ENHANCING SMART STUDENT EVALUATION WITH RULES AND RESPONSIBILITY: A CASE STUDY ON FORMATIVE AND SUMMATIVE ASSESSMENTS

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Abstract

Evaluation and grading of students vary significantly across Higher Education Institutes (HEIs) based on several aspects adopted by HEIs. These aspects may include different students' evaluations as employed across several disciplines including Arts, Sciences and Commerce. This case-based study examines the Student Evaluation methods of Arts faculties of 15 public Higher Education Institutes (HEIs), their differing criteria are compared, and then also contrasted to find weaknesses and errors frequently found in the manual evaluation. Further, the Faculty of Social Sciences and Languages at Sabaragamuwa University epitomizes complexity in evaluation, grading and assessment in students' evaluation in hard sciences. Mark sheets created manually can result in human errors as they must focus on various combinations at the same time and the combination of criteria. This research suggests a digitalized mark sheet. Digitalized mark sheets would alleviate human errors, allow for more accuracy and efficiency, as well as helping students who may suffer from erroneous manual evaluation processes. Moreover, it would also allow statistical analysis to produce the necessary summary reports by multiple authorities on grading and results. The digitalized mark sheet would also mean students could access their results online at different times, and multiple manual data entries into mark sheets would not be necessary.

Keywords: *digitalized mark sheet, evaluation, higher education institute, human error, student assessments*

1. INTRODUCTION

Universities around the world have valued the use of evaluation to demonstrate academic quality and integrity, including the accountability won through the 'fairness' of student assessments. Each for instance has resulted in systems of evaluation, even more so in developing countries like Sri Lanka, that are paper-based, native paper-mark sheets and handwritten calculations, thus not carried electronically or even within chains of approval. This is not to cast aspersion on the known volumes of student assessments, but they have been rightly chastised for slowdowns to efficiencies, inconsistent pieces from one assessor to another, and also to irregularities of awarded grades.

Issues with hand-based evaluation processes are certainly not unique to Sri Lanka. Across the globe, the pressures for efficiency, dependability, and neutrality have led to a shift to electronic and mechanical assessment systems. However, the Sri Lankan context is much different. Compared to developed systems where a centralized e-assessment tool sets the procedures of assessment, assessment will be the responsibility of every separate faculty within the public university system in Sri Lanka. This will likely lead to conflict, worries for students and inconsistent assessment, both internal to potential programs, as well as across separate faculties. The inconsistencies, or colorations, of differing assessment processes will act to diminish student confidence and lead to delays or variances in administration.

Within the Sri Lankan system of public higher education, there are more that fifteen national universities and faculties that will each be responsible to their own procedures in assessment. Each of either schools or university faculties will also have multiple student degree options in many subject areas of Art, Science and Commerce. The Sri Lankan Higher Education System has also made attempts to standardize what assessment, including student distinctions as articulated within the draft of the Sri Lanka Qualifications Framework (SLQF) and QAAC recommendations at the University Grants Commission.

Despite these efforts, the differing modes of assessment approaches, examination criteria, and grading systems used in practice at the universities and across universities are varied, and there are often differences even with comparable programs within the same university. This variation in evaluation modes between universities isn't optimal when performing final assessments of undergraduate degree programs within the university and university system.

Markers involved in this process will often find it difficult to understand examination procedures, examination criteria, being aware of their rights and wrongs in grades, debate the mathematical calculations used to calculate grade points, work efficiently to produce undergraduate results and, decipher sometimes remarkable handwriting that they cannot read.

To help solve these problems, and as an area of research for developing an Evaluation Processing System (EPS), which is based on ways of thinking about establishing rules including examination criteria, and flexible rules made not specific to each university or undergraduate degree program, but which would allow the rules to be modified

over time, and working towards a uniform evaluation process for the undergraduate university sector in Sri Lanka which would include a fairness, accuracy, and efficiency in evaluating undergraduate performance in Sri Lankan university systems.

Universities can bypass the limitations of manually evaluating students, be more transparent, and improve the quality of measuring and reporting on students, by employing an EPS. This study seeks to investigate the potential and practicality of an EPS in the Sri Lankan university system.

In total, the introduction acknowledges the challenges of evaluating university students and makes the argument for a standardized and operational EPS to overcome those challenges. A component of all electronic systems is actors, activity, and information or documents. This piece of research requires identifying all parts of the manual system in the university system with the elements of activities, actors, collaboration, and information and documents, in order to develop a standardized and operational EPS.

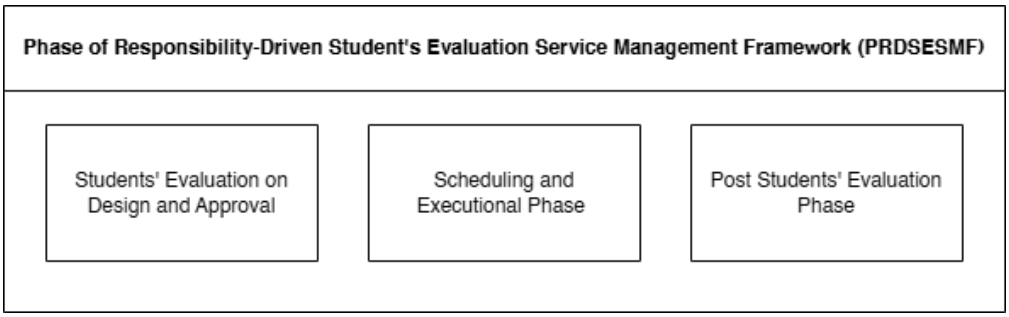
Evaluation Process System (EPS) in the University

The EPS in the university is an intricate and drawn-out system, as it is made up of several stages, some of which take considerable time, so it is perhaps not possible to grasp the system. In order to proceed with such an IT-based process to the complex EPS system, it is favorable to sequentially parse EPS into smaller stages. The EPS can usefully be parsed into main sub-PHASES in terms of time, the Students' Evaluation Design and Approval Phases, Scheduling and Execution PHASES, Post Students' Evaluation PHASES. Each sub- PHASES conditionally leads to the long-term EPS for students.

I. Students' Evaluation Design and Approval Phases: This sub-process focuses on designing the evaluation criteria and obtaining necessary approvals. It involves formulating assessment methods, determining grading systems, and establishing evaluation guidelines. During this stage, faculty members and academic authorities collaborate to define the evaluation framework.
II. Scheduling and Execution Phases: The second sub-process involves scheduling and conducting evaluations according to the approved criteria. It encompasses activities such as setting examination dates, organizing assessment tasks, and ensuring proper invigilation. This stage also includes the collection and management of evaluation data and marks.
III. Students' Post-Evaluation Phases: After the evaluations are conducted, this sub-process deals with the aftermath of the evaluation. It includes tasks such as result processing, grade calculation, and publication of evaluation outcomes. Students may have the opportunity to review their results, seek clarification if needed, and address any concerns or disputes related to the evaluation.

By breaking down the Evaluation Process System (EPS) into these three sub-phases, it becomes easier to comprehend and manage each stage effectively. Implementing an IT-based solution within this structured framework can greatly enhance the efficiency and transparency of the EPS in the university system.

Figure 1
Phases of Responsibility-Driven Students' Evaluation Service Management Framework



Source: Developed by Author, 2026.

The researcher focused primarily on developing the Phases of Responsibility-Driven Students' Evaluation Service Management Framework (PRDSESMF) as the overall objective of the research. Regarding the PRDSESMF; the sub-frameworks were identified including the Evaluation Rule Processing Template (ERPT), Evaluation Process Schema (EPS), and the Actors and Activity Responsibilities Management Matrix (AARMM), as the specific objectives of the PRDSESMF.

This research paper exclusively delves into the 'Students' Evaluation Design and Approval Phases (SEDAP)' within the PRDSESMF in the university system as illustrated in Figure 1.

The primary objectives of this research are as follows:

I. Formulation of an Evaluation Process Schema (EPS): Clearly specify criteria for each activity that constitutes the Evaluation Process System (EPS) that would involve in the overall evaluation of undergraduate degree programs within the Sri Lankan university system and higher educational institutes - as a means to minimizing, human errors -through confirming precisions of all approval activities that would be completed as a result of the examination process.

II. Definition of Evaluation Rule Template (ERT): Clearly specify rules for each and every activity that involves all actors in undergraduate degree program evaluation in the university system to provide clarity to decision making, so that actors may clearly see what activities must be completed in the university Evaluation Process System (EPS). The goal here is to assist decision-making and commit to identifying the controllers for each activity.

III. Development of Classification Schema for Actors and Activities Responsibility Management Matrix (AARMM): Investigate and identify a representation schema for the management of responsibilities associated with the Students' Evaluation Design and Approval Phases (SEDAP) in the university Evaluation Process System (EPS). The intent of this General Objective is to support the formation of a management structure that provides an identifiable framework for accountability and

consistency in responsibility assignment and management for actors involved in the SEDAP, with clearly delineating responsibilities, for each activity associated with the undergraduate degree program evaluation in the Sri Lankan university system and higher educational institutes.

The research intends to aid the development of a more accurate, efficient and standardized electronic evaluation system for undergraduate degree programs like in the Sri Lankan university system to ultimately improve the quality of the evaluation processing system for the education system. This study is noteworthy because it has introduced a rules- and responsibility-driven SMART evaluation framework that undergone both formative and summative assessment in Sri Lanka's higher education.

By enhancing transparency, fairness, and ethics associated with the evaluation process, it provided a systematic means of improving student learning outcomes whilst lowering the subjectivity associated with assessments. This study's results are helpful for educators, institutions, and policymakers as they provide a tangible way to improve assessment practices to provide global quality, promote learner responsibilities towards their own learning, and ultimately underpin the establishment of competent graduates, who are prepared for their respective social, academic, and professional futures.

2. LITERATURE REVIEW

Assessment in higher education has long acknowledged its importance to academic integrity, student learning, and accountability. Globally, formative (ongoing) and summative (end) assessments can be used as a means of measuring learning outcomes with varying degree of emphasis and implementation (Black & Wiliam, 1998; Sadler, 2009). Recently, there been a movement in switching assessment and evaluation systems to electronic formats, mainly for efficiency, accuracy, and accountability (Hill & Turner, 2016).

Many universities, particularly those located in South Asia, are still heavily reliant on manual examination processes and paper-based grading system for evaluation and feedback cycles. A number of studies highlighted consistent problems of manual evaluation processes including human error in calculation, inconsistency of grading standards, lack of transparency, and delays submitting results (R. J. Shavelson et al., 2008). For instance, the restricted practice of examination practices from a South Asian perspective has shown that examiners could not make sense of complex grading criteria with respect to fairness as perceived by students, which made for duplication of administration work (Fernando, 2017). These themes seem to reflect some degree of the issues discussed in Sri Lankan higher education culture, where academic staff have autonomy in designing the methods of evaluations, with such autonomy contributing to experiences of inconsistency for students (beyond the inconsistency resulting from the design) in the same degree program.

The process of evaluation within higher education is an established cornerstone of academic quality, institutional accountability, and student learning thus far. There are established evaluation methods globally, which the literature has recognized a formative and summative evaluation methods both serve different but not

contradictory purposes for evaluation. Formative evaluation includes those used to develop students' improvements, including peer feedback to increase student engagement, motivation, and self-regulation or feedback for students that mainly highlights their improvement rather than their grades (Ismail et al., 2022; Nicol & Macfarlane-Dick, 2006). The summative evaluation serves to indicate students are qualified (or not) in their achievements with anything to indicate they progressed (or did not) rather than if they have or have not understood subject. Further summative evaluation forms do build on the limited feedback, to indicate that they have progressed or understood subject, but as indicated the feedback available within summative evaluation is still limited to minimal or ineffective grading methods (Harlen, 2005; Taras, 2005). More current comparative studies of formative evaluation methods further support with greater positive effect sizes for academic performance and students' satisfaction (Parmigiani, Traverso, et al., 2024; Zafar et al., 2025).

There has been a noticeable change toward online and technology-assisted tests, especially in the wake of COVID-19. Online tests have been recognized for their efficiency, accuracy, and immediate feedback to students (Dermo, 2009; Jordan, 2013; Karunarathne & Wijewardene, 2021). Research has shown empirically that e-tests can lead to improved learning, and can work within today's educational learning designs, including blended and online (Nguyen, 2022; Sotiriado et al., 2019). A mapping-based analysis of online test research indicated their international use and some continued issues such as reliability, validity, and academic dishonesty (Liu et al., 2025). Digital proctoring has become one of the solutions addressing academic dishonesty, among other problems such as privacy issues, as well as student trust and ethicality in technology use (Han et al., 2024).

Despite these advances, universities continue to have imperative issues of offering transparency, equity, and accountability in assessment. Findings show that students are likely to prefer formative approaches due to their developmental significance, but they still enjoy summative approaches for certification purposes, showing that there should be a balance between the two (Ismail et al., 2022). Furthermore, research calls for more authentic and competency-based assessments that better reflect the practical implementation of knowledge and skills (López-Nuñez et al., 2024). Despite this, grade disparities, risks of academic dishonesty, and overreliance on standard practices remain in most settings (Newton & Draper, 2025; R. Shavelson et al., 2008).

Assessment practices in Sri Lanka, however, are still very much decentralized and are conducted manually, and this leads to inconsistencies and inefficiencies in universities (Gunawardena, 2019; K. Perera & Ranasinghe, 2020). Although online learning platforms are being utilized extensively, end-to-end digital assessment frameworks are not yet applied systematically. Current Sri Lankan academic research emphasizes the importance of redesigning examination systems to align with international best practice and domestic requirements, emphasizing the value of creative methods of assessment design (Gamage et al., 2022; S. Heil & Ifenthaler, 2023). The gap calls for the introduction of systematic, rule-and-responsibility-based

evaluation models that can ensure fairness, standardization, and accountability through the use of digital technologies.

In Sri Lanka, formative assessments and summative assessments feature in a cyclical process of showing both student learning outcomes and quality assurance to institutions. Universities are increasingly recognizing online and technology-enhanced assessments as more effective than traditional assessments because they are open and transparent, provide immediate feedback, and reduce many aspects of assessment burden (Dermo, 2009; J. Heil & Ifenthaler, 2023). However, the integration of online and technology-enhanced assessments into Sri Lankan universities is limited and fragmented. Practitioners in Sri Lanka have established that formative assessments do affect engagement and build assessment literacy in students (Parmigiani et al., 2024), yet there remains a reliance on non-electronic means to address assessment, which is inefficient and often means significant delays in providing feedback to the students. Authentic and competency-based assessment (López-Nuñez et al., 2024; Sotiriado et al., 2019) remains necessary for graduate competencies needed for professional workplaces in Sri Lanka.

In light of such limitations of manual processes, many higher education systems have adopted electronic assessment and evaluation practices. Evidence from the UK and Europe has demonstrated that e-assessment can limit administrative and evaluative burden, provide some confidence that calculation errors have been reduced, and allow timely feedback (Dermo, 2009; Jordan, 2013). Research on e-examinations in Poland, for instance, identified that digitized assessment has a greater validity and allows for advanced data analytics to inform institutional decisions (Sotiriado et al., 2019). Additionally, electronic submissions and feedback increased students' satisfaction because they appreciate transparency and the option to access their results online (Walker et al., 2012).

Another consideration, in addition to the technology used, that influences fairness and accountability in the evaluation process is the clarity of roles and responsibilities in your evaluation process. Accountability structures, such as Responsibility Assignment Matrix (RACI) and its variants (PACSI, RAPID, etc.), are widely used in frameworks for developing organizational accountability (Project Management Institute, 2017). While RACI models are commonplace in organization management as well as IT service management, a model has not been used in an academic evaluation system. Some studies and efforts identify the growing need for rules and directions that formally govern the processes in an organization (Object Management Group, 2015), which would also lend itself well to a higher education evaluation model.

In the case of Sri Lanka, there has been relatively little scholarly attention given (outside of policies regarding the Sri Lanka Qualifications Framework (SLQF), and the Quality Assurance and Accreditation Council (QAAC)) to the evaluation and grading process. While both of these frameworks include discussion of standards and quality assurance (for qualifications), the processes related to the actual design, approval, and advising of student evaluation were designed in a decentralized and manual methods (Gunawardena, 2019).

The result is variability between faculties and institutions establishing inefficiencies and contention. The results of ICT adoption research in Sri Lanka have indicated a fundamental acceptance of technological solutions for institutional administration and teaching settings, specifically regarding the ability to use digital technological solutions. However, there were no institutions that had a fully functioning digital evaluation system that would encompass specific policies with clearly assigned responsibilities in the Sri Lankan context (T. Perera & Ranasinghe, 2020).

Existing literature has largely discussed the advantages of e-assessment systems, and the requisite assignment of clear responsibilities, specifically towards organizational processes. Yet, few of the studies have outlined how rules, responsibilities, and actor related, are linked to systematically building higher education evaluation systems, particularly within the context of Sri Lanka. While there exists a comparable body of international literature that explains how an ICT approach can provide a more efficient approach to evaluation, there is a practical absence of context specific frameworks that consider both technological solutions and function with some organizational governance. These literature sources provide valuable insights and frameworks that can inform the development of an electronic evaluation system and the establishment of responsibilities within the Sri Lankan university system. They contribute to the understanding of best practices and potential solutions to the challenges identified in the research objectives.

There is a considerable international scholarship that highlights the transformational capacities of electronic assessment in higher education. The literature indicates that electronic assessment can alleviate administrative workload, reduce computational errors, increase transparency, and provide quicker feedback to students. Models developed in Europe, the UK, and elsewhere demonstrate that digital solutions can enhance assessment processes, along with formal accountability models like RACI matrix assignment of responsibilities for accountability; in fact, these studies suggest that both the adoption of technology and an explicit structure of assignment of responsibilities contribute to enhanced academic integrity, student trust, and institutional accountability. However, much of the literature has come from contexts in which higher education systems are more centralized, technologically supported, and have greater compatibility with international quality assurance than in most regions.

In contrast, Sri Lanka’s higher education paradigm continues to be predicated on manual and decentralized assessment activity, in which academic staff retain varying degrees of autonomy in their assessment design and practice. While ICT tools for teaching and organization have been adopted, there is no evidence of an embed, cohesive and digital assessment framework that systematically addresses issues of fairness, efficiency and accountability. Additionally, any consideration of models of assessment governance focused on responsibility - specifically applying roles, rules, and processes - do not exist in the Sri Lankan context. This results in inconsistencies between faculties and institutions, delayed feedback for learners, and perceived inequities for students. Therefore, whilst global literature supports the effectiveness of e-assessment and accountability-based frameworks, there are such context-specific

models in Sri Lanka which connect digital technologies and governed practice. Addressing this gap is the foundation for the development of the Phases of Responsibility-Driven Students' Evaluation Service Management Framework (PRDSESMF) which engages directly with these issues by way of embedding technological efficiencies, within a rule- and responsibility-based governance structure contextualized for Sri Lankan universities.

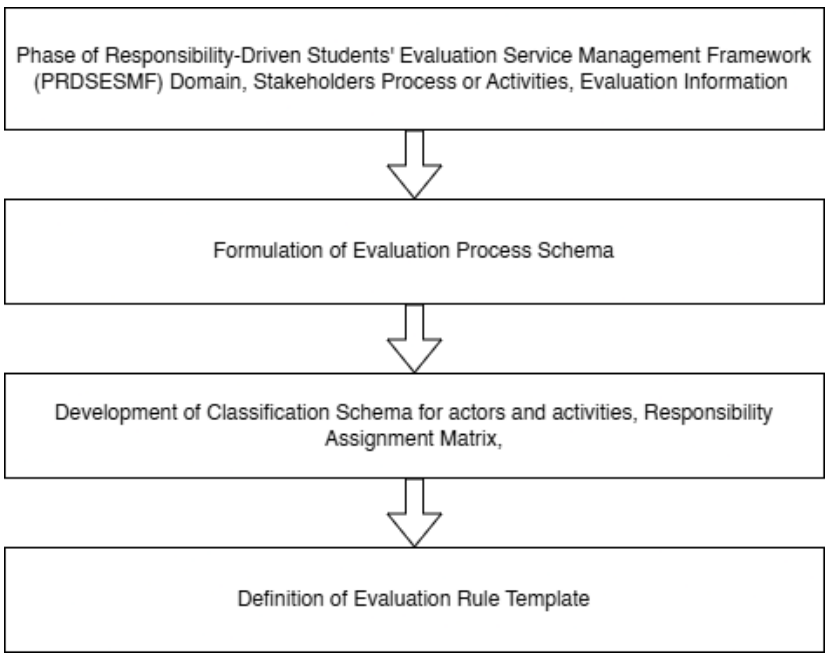
3. METHODS

To develop the Evaluation Processing System (EPS) for the Sri Lankan university system, this study adopts a mixed-method approach grounded in design science and behavioral science paradigms. The research was executed in two primary phases: data collection/problem identification and the systematic development of the evaluation framework.

1. Data Collection and Problem Identification

Initially, a comprehensive review of student faculty handbooks was conducted to understand institutional examination criteria, rules, and regulations. To complement this, semi-structured interviews were held with key stakeholders across Sri Lankan universities, including Deans of Faculties, Heads of Departments, senior academic members, and examination registrars. Insights from these interviews and document analyses were used to identify systemic inefficiencies and define requirements for the proposed solution.

Figure 2
Evaluation Processing Management



Source: Developed by Author, 2026.

The PRDSESMF Framework: The technical development of the EPS is guided by the OMG Semantics of Business Vocabulary and Business Rules standard. The operationalized stages of the **Phases of Responsibility-Driven Students' Evaluation Service Management Framework (PRDSESMF)** are structured sequentially to ensure a transparent and accountable evaluation management system (see figure 1).

1. Stage 1: PRDSESMF Domain Identification:

This stage defines the boundaries of the evaluation system. It maps out key stakeholders (deans, academic staff, registrars, and students), core evaluation processes (exam paper setting, grading, moderation, and results release), and the corresponding information flows.

2. Formulation of Evaluation Process Schema

The acquired domain knowledge is structured into a process schema. This schema explicitly maps the chronological trajectory of examinations and assessments from inception to completion, mitigating workflow ambiguity and establishing a uniform understanding across diverse faculties.

3. Classification Schema & Responsibility Assignment Matrix (RAM)

Actors and activities identified in the previous stages are systematically classified. This classification facilitates the creation of a RACI (Responsible, Accountable, Consulted, Informed) matrix, which directly addresses role ambiguity regarding evaluation processes within the Sri Lankan university context.

4. Evaluation Rule Definition Template

The final phase formalizes evaluation, moderation, and review policies into a standardized template. This template defines grading criteria, feedback timelines, and documentation protocols, ensuring institutional consistency and adherence to national quality standards while allowing future flexibility.

4. RESULTS AND DISCUSSIONS

The evaluation of the research work is divided into three main sections: the researchers considered past experiences and human errors associated with the examination evaluation process. They conducted qualitative analysis in consultation with domain experts to assess the correctness and completeness of the proposed system.

Additionally, the researchers identified a formulation representation schema and developed a responsibility assignments management matrix for the evaluation process in the higher education system. This information helps define and allocate responsibilities accurately, ensuring a smooth and efficient evaluation management process system.

Evaluation Process System (EPS) in the University System: The evaluation management process system in the university system is complex and time-consuming. It involves various stages that span a significant period, making it

challenging to comprehend the entire process as a whole. To better understand and implement an IT-based solution to this intricate system, it is helpful to break down the evaluation process into smaller stages.

The Evaluation Processing System (EPS) can be divided into three main sub-processes based on the time intervals involved: Students' Evaluation Design and Approval Phases, Scheduling and Execution Phases, and Post Students' Evaluation Phases. Each sub-phases plays a crucial role in ensuring a comprehensive evaluation of students.

The researcher discusses only the Students' Evaluation Design and Approval Phases, aiming to achieve the objectives and goals.

Students' Evaluation Design and Approval Phases: The Students' Evaluation Design and Approval Phases is the initial stage of the university's student evaluation management system as illustrate in Figure 2. It encompasses various activities that must be completed before the examination process can commence. These activities are crucial for ensuring legal compliance and a well-organized examination process. This process comprises nine key activities:

I. Students Registration: the registration process can be divided into two activities: registration for the course and registration for the examination (subject). This process involves registering students for the upcoming examination, which includes verifying student details, confirming eligibility, and ensuring accurate enrolment in the respective courses."

II. Appoint Examiners (paper setter, Moderator, supervisor, Invigilator, Hall attender): In this activity, examiners are appointed for various roles, including paper setters, moderators, supervisors, invigilators, and hall attendants. Specific rules govern these appointments. For instance, if the professor is designated as the paper setter, the appointment of a moderator is not required. Additionally, moderators and supervisors must always be senior academic members and invigilators must be academic or academic supportive staff members. Each role plays a crucial part in the examination process.

III. Examination Timetable Scheduling (Students): The examination timetable is developed from various considerations including availability of exam locations, course requirements and student conviviality. This activity involves seeing specific dates and times assigned to individual examinations.

IV. Setting Question Papers: Question papers are set by qualified scholars, typically lecturers who have taught the course unit for which the paper relates. They ensure that the questions are in line with the curriculum description seeking to ensure levels of attainability.

V. Moderation of Question Papers: Question Papers go through a moderation process to assure accuracy, equity and an adequate level of difficulty. Senior members of the academy representing either the university or an outsider would take on the role of moderator.

VI. Printing Question Papers: Once the question papers have been developed and approved, they are prepared for printing and distribution. This activity includes managing the print run ensuring there are enough copies produced for the examination.

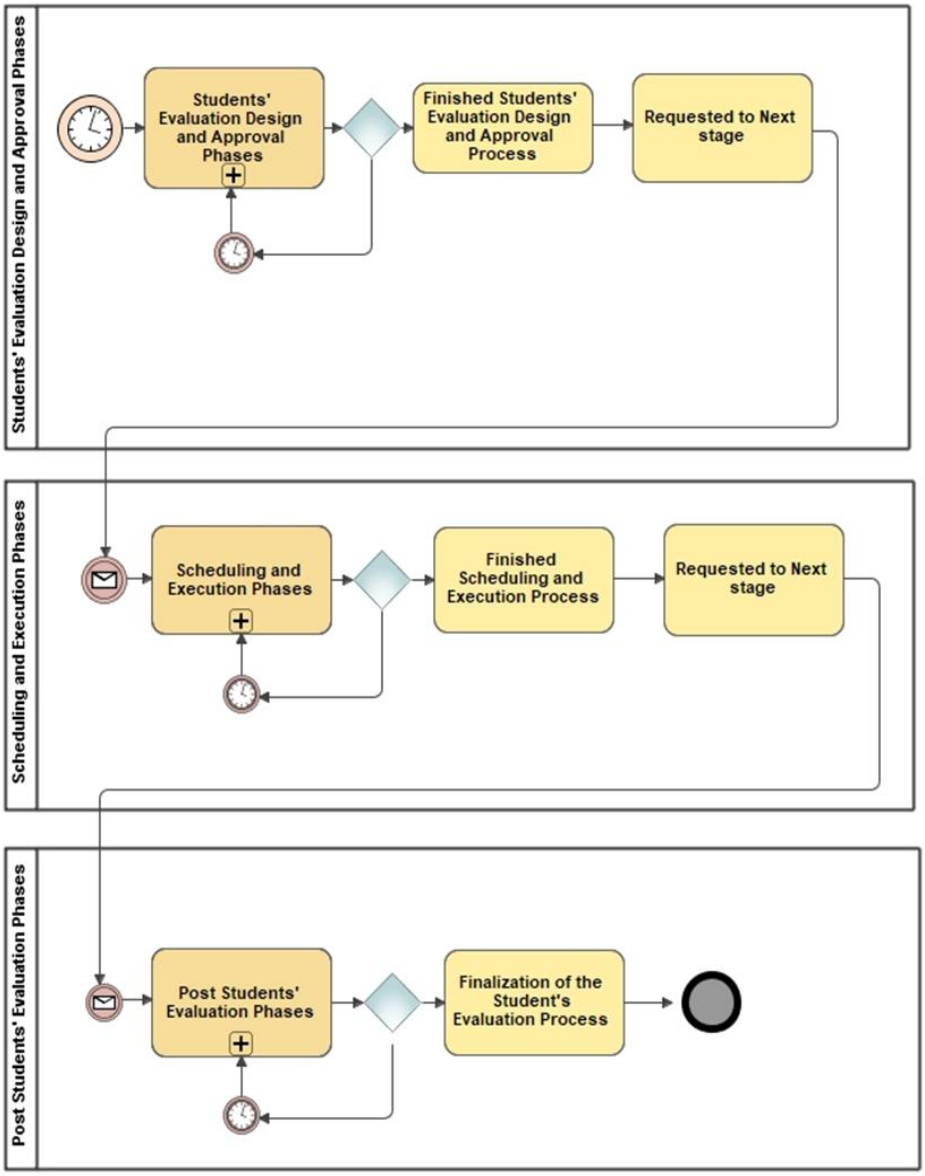
VII. Scheduling Examination Conducting Staff (Roster): The examination conducting staff, including supervisors and invigilators, are assigned specific roles and responsibilities. A roster is prepared to schedule their presence during the examination period.

VIII. Approval of the Faculty Board: The Faculty Board, consisting of academic authorities and faculty members, reviews and approves the overall evaluation process. They ensure compliance with regulations and academic standards.

IX. Approval of the Senate Board: The Senate Board, comprising higher-level authorities within the university, provides final approval for the evaluation process. Their endorsement ensures the process meets the university's academic requirements.

Formulation of an Evaluation Processing Schema (EPS): The researcher identified three main components within the process of the Phases of Responsibility-Driven Students' Evaluation Service Management Framework (PRDSESMF): Students' Evaluation Design and Approval Phases, Scheduling and Execution Phases, and Post Students' Evaluation Phases. After completing one Phases, the next Phases begins, and each Phases comprises numerous activities [see Figure 3]. Each activity involves multiple actors for completion. This research primarily emphasizes the Students' Evaluation Design and Approval Phases to achieve the research objectives.

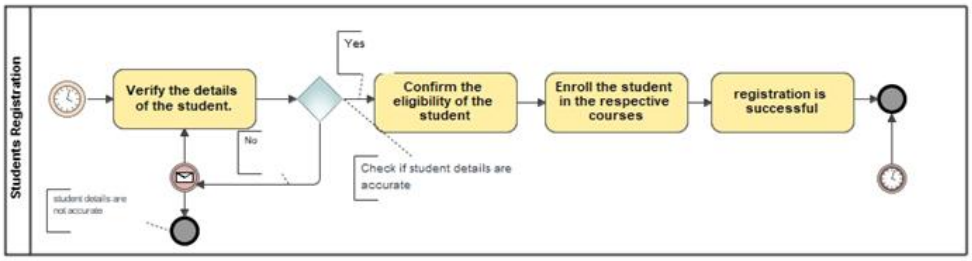
Figure 3
Evaluation Processing Schema



Source: Developed by Author, 2026.

Formulation of the student registration processing schema for the Student Evaluation design and approval process is illustrated in Figure 4. This is the initial step in the evaluation process; all students must register under the course unit before commencing the evaluation process. Subsequently, they must register for the evaluation process with the course units within the university system.

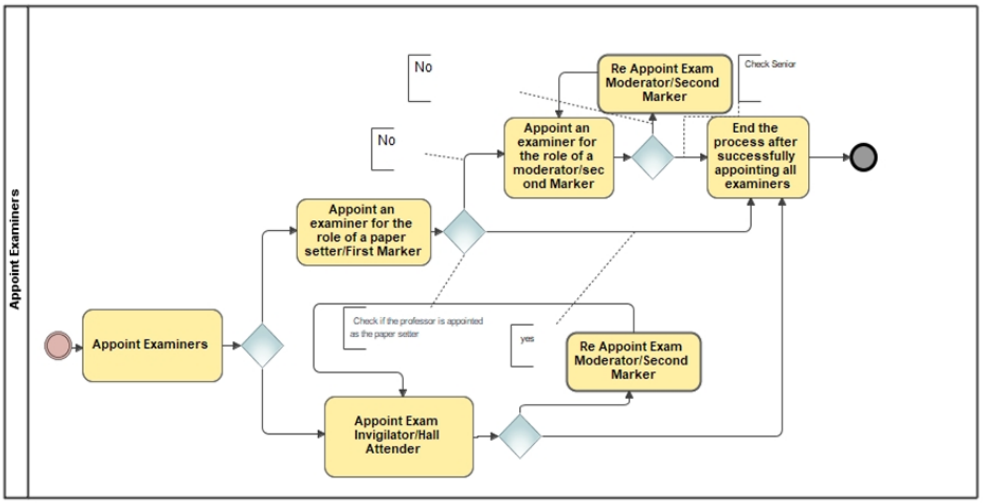
Figure 4
Students' Course Unit Registration Process Schema



Source: Developed by Author, 2026.

Without this step, the evaluation process in the system cannot commence. For example, the activities of student registration for course unit Figure 4 and appointment of examiners schema illustrate in Figure 5, along with their associated tasks, are displayed as follows:

Figure 5
Examiners Processing Schema for evaluation



Source: Developed by Author, 2026.

Define and identify the Actors and Activity Responsibility Matrix (AARM):

Responsibility Assignment Matrix (RAM) for Students' Evaluation Design and Approval Process: The Responsibility Assignment Matrix (RAM), also known as the RACI matrix, describes the roles and responsibilities of various actors involved in completing tasks within the Students' Evaluation Design and Approval process. While the RACI matrix is a standard for business processes, it may not fully capture the complexity of this evaluation process. Therefore, a new set of key responsibilities is defined for each task to ensure effective completion. The formulated representation

schema for the responsibilities of each task is tailored specifically for the student evaluation design and approval process in the university.

Table 1
Actors and Activity Responsibility Template.

Project Deliverable /Activity	**Registration**	**Scheduling examination**	**Appoint Examiners**	**Setting question papers**	**Moderating Question papers**	**Printing Question papers**	**Scheduling examination**	**Approval of Faculty board**	**Approval of Senate board**
Head	C	Ap	A	A, P	A	C	C	C, Ap, Sor	C
Dean	I	C	Ap	C	C	Q	A	A	A
Exam. registrar	A/R	A/R	C	I	I	A	I	I	I
Management Assistant	P	P/R	P/R	R		R	R		
Paper setter		I	I	P/R	S	S			
Paper Moderator		I	I		R				
First marker		I	I						
Second Marker		I	I						
Supervisor		I				I	I		
Invigilator		I					I		
Hall attendance		I					I		
Students (Candidate)	Pi/I	I							
Faculty Board			Ap				Ap	R	Ap
Senate Board			Ap				Ap	I	R

Source: Developed by Author, 2026.

R = Responsible (also recommended)
A = Accountable (also approver or final approving authority)
C = Consulted (sometimes consultant or counsel)
I = Informed (also informed)
P=Participate the work
Ap=Approver
S=Suggest
Q=Quality review
D=Decision
''=Assists
Dm=Decision maker
S'=Support
Sor=Signature -off required
Pi=provide information

- Task or role: Students Registration Key Responsibility: responsible, accountable, consulted, informed, and provide information Abbreviation of key Responsibility: RACIPiS
- Task or role: Scheduling examination Key Responsibility: responsible, accountable, consulted, informed, and Approval Abbreviation of key Responsibility: RACIApA
- Task or role: Appoint Examiners Key Responsibility: responsible, accountable, consulted, informed, and Approval Abbreviation of key Responsibility: RACIApA
- Task or role: Setting the question papers Key Responsibility: responsible, accountable, consulted, informed, and Participate in the work Abbreviation of key Responsibility: RACIPa
- Task or role: Moderating the question papers Key Responsibility: responsible, accountable, consulted, informed, and Suggest changes Abbreviation of key Responsibility: RACISu
- Task or role: Printing Question papers Key Responsibility: responsible, accountable, consulted, informed, Suggest changes, and Quality review the task Abbreviation of key Responsibility: RACISQ
- Task or role: Scheduling examination conducting staff (Roster) Key Responsibility: responsible, accountable, consulted, informed, Quality review, suggest changes, and participate in the task Abbreviation of key Responsibility: RACIPQS
- Task or role: Approval from the Faculty board Key Responsibility: responsible, accountable, consulted, informed, Approval, and Signature-off required for the task Abbreviation of key Responsibility: RACIApS
- Task or role: Approval of Senate board Key Responsibility: responsible, accountable, consulted, informed, and Approval Abbreviation of key Responsibility: RACIAp

Definition of Evaluations Rule Template (ERT):

The researcher can define the rule template for the student registration activity as an example. To complete the student's registration activity, many actors are involved with different tasks. The task has three different situations: starting the task,

progressing the task and completing the task. Now, let's consider the rule for the student registration activity in the Students' Evaluation Design and Approval Process (SEDAP).

The students' evaluation process can be categorized into three phases: the Students' Evaluation Design and Approval Phase (SEDAP), the Scheduling and Execution Phase (SEP), and the Post Students' Evaluation Phase (PSEP). Each phase consists of multiple activities, and to complete each activity within each phase, many actors are involved. To govern each activity, a set of rules may be applied. The following matrix (see Table 2) displays the rule classification schema for the student’s evaluation process.

Table 2

Rule Classification Schema Matrix

Actor Type	SEDAP	SEP	PSEP
Head	Rules related to EDAP	Rules related to SEP	Rules related to PSEP
Dean	Rules related to EDAP	Rules related to SEP	Rules related to PSEP
Exam. registrar	Rules related to EDAP	Rules related to SEP	Rules related to PSEP
Management Assistant	Rules related to EDAP	Rules related to SEP	Rules related to PSEP
Paper setter	Rules related to EDAP	Rules related to SEP	Rules related to PSEP
Paper Moderator	Rules related to EDAP	Rules related to SEP	Rules related to PSEP
First marker	Rules related to EDAP	Rules related to SEP	Rules related to PSEP
Second Marker	Rules related to EDAP	Rules related to SEP	Rules related to PSEP
Supervisor	Rules related to EDAP	Rules related to SEP	Rules related to PSEP
invigilator	Rules related to EDAP	Rules related to SEP	Rules related to PSEP
hall attendance	Rules related to EDAP	Rules related to SEP	Rules related to PSEP
Students (Candidate)	Rules related to EDAP	Rules related to SEP	Rules related to PSEP
Faculty Board	Rules related to EDAP	Rules related to SEP	Rules related to PSEP
Senate Board	Rules related to EDAP	Rules related to SEP	Rules related to PSEP

Source: Developed by Author, 2026.

Based on the classification schema outlined above, the following rules can be defined as elements within the rule classification schema matrix:

If the actor is a candidate, the role is registration, the attendance is greater than 80%, and the status is registered, then the relevant rule can be defined as follows under the SEDAP: the first rule is presented as an example, in a similar way, other rules can be formulated, a few of sample rules are shown below.

Rule 1:

If (actor=candidate and role=registration for the course unit and attendance>=80) then eligible to site the examination.

If (actor =candidate and status=registered for courser unite) then sit the examination

Rule 2:

If (SEDAP = SR AND actor = student AND activity = checking student's information) is true

Then

Enrol in course activity

Else

Handle ineligible students through an alternative path activity

End If

Rule 3:

If (actor = candidate AND status = registered for course unit)

Then eligible to sit the examination.

This study was conducted as a pilot study and was limited to the Students' Evaluation Design and Approval Process (SEDAP). There are two other processes in existence. However, there is potential for extending this research to the other two processes, namely the “Scheduling and Execution Phases (SEP)” and the “Post Students' Evaluation Phases (SPEP)” within the university system. Furthermore, the researchers believe that this approach can be implemented on those phases across the entire island.

5. CONCLUSION

The findings of the study confirm that there is widespread agreement on the need for higher education to have more structured evaluation models that are transparent and accountable. The research work used a SMART evaluation framework, which is associated with rules and responsibility that go directly to the concerns that were expressed in Sri Lanka over the years about student evaluations being relevant, subjective, and effective. The framework ascribed responsibilities to the actors-student, lecture, administrator-to create transparency and to enhance accountability in institutions. The smart approach was the framework to evaluate education in Sri Lanka, where education is still largely manual, but can serve as a modernization of student evaluation that is legitimate. The framework did include both formative and summative approaches to ensure a balance between the development of learning opportunities versus opportunities for certification.

This research has contributed a body of methodological guidelines to support designers in developing an Evaluation Management Processing System (EMPS) for the Students' Evaluation Design and Approval Phases.

In addition to academic contribution, this research has implications for useful policy and practices in Sri Lankan higher education. The developed Evaluation Management Processing System (EMPS) can support Universities to meet the requirements of national bodies like the Sri Lanka Qualifications Framework (SLQF) and the Quality Assurance and Accreditation Council (QAAC). Through the use of structured responsibility matrices and guidelines for evaluation as part of the institution’s processes, the framework can provide universities a pathway toward potentially creating more consistency across faculties, limiting conflict and increasing confidence about student assessment. To policymakers and administrators, the framework is a model to follow to redesign existing processes while ensuring coherence with international best practices in higher education assessment.

While there have been a few research efforts in this domain, to our knowledge, no research has been conducted to develop an ontological framework process model for the Students' Evaluation Design and Approval Phases within the Evaluation Management Processing system (EMPS) in Sri Lankan higher education. Therefore, a well-defined modelling framework has been developed in the EMPS in Sri Lankan higher education as part of this work.

In this study, various actors, activities, collaborations, documents, and a set of rules involved in completing the Phases of Responsibility-Driven Students’ Evaluation Service Management Framework. An investigation has been conducted to explore

these aspects. The modelling of multi-party collaboration is crucial for designers to understand the system during the development of the Evaluation Management Processing system (EMPS).

At the theoretical level, the study advances existing scholarship in electronic assessment by applying rule-based assessment and responsibility assignment models within a higher education setting. While international studies have typically examined technologies for e-assessment and responsibility focuses separately, this study brings together these two approaches into a single framework that offers valid converged ontological analysis. The proposed offer not only improves time allocation in existing assessment practices but also advances philosophical concerns to enable accountable assessments that are transparent and fair. The dual focus on both technology and organizational dimensions enables distinction of the EMPS from other models and contributes a new line of research to information systems in education.

hope that using this study's theoretical lines of research as a reference model, designers can create a suitable Evaluation Management Processing system (EMPS) that would improve the evaluation practices in the existing higher education system in Sri Lanka. The framework also underpinned the possibility of new responsibility matrices that enable greater scrutiny of the evaluation of different stakeholders, while further enabling accountability when conducting ‘accountable tasks.’ This provides an opportunity to avoid disputes while developing mutual trust, fidelity and efficacy in the evaluation of student learning. Another theoretical direction will encourage adapting artificial intelligence (AI) technologies to the overall evaluation process - automatic grading, preventing plagiarism, and providing personalized student feedback, etc. These technologies can help create greater transparency, reduce times for overall evaluation and help provide scale of educational processes, all while complying with the "vision of a University Grants Commission of Digital Higher Education."

As with all research, there are limitations to this study that provide the basis for future research. A framework was conceived conceptually and vetted by stakeholders, however a pilot run with members from multiple universities on a larger scale should be executed to test scale and flexibility in multiple higher education systems. Further, although the merit of using artificial intelligence and automated feedback and marking has been identified, that was beyond the scope of the present study and should be studied in future works. Additionally, future research can also investigate the incorporation of learning management systems and data analytics into the EMPS to enable further capability of the system to provide real-time learner results and institutional performance insights.

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