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Design and Development of Student Evaluation System for Faculty Performance in University of Rizal System

Jayson A. Daluyon[1], Mark Anthony M. Zamora[2]*

Abstract: The study focused on the design and development of a student evaluation system for faculty performance in the University of Rizal System (URS). The system is composed of several features pertaining to privileges of different user groups, such as for the system admin, staff, and students. The developed system was evaluated by the respondents from the URS Binangonan campus, which mainly consists of students enrolled in different courses from first year to fourth year level. A survey questionnaire checklist was used to determine the level of acceptability of the design and development of the student evaluation system for faculty performance and administered via Google Form. The questionnaire checklist was based on the ISO25010, or software product quality criteria, in terms of functional suitability, performance efficiency, usability, reliability, security, maintainability, and portability. Based on the result of the evaluation, it was found that the developed system was generally acceptable as perceived by the respondents. Moreover, the researcher concluded that the design and development of the student evaluation system for faculty performance was functionally suitable, performs efficiently, usable, reliable, secured, maintainable, and portable. Furthermore, the researcher recommends that the developed Student Evaluation System may be implemented and used as a tool for the conduct of faculty evaluation; improvements or enhancements may be applied to the areas that were deemed acceptable; and finally, further study may be conducted to measure its effectiveness and impact.

Keywords: Faculty evaluation, Student Evaluation System, Faculty Performance, ISO 25010

1. Introduction

Evaluation is a management function that is positioned on the concept that personnel development is better directed by an initial analysis of the present personnel situation. The results of the performance evaluation therefore will serve as a guide in improving the individual personnel, even as it defines and

[1] College of Computer Studies, University of Rizal System, Tanay, Rizal, Philippines
Email: jayson.daluyon@urs.edu.ph
[2]* College of Computer Studies, University of Rizal System, Tanay, Rizal, Philippines
Email: markanthony.zamora@urs.edu.ph (Corresponding Author)

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identifies the level and quality of his performance in a stated period [1]. Faculty evaluation is necessary for gauging their success in achieving educational goals. This has to be done through collecting data, measuring the data against some appropriate criterion, and finally judging each faculty member.

Faculty evaluation is a semestral process that the management of a certain university is conducting with the participation of their randomly selected students for the purpose of knowing if their professors are following the teaching protocols that were established by the university [2][3] In addition, it also helps the management to know if their professors are qualified to renew their contracts and if they are capable of doing their job. To do this, the process of administering, collecting, tabulating, and distributing the result of the evaluation is usually done traditionally or manually.

In terms of finding the output or the result of the traditional process, a huge amount of time is used. It takes days before the output is released, and also the equal percentage distribution of the students in the evaluation was not proportionate. In addition, the selection of the students is done in a prearranged method rather than at random because it is also one of the factors that cause a slow movement of the process. With the slow phasing of the manual process for the conduct of faculty performance evaluation, the researchers were motivated to develop a Student Evaluation System for Faculty Performance in URS. The study was intended to modernize the process of faculty evaluation using available technologies and resources. It focused on improving the processes, minimizing the time needed, as well as producing an accurate and reliable output. It also provides respondents with an interactive and straightforward way of assessing their professors. In totality, this study aimed to provide an acceptable information system that lessens the work of the management.

The primary goal of the study is to design and develop a Student Evaluation System for Faculty Performance in the University of Rizal System (SESFPURS).

Specifically, this study aimed to:

1. Evaluate the level of acceptability of the design and development of the student evaluation system for faculty performance in the University of Rizal System based on ISO 25010 or software product quality in terms of: (a) Functional suitability; (b) Performance efficiency; (c) Usability; (d) Reliability; (e) Security; (f) Maintainability, and (g) Portability.
2. Determine what recommendations may be drawn based on the result of the acceptability evaluation as perceived by the respondents, as well as from the conclusion drawn.

2. Materials and Methods

2.1 Research and System Design

The design and development of the Student Evaluation System for Faculty Performance in the University of Rizal System adapts the Software Development Life Cycle (SDLC) Model. Software Development Life Cycle (SDLC) is a process used by the software industry to design, develop, and test high-quality software. The SDLC aims to produce high-quality software that meets or exceeds customer expectations and reaches completion within times and cost estimates. It consists of a detailed plan describing how to develop, maintain, replace, and alter or enhance specific software. The life cycle defines a methodology for improving the quality of software and the overall development process [4].

It is believed that the SDLC model was the best suitable software paradigm for the research study because the Student Evaluation System for Faculty Performance in the University of Rizal System has undergone a series of stages, from careful planning, requirements definition, designing, and developing up to thorough testing and evaluation procedures.

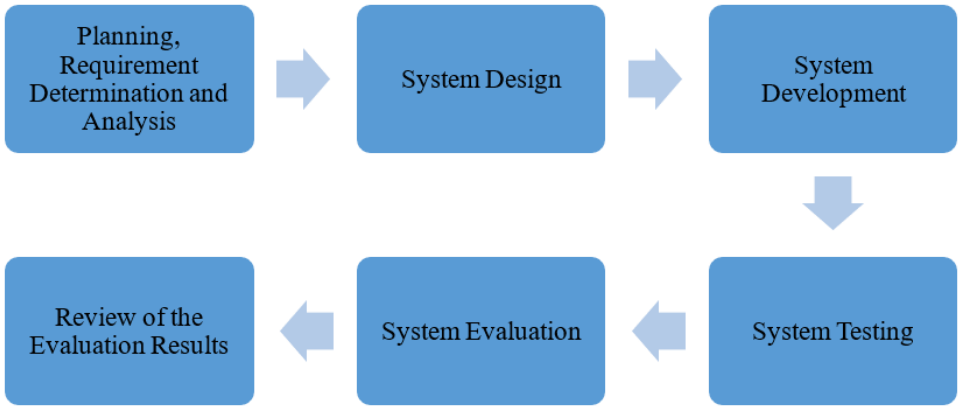

Figure 1. The SDLC Model for the Student Evaluation System for Faculty Performance in the University of Rizal System

The necessary phases of the SDLC model were followed as systematic guides through the process. On the planning and requirement phase, the researchers conducted an initial interview with the college secretaries to gather preliminary data and forms used for faculty evaluation. Secondary data from online resources was also gathered. Based on the gathered data, the design of the system was then followed. Next is building or developing the system based on the gathered data, and the design was created using Hypertext Preprocessor (PHP) as the programming language, MySQL for the database, and Cascading Style Sheets (CSS) for the formatting and styles of the interface. Upon completion of the development of the system, the researchers conducted testing using a quality assurance test plan to ensure that the developed system is free from bugs, errors, and abnormalities.

2.2 System Evaluation

For the evaluation of the developed system, the researcher used an adopted questionnaire checklist based on the ISO 25010 Software Quality Standards to determine the level of acceptability of the Student Evaluation System for Faculty Performance for the University of Rizal System using the seven (7) criteria in terms of functional suitability, performance efficiency, usability, reliability, maintainability, security, and portability [5].

A total of 112 respondents were composed of three (3) faculty, two (2) staff, and one hundred seven (107) students. The respondents were chosen purposively.

For the interpretation of data, a four-point scale was used with the verbal interpretation shown in Table 1. A weighted mean was used to measure the overall response of the respondents, whether it is strongly accepted or not.

Table 1. Four-point Likert Scale

Score	Range	Verbal Interpretation	Legend
4	3.50-4.00	Highly Accepted	HA
3	2.50-3.49	Accepted	A
2	1.50-2.49	Moderately Accepted	MA
1	1.00-1.49	Not Accepted	NA

3. Results and Discussion

The developed system automates the student's evaluation of faculty performance. It collects and records inputted data and computes faculty performance electronically, resulting in a more organized manner. The system also provides access to computed result outputs if needed.

Table 2 shows the distribution of the respondents of the study, which includes students, faculty, and college secretaries and/or staff members.

Table 2. Distribution of the Respondents

Type of Respondent	No. of Responses	Percentage
Faculty	3	2.7%
Secretary/Staff	2	1.8%
Students	107	95.5%
Total	**1.51-2.50**	**100%**

As shown in Table 2, there were a total of 112 persons who responded to the survey conducted via Google Forms. The majority of the responses were from the students with a total number of 107, or 95.5%, followed by the faculty with a total of three (3) responses, or 2.7%, and lastly from the college secretary or staff with two (2) responses, or a percentage of 1.8%.

As shown in Table 3, the computed overall mean of functional suitability of the developed Student Evaluation System for Faculty Performance was 3.38 and verbally interpreted as acceptable as perceived by the respondents. Moreover, the students perceived that functional appropriateness was highly acceptable and gained a mean of 3.69, in which the function of the developed system facilitates the accomplishment of specified tasks and objectives. However, the functional correctness of the system was perceived as accepted by the faculty, garnering a mean of 2.67. Despite this, the developed system provides functions that meet stated and implied needs when used under specified conditions.

Table 3. Level of the Acceptability of the Developed SESFPURS in Terms of Functional Suitability

Functional Suitability	Students	Faculty	Secretary / Staff	Overall Mean
Functional Completeness. Degree to which the set of functions covers all the specified tasks and user objectives.	3.63 (HA)	3.33 (A)	3.50 (HA)	3.49 (A)
Functional Correctness. Degree to which the performance evaluation system provides the correct results with the needed degree of precision.	3.64 (HA)	2.67 (A)	3.50 (HA)	3.27 (A)
Functional Appropriateness. Degree to which the functions facilitate the accomplishment of specified tasks and objectives.	3.69 (HA)	3.0 (A)	3.50 (HA)	3.40 (A)
Overall Mean	**3.65 (HA)**	**3.0 (A)**	**3.50 (HA)**	**3.38 (A)**

Table 4. Level of the Acceptability of the Developed SESFPURS in Terms of Performance Efficiency

Performance Efficiency	Students	Faculty	Secretary / Staff	Over-All Mean
Time behavior. Degree to which the response and processing times and throughput rates of the performance evaluation system, when performing its functions, meet requirements.	3.68 (HA)	3.33 (A)	3.0 (A)	3.34 (A)
Resource utilization. Degree to which the amounts and types of resources used by the performance evaluation system, when performing its functions, meet requirements.	3.72 (HA)	3.0 (A)	3.5 (HA)	3.41 (A)
Capacity. Degree to which the maximum limits of the performance evaluation system parameter meet requirements.	3.67 (HA)	3.67 (HA)	4.0 (HA)	3.78 (HA)
Overall Mean	**3.69 (HA)**	**3.33 (A)**	**3.5 (HA)**	**3.51 (HA)**

In Table 4, it can be seen that the performance efficiency was highly acceptable as perceived by the respondents, with an overall mean of 3.51, in which the developed Student Evaluation System for Faculty Performance performs relative to the amount of resources used under stated conditions. The secretary or staff has perceived that the developed system was highly acceptable in terms of its capacity, in which the maximum limits of the performance evaluation system parameter meet specified requirements with a mean of 4.0. Furthermore, both the faculty and staff perceived that the developed system was acceptable in terms of time behavior and resource utilization, with an average score of 3.0. Performance efficiency has been adapted into the system quality model to assess its capability to exhibit the required performance with regards to the number of resources needed to satisfy the needs of the users in a specified context of use [6].

Table 5. Level of the Acceptability of the Developed SESFPURS in Terms of Usability

Usability	Students	Faculty	Secretary / Staff	Over-All Mean
Appropriateness recognizability. Degree to which users can recognize whether the performance evaluation system is appropriate for their needs.	3.74 (HA)	3.0 (A)	3.5 (HA)	3.41 (A)
Operability. Degree to which the performance evaluation system has attributes that make it easy to operate and control.	3.64 (HA)	3.0 (A)	3.5 (HA)	3.38 (A)
User error protection. Degree to which the performance evaluation system users against making errors.	3.6 (HA)	3.0 (A)	2.5 (A)	3.03 (A)
User interface aesthetics. Degree to which a user interface enables pleasing and satisfying interaction for the user.	3.57 (HA)	3.0 (A)	3.5 (HA)	3.36 (A)
Over-all Mean	**3.64 (HA)**	**3.0 (A)**	**3.25 (A)**	**3.30 (A)**

Table 5 shows that the developed Student Evaluation System for Faculty Performance was only perceived as acceptable by the respondents, gaining an overall mean of 3.30. This means that the developed system is acceptable and can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use. The students perceived that the usability in terms of its appropriateness recognizability was highly acceptable with a mean of 3.74,

which means that the users can recognize whether the performance evaluation system is appropriate for their needs.

In Table 6, it can be seen that the developed Student Evaluation System for Faculty Performance is acceptably reliable as perceived by the respondents, with an overall mean of 3.36. It clearly shows that the developed system performs specified functions under specified conditions for a specified period of time. Moreover, both the maturity and availability aspects were highly acceptable, with a mean of 3.66 by the students.

Table 6. Level of the Acceptability of the Developed SESFPURS in Terms of Reliability

Reliability	Students	Faculty	Secretary / Staff	Over-All Mean
Maturity. Degree to which the performance evaluation system meets needs for reliability under normal operation	3.66 (HA)	3.0 (A)	3.5 (HA)	3.39 (A)
Availability. Degree to which the performance evaluation system is operational and accessible when required for use.	3.66 (HA)	3.33 (A)	3.5 (HA)	3.5 (HA)
Fault tolerance. Degree to which the performance evaluation system operates as intended despite the presence of hardware or software faults.	3.57 (HA)	3.0 (A)	3.0 (A)	3.19 (A)
Recoverability. Degree to which, in the event of an interruption or a failure, the performance evaluation system can recover the data directly affected and re-establish the desired state of the system.	3.58 (HA)	3.0 (A)	3.5 (HA)	3.36 (A)
Over-all Mean	**3.62 (HA)**	**3.08 (A)**	**3.38 (A)**	**3.36 (A)**

Table 7 shows that the developed system is highly secured, as it gains an overall mean of 3.59 and was interpreted as highly acceptable by the respondents. In this regard, the developed system protects information and data so that persons or other products or systems have the degree of data access

appropriate to their types and levels of authorization. It is also worth mentioning that the secretary or staff perceived that the developed systems are highly acceptable in the aspects of confidentiality, integrity, non-repudiation, accountability, and authenticity, gaining a mean of 4.0.

Table 7. Level of the Acceptability of the Developed SESFPURS in Terms of Security

Security	Students	Faculty	Secretary / Staff	Over-All Mean
Confidentiality. Degree to which the performance evaluation system ensures that data are accessible only to those authorized to have access.	3.69 (HA)	3.0 (A)	4.0 (HA)	3.56 (HA)
Integrity. Degree to which the performance evaluation system prevents unauthorized access to, or modification of, computer programs or data	3.65 (HA)	3.33 (A)	4.0 (HA)	3.66 (HA)
Non-repudiation. Degree to which actions or events can be proven to have taken place, so that the events or actions cannot be repudiated later.	3.72 (HA)	3.0 (A)	4.0 (HA)	3.57 (HA)
Accountability. Degree to which the actions of an entity can be traced uniquely to the entity.	3.72 (HA)	3.0 (A)	4.0 (HA)	3.57 (HA)
Authenticity. Degree to which the identity of a subject or resource can be proved to be the one claimed.	3.72 (HA)	3.0 (A)	4.0 (HA)	3.57 (HA)
Over-all Mean	**3.7 (HA)**	**3.07 (A)**	**4.0 (HA)**	**3.59 (HA)**

It can be seen in Table 8 that the developed Student Evaluation System for Faculty Evaluation is acceptably maintainable as perceived by the respondents, gaining an overall mean of 3.39. This means that the system has an acceptable degree of effectiveness and efficiency in which it can be modified to improve, correct or adapt to changes in the environment and in requirements. It is also worth noting that the students perceived highly that the modularity of the developed system is composed of discrete components such that a change to one component has minimal impact on other components, gaining a

mean of 3.73. Maintainable software is easy to extend and fix, which encourages the software's uptake and use [7][8].

Table 8. Level of the Acceptability of the Developed SESFPURS in Terms of Maintainability

Maintainability	Students	Faculty	Secretary / Staff	Over-All Mean
Modularity. Degree to which the performance evaluation system is composed of discrete components such that a change to one component has minimal impact on other components.	3.73 (HA)	3.0 (A)	3.0 (A)	3.24 (A)
Reusability. Degree to which an asset can be used in more than one system, or in building other assets.	3.68 (HA)	3.33 (A)	3.5 (HA)	3.51 (HA)
Analyzability. Degree of effectiveness and efficiency with which it is possible to assess the impact on the performance evaluation system of an intended change to one or more of its parts, or to diagnose a system for deficiencies or causes of failures, or to identify parts to be modified.	3.65 (HA)	3.0 (A)	3.5 (HA)	3.38 (A)
Modifiability. Degree to which the performance evaluation system can be effectively and efficiently modified without introducing defects or degrading existing system quality.	3.75 (HA)	3.0 (A)	3.5 (HA)	3.42 (A)
Over-all Mean	**3.70 (HA)**	**3.08 (A)**	**3.38 (A)**	**3.39 (A)**

Lastly, in Table 9, the developed Student Evaluation System for Faculty Performance gained an overall mean of 3.48 and was perceived as acceptably portable by the respondents. The secretary or staff perceived that the portability of the developed system in terms of its installability was highly acceptable, gaining a mean of 4.0. This indicates that the developed system can be successfully installed and/or uninstalled in a specified environment.

Table 9. Level of the Acceptability of the Developed SESFPURS in Terms of Portability

Portability	Students	Faculty	Secretary / Staff	Over-All Mean
Adaptability. Degree to which the performance evaluation system can effectively and efficiently be adapted for different or evolving hardware, software or other operational or usage environments.	3.66 (HA)	3.0 (A)	3.5 (HA)	3.39 (A)
Installability. Degree of effectiveness and efficiency with which the performance evaluation system can be successfully installed and/or uninstalled in a specified environment.	3.66 (HA)	3.0 (A)	4.0 (HA)	3.55 (HA)
Replicability. Degree to which the performance evaluation system can replace another specified software product for the same purpose in the same environment	3.65 (HA)	3.33 (A)	3.5 (HA)	3.5 (HA)
Overall Mean	**3.66 (HA)**	**3.11 (A)**	**3.67 (HA)**	**3.48 (A)**

4. Conclusion and Recommendations

The study is about the Student Evaluation System for Faculty Performance in the University of Rizal System. It can be concluded that the system was functionally suitable, performs efficiently, is usable, reliable, secured, maintainable, and portable based on the results discussed. Moreover, the developed system achieved the researcher's intended objectives, that is, to develop and evaluate the user acceptance of the developed system, in which it meets the intended outcome or results.

Based on the results and conclusions, the following recommendations are proposed. The developed Student Evaluation System may be implemented and utilized as a tool for conducting faculty evaluations, allowing for a more efficient and systematic assessment process. To further improve the system's performance and acceptability, enhancements may be made in key areas such as functional suitability, usability, reliability, maintainability, and portability. These improvements will ensure that the system meets higher quality standards and better addresses user needs. Additionally, if the university intends to implement the system, it is recommended that a follow-up study be conducted to assess its effectiveness and impact. This evaluation can provide valuable insights for future refinements and optimization.

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