave a perfect score. A respondent from the 17-25 age range and 2 each from the other brackets answered 4 out of 5. Only 1 respondent from the 46-55 age range answered 3.

With regards to the criteria "Learnability: I easily remember how to use it" got a 4.90 weighted mean which suggests that respondents "strongly agree". According to the category, 5 respondents from the PE Department, 9 professionals, and 13 athletes answered that they easily remember how to use the system. 1 professional and 2 athletes, on the other hand, gave 4 out of 5. According to gender, 14 males and 13 females answered 5, while 1 male and 2 female answered 4. By age, all respondents aged 17-25, 5 respondents aged 26-35, 4 respondents aged 36-45, and 3 respondents aged 46-55 answered 5. 1 respondent from the age ranges 26-35, 36-45, 46-55 answered 4.

On the other hand, the criteria "Learnability: it is easy to learn and use it" garnered a 4.80 weighted mean which suggests that respondents "strongly agree". 4 respondents from the PE Department, 9 professionals, and 11 athletes answered that it is easy to learn and use the system. 1 respondent from the PE Department, 1 professional, and 4 athletes answered 4 out of 5. According to gender, 11 male and 13 female respondents answered 5, while 4 males and 2 females answered 4. By age range, 14 respondents aged 17-25, 5 from 26-35, 3

from 36-45, and 2 from 46-55 said that it is easy to learn and use. 1 respondent each from the age ranges 17-25 and 26-35, and 2 respondents each from age ranges 36-45 and 46-55 answered 4 out of 5.

In terms of "Operability: it is easy to use", respondents chalked up a 4.63 weighted mean. That is, 3 respondents from the PE Department, 6 professionals, and 10 athletes gave the perfect score, while 2 respondents from the PE Department, 4 professionals, and 5 athletes answered 4 out of 5. According to gender, 10 males and 9 females gave 5 out of 5, while 5 males and 6 females gave 4 out of 5. By age range, 13 respondents aged 17-25, 2 respondents aged 26-35, 3 respondents aged 36-45, and 1 respondent aged 46-55 said it is easy to use. 2 respondents each from the age ranges 17-25 and 36-45, 4 respondents aged 26-35, and 3 respondents aged 46-55 answered 4 out of 5.

Respondents gave a 4.60 in terms of the system's user-friendliness. That is, 4 respondents from the PE Department, 5 professionals, and 9 athletes scored a perfect 5, while a respondent from the PE Department, 5 professionals, and 6 athletes gave a 4. According to gender, 8 males and 10 females said it is user-friendly, while 7 males and 5 females scored it 4 out of 5. According to age range, 11 respondents aged 17-25, 4 respondents aged 26-35, 2 respondents aged 36-45, and 1 respondent aged 46-55 gave a perfect score. 4 respondents aged 17-25, 2 respondents aged 26-35, and 3 respondents each from age ranges 36-45 and 46-55 scored the system 4.

8. Conclusions

The results showed that the Athlete's Registration Management and Monitoring System developed is highly favorable to users. Since, technology advances rapidly, there is a need to be at par to the ever-changing world of technology. To enable a full objective interpretation of the data from the analysis of a system, it is necessary to compare the collected data to aggregated data of peer group of teams, or individuals, which evaluated at an appropriate standard. The Athlete's Registration Management and Monitoring system is highly favorable in terms of recognisability, learnability, operability and user-friendliness. Based on these assessments by the respondents, it can be said that the features can easily be understood by ordinary users. Additionally, the system can also be used as an entity for marketing. It can be an aid for its promotional campaign. This serves the need of the PE department to solve the traditional problems. Enhance the system by the use of technology. University new system will recognize that the dedication, efficiency, affordance and performance of the athletes are the factors in achieving excellence through athlete's registration management and monitoring and evaluation. All head coaches will be responsible for ensuring that his/her players and assistant coaches will practice the games regularly through observation from the system.

9. Recommendation

This study recommends for further research in the field of technological innovation particularly in sports events and sports marketing as strategy and promotion online. Also, the following recommendations were drawn the base on the findings of the study.

1. Consult and work with a Graphic Artist to further enhance the user interface design of the system.

2. Work on enhancement about the application that runs and updates for viewing in real time and in the mobile application.

3. Work on to make the system reduces the large memory size and consumption.

4. Visit the sports critics, sports analyst and professionals sports organizer that will help for the promotion of the sports in the school organization.

5. Provide a dashboard for the athletes monitoring for their body and mind by the use of data analytics and data science.

Acknowledgements

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