Effectiveness of BPMN and RACI Frameworks for the Design and Approval Process of a Student Evaluation System: A Systematic Literature Review

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Dissanayake, D.N.A.[1*] Rathnayake R.M.N.B.[2] and Indumini J.D.U.[3]

[1,2]Department of Information Technology, Faculty of Social Sciences and Languages, Sabaragamuwa University of Sri Lanka, Belihuloya

[3] Center for Computer Studies, Sabaragamuwa University of Sri Lanka, Belihuloya

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Abstract

Before the creation of a student evaluation system for the design and approval process (SEDAP), it is crucial to uncover the scope and address the limitations of previous studies. This study aims to explore the literature of the use and effectiveness of Business Process Modeling Notation (BPMN) and Responsible, Accountable, Consulted, and Informed (RACI) frameworks in the SEDAP, utilising the PRISMA statement. To achieve this, the PRISMA methodology was used to identify, select, and critically analyse relevant literature from four academic databases: Springer, IEEE Xplore, ScienceDirect, Scopus, and Google Scholar citation searching, among other methods. A total of 155 articles were gathered and underwent three phases: identification, screening, and inclusion, following PRISMA guidelines. In the identification phase, duplicate reports were removed, and ineligible records were marked as such by automation tools. During screening, 89 reports were excluded due to factors such as an ineligible population, irrelevance to the main subject, differing applied methodologies, and distinct outcome evaluation methods. Finally, 15 reports were included in the finalisation phase. The findings of this study discussed the literature on the use and effectiveness of BPMN and RACI frameworks in the SEDAP. To provide a deeper understanding, a thematic analysis of the selected studies was conducted. This thematic review organises the findings according to the research questions that guide this systematic literature review. Additionally, the study seeks to inform administrators and researchers about the potential benefits of utilising these frameworks in student assessment.

Keywords: BPMN, PRISMA Statement, RACI, Student Evaluation, Systematic Literature Review

INTRODUCTION

Academic achievement in the ever-changing world of education continues to be based on the efficient assessment of students' performance (Black, 1998). Ensuring that assessments are equitable, transparent, and align with an institution's educational goals (Taras, 2010) requires a strong student evaluation system. Exams are a vital part of this assessment system and are highly significant in determining students' academic progress.

Students' Evaluation Design and Approval Process (SEDAP) involves the initial planning and designing of the student evaluation system (Brown, 1994). It includes the development of evaluation criteria, types of assessments, and overall evaluation methodology. One of the most important aspects of SEDAP is the approval process, which entails a careful review of the suggested system to ensure that it is sacred and aligned with the university's scholarly values (Yorke, 2003). First and foremost, SEDAP establishes the parameters for the rest of the process, laying the groundwork for how the student's academic progress will be evaluated.

The main objective of this Systematic Literature Review (SLR) target to explore the literature of the use and effectiveness of Business Process Modeling Notation (BPMN) (Weske, 2012) and Responsible, Accountable, Consulted, and Informed (RACI) (Project Management Institute, 2017) frameworks in the design and approval process of student evaluation systems, utilizing the PRISMA statement (Moher, 2009).

BPMN is used for better understanding and communication of a company's processes (Lodhi, Köppen, & Saake, 2011),

[*] **Corresponding author:** Tel.: +94 (71) 514 6861; Email: nihinsadissanayake@gmail.com
https://orcid.org/0009-0008-2769-7043

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and BPMN is a standard defined by the Object Management Group (OMG, 2006) for modelling business processes. BPMN graphical notations are used as a tool for communication between business and technical users, while the RACI matrix, a kind of responsibility assignment matrix (RAM), is used as a tool to assign responsibility and roles during the work process. RACI is derived from four responsibilities: responsible, accountable or approved, consulted, and informed (Smith & Erwin, 2005).

The "Responsible" person is the one who carries out the task and takes ownership of its completion (Lee, Lee, Jin, & Hyun, 2021). The "Accountable" individual holds the final authority and is ultimately answerable for the task's outcome. "Consulted" refers to people who give advice and contribute to the task through holistic communication. Meanwhile, an "Informed" person is one who receives updates about the progress and results but does not directly participate.

Before creating a student evaluation system for the design and approval process, it is important to explore its scope. Identifying gaps in current literature and practices requires a systematic approach to address these issues effectively.

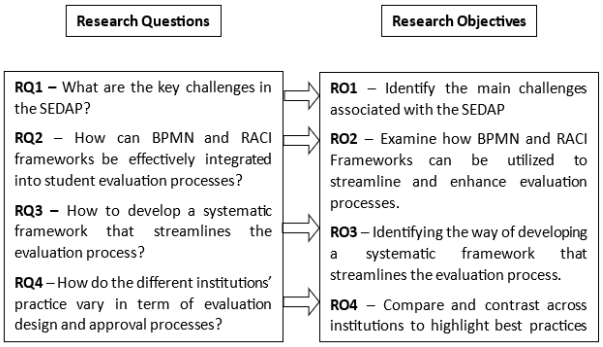
This review method ensures a structured and selective process, ensuring a comprehensive analysis of relevant data while minimising bias (Angioi & Hiller, 2023). The SLR is the most effective way to enhance academic performance and engagement involving student evaluation systems.

The development and creation of a student evaluation system is a bit challenging. Lack of standardised procedures and leading to inconsistencies in academic examination management can be presented as problems in the existing process. There is a pressing need to address these problems by identifying and developing an evaluation scheme for student evaluation using BPMN and RACI. This framework significantly improves the efficiency and reliability of the student evaluation system, therefore enhancing the overall quality of education.

Research Questions and Objectives

There are four key research questions (RQs) and specific objectives (ROs) that can be presented to achieve the primary objective of this study. The first research question (RQ1) investigates the key challenges in the SEDAP, aligning with RO1, which focuses on identifying those issues. The second research question (RQ2) examines how BPMN and RACI can be effectively integrated into student evaluation processes, directly supporting RO2, which seeks to explore their potential role in streamlining and enhancing evaluation mechanisms. Additionally, RQ3 develop a systematic framework that streamlines the evaluation process, aligning with RO3. Finally, RQ4 explores how evaluation practices differ across institutions, linking to RO4, which involves comparing institutional approaches to highlight best practices and inefficacies. By addressing these research questions and objectives as below Figure 1 shows, the study will provide valuable insights into improving the design and approval process of student evaluations, ensuring efficiency, consistency, and effectiveness in educational assessment systems.

Figure 1: Research methodology diagram



Source: Developed by author, 2025

This study will significantly contribute to academic literature by integrating existing research and critically examining gaps in the design and approval processes of student evaluation systems. It will not only enhance the understanding of these processes but also lay the foundation for future research using models such as PRISMA, RACI, and BPMN. By providing both theoretical insights and practical applications, this study supports a more structured approach to improving student evaluation systems, making it valuable for both researchers and practitioners.

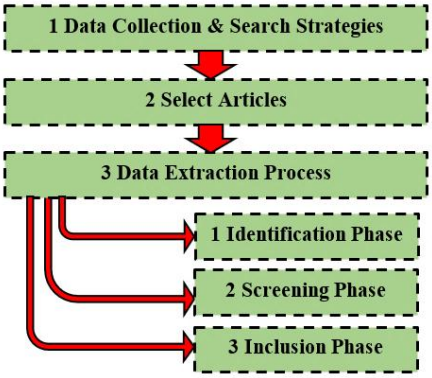
However, some limitations should be acknowledged. First, the systematic literature review approach relies on previously conducted studies, which may overlook recent advancements or innovations in educational evaluations. Additionally, while consistency is essential, excluding non-English sources may limit the study's global perspective. Lastly, restricted access to certain databases and full-text publications may have prevented a comprehensive review of all relevant literature, potentially missing important studies. These limitations highlight the need for further research with a broader and more inclusive approach.

REVIEW METHODOLOGY

This study followed the Preferred Reporting Items for Systematic Reviews (PRISMA) guidelines to generate this review. Methodology can be divided into three steps with data collection and search strategies as the first step, selecting articles as the second step, and the data extraction process- identification phase, screening phase, and inclusion phase as the final step.

Research Design

Figure 2: Research design



Source: Developed by author, 2025

Data Collection and Search Strategies

Addressing limitations of previous studies, this research employs the PRISMA statement to identify, select, and critically analyse relevant literature from four academic databases, including Springer, IEEE Xplore, Science Direct, Scopus and Google Scholar citation searching, among other methods. By systematically searching each database, a total of 155 articles which were written in English were gathered. Databases were searched individually using search terms and strategies to identify as many suitable studies as possible.

Search terms were developed together with informatics and combined with Boolean operators as follows. The terms "BPMN" AND "RACI" AND "Student Evaluation" AND "PRISMA" as keywords for the searching term in all databases and citation searching. To assure the inclusion of studies focusing on both general evaluation systems and the specific frameworks essential to this research, as an example, the Boolean logic "Student Evaluation" AND "RACI" OR "BMPN" were used. This focused approach succeeded in easily finding the most relevant studies, especially in the design and approval process in the student evaluation system. The reference list of the eligible papers included after the electronic search was also manually searched. This searching strategy was methodically created to ensure full coverage of the relevant scope. The following Table 1 shows a summary of data collection and search strategies among the selected four databases.

Table 1: Data collection and search strategy

Database	Search terms/ keywords	Boolean operators	Applied filters	Retrieved papers
Springer	Student Evaluation AND RACI OR BPMN	AND, OR	Full Text Published After 2020	85
IEEE Xplore	Student Evaluation System AND RACI AND BPMN	AND	Full Text English language 2020 – 2025	68
Science Direct	Student Evaluation AND RACI OR BPMN	AND, OR	Published After 2010 English language	75
Scopus	Student Evaluation OR BPMN AND RACI	OR, AND	Full Text Published 2015 - 2025	86

Source: Developed by author, 2025

Selecting Articles

After gathering data, titles and abstracts were individually reviewed to determine whether to include or exclude them from the scope. The full text of relevant articles was reviewed for final inclusion.

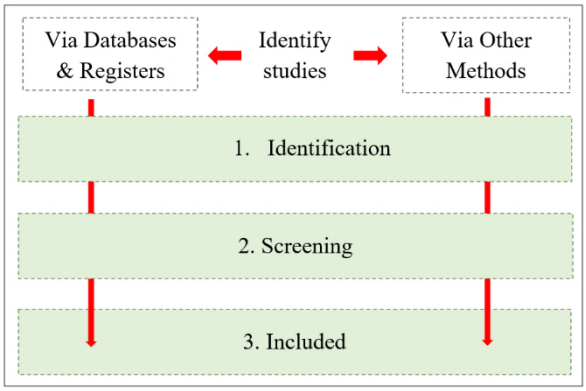
To effectively organise and manage the collected data, an efficient data management method was implemented. The Mendeley referencing tool was utilised to store and organise references, ensuring easy access to full-text papers and citation details. Its duplication detection feature was employed to verify the dataset's uniqueness and remove supplicate records. This meticulous data management approach played a crucial role in maintaining the accuracy and integrity of the systematic literature review on the student evaluation system. By adopting a comprehensive search strategy, utilising multiple databases, and implementing effective reference management, the study ensured reliability. During this process, Mendeley detected and eliminated 62 duplicated records (Mendeley - reference).

Data Extraction Process

Following the PRISMA statement guidelines, this data extraction process can be divided into three phases: first identification, second screening, and third phase, with two main sections of identification of studies via database/registers, and via other methods.

Springer, IEEE Xplore, Science Direct, and Scopus belong to section one of the identification of studies via databases and registers. While Google Scholar citation searching belongs to section two of the identification of studies via other methods. 112 reports were identified from databases in section one, and another 43 records were identified from citation searching.

Figure 3: Structure of the process - PRIZMA statement



Source: Developed by author, 2025

PRISMA Statement

The PRISMA statement (Preferred Reporting Items for Systematic Review and Meta-Analysis) is a set of guidelines designed to help researchers transparently report systematic reviews and meta-analyses. Primarily, the PRISMA statement has been designed for systematic reviews of studies (Page et al., 2021). It ensures that these studies are conducted rigorously and that their findings can be easily understood and replicated. The PRISMA statement is important for enhancing transparency and reproducibility in systematic reviews. It also helps researchers and readers assess the quality of the review.

The PRISMA statement consists of a checklist and a flow diagram. The first one is PRISMA Checklist: a 27-item checklist covering various sections of a systematic review,

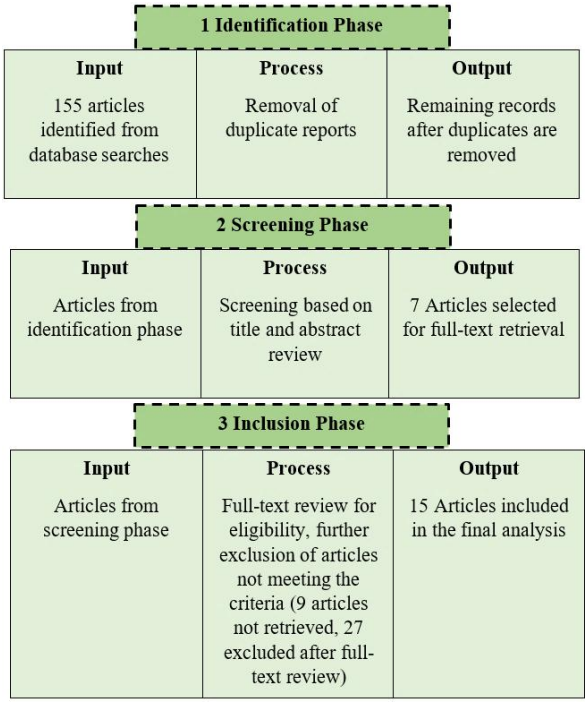
including title, abstract, introduction, methods, results, discussion, findings and conflict of interest. The second one is PRISMA Flow Diagram: a visual representation of the study selection process, showing the number of records identified through database searches, records screened, full-text articles assessed for eligibility, and studies included in the final analysis.

The PRISMA methodology is used in this study to ensure a transparent and well-structured approach to reviewing literature on BPMN and RACI in student evaluation systems. This methodology helps in identifying, screening, and selecting suitable studies systematically that support understanding the effectiveness and usage of these frameworks in education.

PRISMA Flow Diagram

The PRISMA flow diagram helps to identify the study selection process, ensuring clarity in filtering relevant literature. There are three stages, including identification, screening, and inclusion of the PRISMA flow diagram and which reduces duplicates and improves the reliability of findings.

Figure 4: Detailed structure of the process – PRISMA statement



Source: Developed by author, 2025

The above Figure 4 presents the structured article filtering process commonly used in SLR. This process ensures that only the most suitable and high-quality research articles are included in the final phase.

The first phase is the identification phase. The main objective of this is to collect as many relevant papers as possible from databases. A total of 155 articles were identified through a systematic search in databases.

Under the process, the first step is to remove duplicate reports, which happens when the same paper appears multiple times in different databases. This step prevents redundancy and ensures that only unique records are passed to the next stage. As an output of this, a refined paper set was created while duplicate articles were removed, leaving only unique records for further evaluation.

Next, in the screening phase, while focusing on conducting an initial filtering, the collected articles undergo an initial evaluation based on their titles and abstracts. This phase is important for filtering out studies that do not align with the research objectives. As a result, 7 articles are selected for full-text retrieval, while others are excluded due to irrelevant, insufficient information, or misalignment with the study's scope.

The final step, the inclusion phase, involves a full-text review of the selected articles from the second phase. This step determines the final set of articles that will be used in the systematic review at the end. To ensure its relevance and quality, each article is assessed based on predefined eligibility criteria. Some articles may not be available for retrieval, while others may be excluded after a detailed full-text review.

According to the diagram, 9 articles could not be retrieved, and 27 articles were excluded. Ultimately, 15 articles are included in the final analysis, forming the foundation for the systematic review.

This article selection process follows the PRISMA guidelines, which are widely used in the academic context to enhance transparency. Applying this systematic method is important to minimise bias and ensure that only the most suitable and methodologically sound studies are included in the final analysis. This structured approach strengthens the overall reliability of the research and enhances its contribution to the academic field.

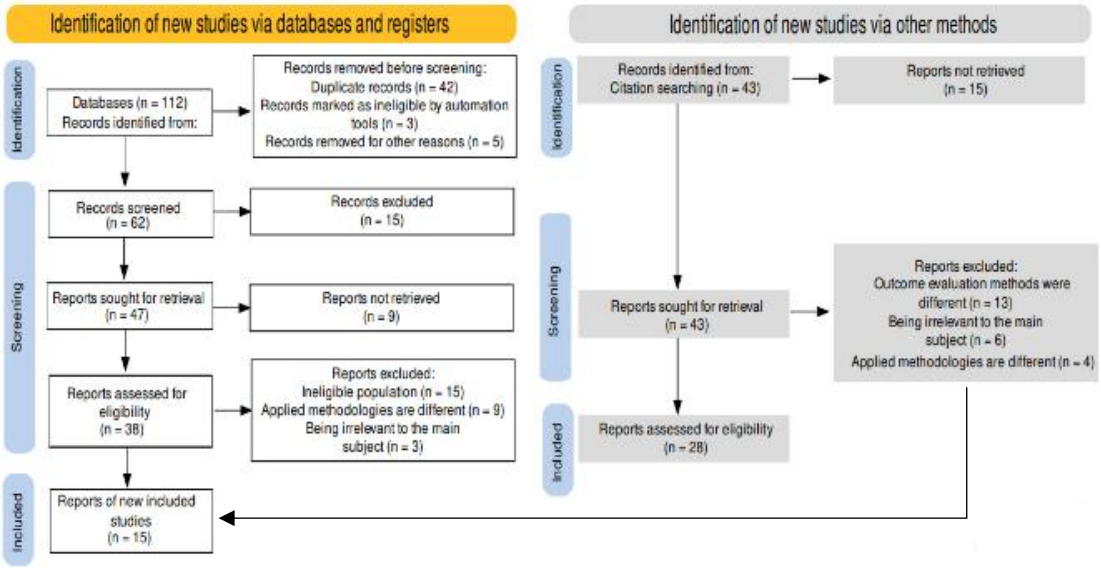
RESULTS AND DISCUSSION

This section presents the results found through this systematic revision process. This section can also be divided into two main parts according to the output. According to the PRISMA guidelines first part of the results shows the results of the PRISMA statement, while the other part represents the characteristics of included studies.

Results of the PRISMA Statement

This section basically includes the results of the PRISMA Statement. The output of all the results in each phrase of the PRISMA statement is shown in the figure below.

Figure 5: Results of the PRISMA statement



Source: Developed by author, 2025

Identify New Studies Via Databases & Registers: Under the identification of new studies via databases and registers, the first phase, the identification phase, 62 duplicate reports were removed, and 3 ineligible records were marked as such by automation tools. And 5 other records were removed for other reasons.

The screening section is important as this is where the bulk of records will be excluded, and also gives some justifications as to why chosen to remove these records. Under the identification of new studies via databases and registers, a total of 62 records were run through the screening process. Within that 62, 15 records were excluded. Then, 47 reports were sought for retrieval, and of those, 9 reports were not retrieved. After assessing for eligibility, 38 reports were selected, and 17 reports were excluded due to an ineligible population (15 reports), a different applied methodology (9 reports), and being irrelevant to the main subject (3 reports). As a summary of the identification of new studies via databases and registers, within the screening phase, 89 reports were excluded due to factors such as an ineligible population, irrelevance to the main subject, differing applied methodologies, and distinct outcome evaluation methods.

Identify New Studies Via Other Methods: Under the identification of new studies via other methods, the first phase, the identification phase, 43 records were identified from citation searching using Google Scholar. A total of 15 reports were not retrieved, and the other 28 reports were assessed for eligibility. 13 reports were excluded due to different outcome evaluation methods; 6 reports were excluded due to being irrelevant to the main subject and the other 4 were excluded because applied methodologies were different. Finally, 15 reports were included in the finalisation phase using both sections. Table 4 presents the list of all the included papers in this systematic review.

Characteristics of Included Studies

All the included fifteen studies were organised by publication year and by alphabetical order of the first author's name, with a number code related to the database. To identify each paper number code is combined with its database, as shown in Table 2 below.

Table 2: Number code list with databases

Number code	Database
SPG	Springer
SD	Science Direct
IEX	IEEE Explore
SCP	Scopus

Source: Developed by author, 2025

The search based on the inclusion criteria yields a total of 15 articles. After applying exclusion criteria, we only select 15 articles total of 155 articles for the present systematic review of the literature. Papers which are included in the systematic review can be summarised, and only a few papers are presented in Table 3.

Table 3: Summary of selected articles

Number code	Year	Authors	Journal name	Title	Ref
SPG1	2024	Giacomo Garaccione, Riccardo Coppola, Luca Ardito, Marco Torchiano	IEEE International Symposium on Empirical Software Engineering & Measurement (ESEM '24)	Gamification of a BPMN Modeling Course: An Analysis of Effectiveness and Student Perception	(Garaccion, Coppola, Ardito, & Torchiano, 2024)

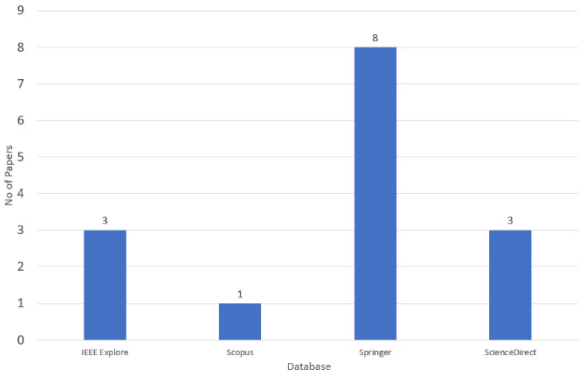
SD1	2025	Martinus Tukiran, Nurul Ainu Sofi, and Winnie Pratiwi Anas	Decision Science Letters	A decision science approach to redesigning organizational structure: empirical insights from business process mapping and strategy alignment	(Tukiran, Sofi, & Prat, 2025)
IEX1	2012	Mar´ıa-Cruz Valiente, Elena Garc´ıa-Barriocanal, and Miguel-A´ ngel Sicilia	IEEE Transactions on Systems, Man, And Cybernetics	Applying Ontology-Based Models for Supporting Integrated Software Development and IT Service Management Processes	(Valiente, Garc´ıa-Barriocanal, & Sicilia, 2012)
IEX3	2022	Ihsane Abouzid, Younes Karfa Bekali and Rajaa Saidi	Journal of ICT Standardization	Modelling IoT Behavior in Supply Chain Business Processes with BPMN: A Systematic Literature Review	(Abouzid, Bekali, & Saidi, 2022)
SCP1	2020	Ana Ivanchikj, Souhaila Serbout and Cesare Pautasso	-	From Text to Visual BPMN Process Models: Design and Evaluation	(Ivanchikj, Serbout, & Pautasso, 2020)

Source: Developed by author, 2025

According to the common characteristics of the selected studies, this section can be divided into several sub-areas, considering each characteristic.

Character 01 – Source Database

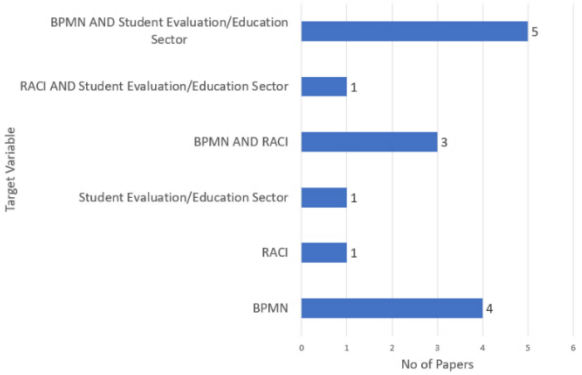
Figure 6: Source database



Source: Developed by author, 2025

Character 02 – Target Variable

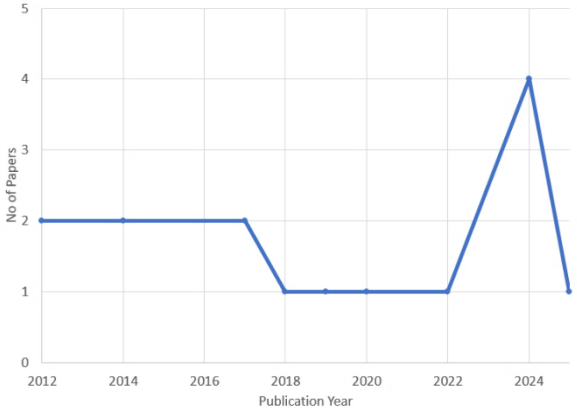
Figure 7: Target variable



Source: Developed by author, 2025

Character 03 – Frequency of Publication Year

Figure 8: Frequency of publication year



Source: Developed by author, 2025

The study identifies several research gaps related to RACI, BPMN, and student evaluation procedures. First, there is no standardised structure for evaluation. This can be improved by developing an integrated and flexible framework that combines RACI and BPMN, ensuring clear processes. Another gap is the limited use of BPMN and RACI in education. This issue can be addressed by conducting empirical research to test the effectiveness of these frameworks in academic evaluation. Additionally, student involvement in designing evaluation systems has been minimal. To overcome this, participatory design methods should be introduced, allowing students to contribute to the development of evaluation criteria. The inconsistent application of RACI in educational settings is another concern. This can be resolved by creating standardised guidelines for its use across different academic contexts, while using BPMN modelling techniques to visualise these processes can make them more transparent and reliable.

Thematic Review of Included Studies

A thematic analysis of the selected studies was conducted to provide a deeper understanding of the effectiveness of BPMN and the RACI framework in the SEDAP. This thematic review organises the findings of the 15 included studies according to the research questions. Each theme corresponds to one of the four research questions, focusing

on key challenges in SEDAP, the integration of BPMN and RACI frameworks, existing gaps in the literature, and variations in institutional practices. This section aims to highlight common findings, contradictions, and opportunities for future studies by synthesising and comparing the insights from multiple studies within each theme. Through this analysis, it is ensured that the results are directly relevant to the study objectives and provide a foundation for meaningful discussion.

To ensure a systematically structured review process, the 15 selected studies were organised according to their relevance to each other based on the research questions. Table 4 presents a summary of the included studies, highlighting their main focus areas and the specific research questions they address. This not only facilitated a thematic analysis but also ensured that each selected paper directly contributed to answering the objectives of the review.

Table 4: Organisation of studies based on research questions

Study (Author, Year)	Title	Main focus	Related research question (RQ)
(Garaccion, Coppola, Ardito, & Torchiano, 2024)	Gamification of a BPMN Modeling Course	BPMN effectiveness in education	RQ2
(Cabanillas, Resinas, & Ruiz-Cortés, 2011)	Automated Resource Assignment in BPMN Models Using RACI Matrices	Integration of BPMN and RACI	RQ2
(Cherouana & Mahdaoui, 2017)	BPMN for E-Government Process Improvement	BPMN process improvement	RQ2
(Osmani, Weerakkody, & Hindi, 2017)	Graduate Attributes in Higher Education	Evaluation system challenges	RQ1, RQ4
(Wieman, 2019)	Expertise in University Teaching and Evaluation	Gaps in current evaluation methods	RQ1, RQ3
(Chakrabarti, 2024)	Assessment Using Machine Learning	Tech-driven evaluation improvements	RQ1
(Quansah, Cobbinah, Asamoah-Gyimah , & Hagan Jr., 2024)	Validity of Student Evaluation	Student evaluation limitations	RQ1, RQ4
(Liu, 2024)	BPMN Smart Contracts	BPMN in digital processes	RQ2
(Tukiran, Sofi, & Prat, 2025)	Redesigning Organizational Structure	Business process mapping	RQ2, RQ4
(Melissa L. Rethlefsen, et al., 2021)	Teaching Requirements Analysis	Student involvement in system design	RQ3
(Ahmed, 2018)	RACI Matrix Case Study (Unilever)	RACI matrix usage challenges	RQ2, RQ4
(Valiente, Garc´ıa-Barriocanal, & Sicilia, 2012)	Ontology-Based Models for Integrated Software Development	BPMN & software processes	RQ2
(Márquez, Rodríguez , & Medina, 2014)	Secure Business Process Using BPMN	Secure BPMN processes	RQ2
(Abouzid, Bekali, & Saidi, 2022)	IoT Behavior Modeling in BPMN	BPMN adaptation gaps	RQ3
(Ivanchikj, Serbout, & Pautasso, 2020)	Text to BPMN Models	BPMN visualization improvements	RQ2

Source: Developed by author, 2025

To provide a deeper understanding of the role of BPMN and RACI in SEDAP, a thematic analysis of the 15 selected studies was conducted. The thematic review is organised by research questions (RQs) to directly reflect and answer the study's main goals. Each theme comprises key findings, gaps, and practice implications from the literature.

Theme 1: Key Challenges in the SEDAP (RQ1) How and what are the Key Challenges in Designing and Approving Student Evaluation Processes Across Different Institutions?

The thematic analysis highlights common and persistent issues affecting SEDAP:

Lack of Standardisation: One of the challenges identified across the literature on SEDAP is the lack of standardisation in evaluation procedures. This issue emerges in diverse institutional contexts, particularly where evaluation systems are developed in silos by individual faculties or departments. Quansah, Cobbinah, Asamoah-Gyimah, & Hagan Jr. (2024) and Osmani, Weerakkody, & Hindi (2017) stated that anomalies in evaluation criteria often happen due to a lack of structured institutional guidelines. These anomalies can affect the process, including grading, assessment weighting, feedback procedure, and the methods used to gather and analyse data.

As an example, when each department applies unique standards without considering the overall institutional framework, the fairness of the evaluation is not met. Students enrolled in similar courses may receive completely different experiences and results based on faculty-specific norms. Chakrabarti (2024) also stated that such anomalies not only confuse students but also lead to incomplete evaluation, while making it difficult to record learning outcomes at the institutional level.

Furthermore, this lack of standardisation can lead to incompatible expectations between lecturers and students. At the student's level, they may find that it is difficult to understand what is expected from them, while lecturer's

level, they struggle to apply their evaluations to institutional-wide learning outcomes. This may affect student satisfaction, over-grading, and lowered trust in the overall evaluation process.

To overcome these challenges, it is important to create a centralised framework that guides all departments in the design and implementation of student evaluation. This may include a baseline of standards, including a common grading scale, shared clarification of learning outcomes, and clear planning steps. Institutions should balance between standardisation and academic automation while ensuring fairness and clarity in the evaluation process.

Poor Stakeholder Engagement: The second key challenge in the SEDAP is the lack of strong stakeholder participation. Previous studies present that a successful and reliable evaluation process must have the active participation of all the key actors, including students, academic staff, administrators, curriculum developers, and policymakers. However, as Osmani, Weerakkody, & Hindi (2017) reveal that many institutions were not able to reach this, which led to weak collaboration among these stakeholders during the process of design and implementation in evaluation.

Commonly, lecturers often view evaluation systems as externally forced mechanisms rather than a supportive tool for collecting feedback and teaching improvements. This absence of ownership can lead to uneven participation in the process. When academic staff are not involved in designing or creating the evaluation systems, they may question their validity or fail to notice the findings; therefore, weak participation affects the instructional quality.

Similarly, administrators and policymakers may develop SEDAP methods without completely understanding the problems faced by the academic staff. As a result, evaluation tools can be overly administrative, focusing more on compliance than on better quality enhancement.

Furthermore, students who are the primary stakeholders of the process are often only involved as passive respondents rather than active participants. Their feedback is collected but rarely integrated into participation, which leads to disengagement whether their opinions matter a lot.

This breaks the connection between stakeholders, may lead to poor buy-in, lack of implementation, and most of all, evaluation systems that are not able to reflect the diverse needs and realities of the academic context. It is also a concern about validity, as collected evaluation data may not correctly reflect student learning experiences and teaching effectiveness.

Developing stakeholder participation requires an intentional move toward active participation in design approaches, where all the actors are involved. Feedback loops, collaborative workshops, pilot testing, and open forums can ensure active participation in the process. Institutions can develop evaluation systems that are relevant and widely accepted after fostering such participation while enhancing the quality of student evaluation.

Technological Barriers: Another significant challenge in the SEDAP is the technological barriers that ruin smooth implementation and effective utilisation. As stated by Chakrabarti (2024) and Wieman (2019), most institutions struggle with a lack of digital infrastructure, outdated systems, and an insufficient integration between methods used for the collection of data, analysis, and reporting.

These difficulties affect in many ways. For example, institutions may still use paper-based manual evaluation or disconnected digital forms that require manual work and analysis. This increases administrative workload and delays in the feedback procedure while reducing the effectiveness. Even though digital systems are used, the lack of training for academic and administrative staff leads to misuse and underutilization. Most of the time, the main concern is data security and unreliable internet access, especially in rural and under-resourced universities.

Furthermore, many institutions do not invest in software-based academic evaluation. As a result, student feedback may be collected but not effectively analysed, stored without follow-up, or presented in a way that does not support academic improvement. This technological incompleteness limits the capacity of evaluation data to inform policy-making decisions and enhance teaching effectiveness.

Wieman (2019) also stated that the lack of better digital support led to incomplete implementation of evaluation processes across departments. The lack of automation also affects transparency, while making it difficult to track whether recommendations are implemented or whether improvements happen over time.

Overcoming these technological difficulties requires institutional attention to digital transformation in the academic context. Institutions must invest in a secure, user-friendly automation tool for designing, distributing, and analysing evaluations. Furthermore, training sessions were also introduced, ensuring the staff members are trained to use automation tools effectively. By transforming into technology in the evaluation process effectively, institutions can move forward more efficient, data-driven and responsive academic environment with transparency.

No Clear Policy Framework: Another key barrier to successful SEDAP is the absence of a clear, coherent policy framework to support it. Many institutions have formal policy documents that describe the vision and procedures for student evaluations; however, policies rarely translate into practice, and the expectations for evaluation vary widely. This failure is due to ambiguous phrases used in the policies, mixed responsibilities, and no mechanisms for following up on when a student evaluation of teaching takes place. Wieman (2019) argues that this gap between policy and practice undermines the whole evaluation cycle, placing educators and administrators in a space of uncertainty about how to make evaluation activities work effectively (see Wieman, 2019; Wieman et al., 2019).

Often, institutional policies are more about why evaluation matters, for example, for quality assurance or accreditation,

even when these aspects are rarely, if ever, articulated. They rarely identify a process for the how of evaluation. As an example, whose responsibility it is to design evaluation tools, how often evaluation takes place, how to communicate evaluations, or what the appropriate procedure is if an evaluation is poor. When policies leave these areas open for interpretation, units may adopt widely divergent practices or forget about evaluation altogether.

These policies have fostered a type of institutional inertia, where evaluation practices can exist on paper but are not necessarily a part of the day-to-day culture of teaching and learning. Also, without identified policies, accountability is diminished. If there is no clear position designated to analyse, report, or act on evaluation evidence, even well-constructed evaluations can end up being a box-ticker instead of something meaningful that can contribute to improvement. Moreover, poorly defined policies can often be disconnected from the changing realities of the higher education landscape, including online learning environments, interdisciplinary formats, or technology-based practices, resulting in institutions being ill-prepared to change their evaluation approaches to suit the context.

In order to find a solution regarding this issue, institutions will need to develop comprehensive, clear, actionable, and adaptable policy frameworks specifying the roles of different staff, processes, timelines and appropriate responses. In developing policies, it is essential that academic staff are consulted, and there should be a review and revision process in place. Furthermore, by linking policy to information and training, as well as resources, it will facilitate the transition between strategic intention and everyday operation. Only then will systems for student evaluation be able to provide reliable tools for enhancing quality rather than another bureaucratic process only used to its potential.

Together, these factors ensure the fairness, credibility, and consistency in student evaluation, reducing its utility for instructional improvement and policy decisions.

Theme 2: Integration Of BPMN And RACI Into Evaluation Systems (RQ2) How Can BPMN And RACI Be Effectively Integrated into the Student Evaluation Process to Improve the Structure and Clarity of Roles and Responsibilities?

Research indicates that integrating BPMN with RACI can enhance roles and workflows:

BPMN Visual Model: BPMN is regarded as potentially impactful for boosting the structural clarity of SEDAP. BPMN is a standardised graphical notation that allows participants to visualise complex workflows in a clear and straightforward way. According to (Lodhi, Köppen, & Saake, 2011) and further corroborated by (Cabanillas, Resinas, & Ruiz-Cortés, 2011), BPMN can help institutions visualise student evaluation from the design of assessment criteria through approval and feedback in one clear picture.

This graphical tool is invaluable in clearing ambiguity surrounding how processes flow. In evaluation systems of the past, stakeholders often drew from a variety of documents, verbal instructions or institutional memory and description when working through their respective roles. This leads to confusion, redundancy, and inefficiency. BPMN eliminates any confusion by giving those involved a visible and tangible language to communicate regarding their roles - anyone who is involved in the process, no matter their technical or administrative background, can understand BPMN. This is important not only for an accurate description of procedural communication but also for training, audits, and continual improvement.

BPMN is very useful for frontline evaluation systems in identifying bottlenecks, redundancies, and disconnects. When mapping a student feedback cycle, for example, the BPMN model can pinpoint delays in data collection, duplication of duties across departments and gaps or ambiguities around approval loops, etc. Insights like these allow institutions to think proactively about redesign of their processes, bettering the evaluation process while improving overall institutional coordination, alignment, harmony and adaptability.

It's also important to highlight that Ivanchikj, Serbout, & Pautasso (2020) describe BPMN's modularity and applicability to many academic contexts. Whether an institution's organisation, evaluation, accreditation, or educational offering is fully online, fully in-person, or likely a hybrid approach, BPMN can be tailored to the user's evaluation path within each environment. This feature makes BPMN a scalable tool, especially for educational institutions that are looking to digitise and/or continuously standardise evaluations in a systematic and sustainable manner.

RACI Role Definition: To complement the structural benefits of BPMN, the RACI matrix offers a practical method for enhancing role clarity and accountability within the SEDAP. RACI stands for Responsible, Accountable, Consulted, and Informed, and is a widely used framework for defining stakeholder roles within a process. (Cabanillas, Resinas, & Ruiz-Cortés, 2011) emphasize that incorporating RACI into BPMN-based process models significantly improves communication, reduces task ambiguity, and prevents overlapping responsibilities.

In many academic institutions, one of the primary causes of delays and inefficiencies in evaluation processes is the unclear distribution of responsibilities. For example, when designing student evaluation forms, there may be confusion over whether the academic coordinator, department head, or quality assurance officer is responsible for final approval. This can lead to duplicated work, missed deadlines, or even conflicts among staff. By explicitly assigning RACI roles to each activity within the BPMN diagram, institutions can eliminate such confusion.

The integration of RACI helps in three key ways

1. Refine the ownership (who is responsible and who is accountable)
2. Ensuring consultation with relevant stakeholders before decisions are made (who is consulted)
3. Integrate holistic communication (who needs to be informed).

By stepping through the details, having everyone understand their roles gives transparency and trust between

departments and staff. Stakeholders know what is expected of them and know what they can expect from others, which creates a more constructive and proactive working atmosphere. Role clarity also informs quality assurance; knowing the performance expectations makes identifying where an evaluation went wrong easier and directs the corrective effort to the right organisations or persons.

Institutions which are embedding RACI matrices into their student evaluation systems are reporting higher levels of staff engagement and lower resistance to people's introduction of new processes. When people know their roles and are not experiencing uncertainty or performing duplicative duties, they engage more productively with the institutional goals. It is clear to see that RACI influencing policy development is a low-cost and high-value way to reform student evaluation systems.

Practical Outcomes of BPMN-RACI: The application of BPMN and RACI in student evaluation design has had significant practical benefits in workflow efficiencies, communication, and institutional alignment. As per the evidence cited above, the application of BPMN for the visual model and RACI for role-related detail collectively leads to an easier-to-manage (more reliable and inclusive) process.

From a practical perspective, this modality of practice allows for great reductions in redundancy and miscommunication. For example, formerly siloed departments, whose evaluation responsibilities were previously implemented in separate notionally correlated processes, are now able to align their respective evaluation responsibilities with regard to one model, with assigned roles for each person involved. Academic staff do not have to guess if they simply need to approve a student survey or merely report it; RACI makes it clear where they are placed in the workflow. This understated advantage will produce a reduction in delayed actions, an avoidance of duplicate effort, and an assurance that important actions are not overlooked.

Moreover, BPMN-RACI has been recognised as enhancing the overall quality of decisions made. When roles are delineated and workflows are mapped, institutions leave themselves the possibility to analyse evaluation processes in terms of performance. For example, start and finish times may be monitored, weak spots can be identified, and evaluation improvement decisions can be based upon data. Overall, BPMN-RACI provides an alternative to ad hoc, reactive types of evaluation, to evidence-based, systematic types of practice aligned with institutional intentions.

A further practice benefit is the value for onboarding and training. As new staff or external reviewers are brought on, the BPMN models and RACI charts can quickly familiarise them with institutional processes. This is a great investment for institutional memory and resilience for institutions that have a large amount of staff turnover.

In all, the combination of BPMN and RACI provides a foundation for shared accountability and transparency—two key values of any quality-oriented academic institution. Institutions can use these tools to help modernise their student evaluations, making them more efficient, inclusive, participatory and accountable.

Theme 3: Gaps in Existing Literature (RQ3) How to Develop a Standardised Framework Based on Literature Gaps to Guide Student Evaluation Processes?

The thematic review emphasises a number of important gaps in using these methods in education.

Lack of Empirical Validation: A common problem highlighted by the current literature is the absence of large-scale empirical validation of approaches used to design and implement processes of student evaluation. The studies examined (Garaccion, Coppola, Ardito, & Torchiano, 2024), (Liu, 2024), (Abouzid, Bekali, & Saidi, 2022) involved theoretical frameworks or an example from a single case study, not a comprehensive assessment of change in practice across a range of educational contexts. Although they provide theoretical contributions to the academic literature, they are not tested as principles in a practical setting. Consider, for example, material that advocates the use of BPMN and RACI models to add structure and principle to evaluation systems; there are very few examples of studies examining their use in an actual institution with a measurable outcome.

This absence of robust empirical evidence creates uncertainty about the effectiveness, adaptability, and long-term sustainability of these models in practice. It also restricts the ability of researchers and practitioners to draw generalised conclusions about best practices. Without empirical studies involving multiple institutions or broader datasets, it becomes challenging to assess how these tools perform across different academic disciplines, student populations, or administrative structures.

Thus, it is important for future research to be design-based implementation research and comparative studies across institutions to test the proposed models. It is one thing to create models and engage in theorising about the models; it is even more constructive to use the models in the real world and systematically collect data to learn what works, for whom, under what conditions, and why. Filling this gap with empirical research will be important to gain trust and allow stakeholders to embrace frameworks for evaluation in the educational context.

Absence of a Standardised Framework: Another significant gap in the literature is the lack of a unified, standardised framework that can assist institutions in implementing student evaluation processes. While many studies examine individual techniques, tools or elements of processes, few seek to bring these pieces together into a comprehensive, scalable model that would allow users to adjust to their institutional contexts. This means institutions are still relying on piecemeal recommendations that leave them to interpret their own way. Consequently, this results in missing important aspects of the process (such as stakeholder involvement, technological integration, and feedback loops - and re-inventing the wheel with things already addressed - and wasting resources) or they may be developing some good practices in student evaluation, but because they have no framework or are in differentiated levels of advancement, it makes it harder for effective development.

Consequently, without a centralised framework, there are some institutions that are embarking on full evaluative maturity, whereas other institutions have limited capacity and have no guidance. With the emergence of global emphasis on quality assurance and accountability in higher education, this gap in the literature is problematic, if not urgent. Therefore, future research should look to develop a modular framework, based on best practices and adaptable to policy and institutional differences, that includes, for instance, process modelling (BPMN), role descriptions (RACI), policies, and technology readiness. A standardised but adaptable framework could be used by higher education institutions to systematically improve or reform their student evaluation processes.

Overlooking Adaptability to Context: Much of the current literature typically lacks attention to adaptability to the specifics of the context in which they propose models through which students can be evaluated. Many papers talk of a tool, a framework or have attempted to develop models or are generally speaking about something, without giving any serious consideration to the wide range of policy contexts, organisational culture, and educational tradition influences on how an evaluation process may differ. For example, what might work in a highly centralised Western university model may not be appropriate for a decentralised institution in Asia or Africa, where the institutional whether it be administratively, in resource language use and culturally, differs.

Nonetheless, a failure to accommodate context may result in models which are too fixed or undesirably irrelevant type models to be implemented or used, resulting in marginal or non-existent use. Many of the models also appear to ignore alignment with policy forms, making it difficult for institutions to establish evaluation practice in strategic planning long term or conform to national accreditation.

Future research must therefore emphasise design flexibility and cultural sensitivity. Frameworks should allow customisation according to institutional type (public vs. private), size, available technology, stakeholder structure, and policy mandates. Incorporating participatory approaches, where institutions co-develop frameworks based on local needs and constraints, could also improve relevance and sustainability.

Additional Literature Gaps: Beyond the core gaps mentioned, several secondary gaps in the literature further constrain the development of effective student evaluation processes. Firstly, technological infrastructure and digital readiness are rarely discussed in depth. While digital tools are essential for modern evaluation systems, few studies assess how varying levels of IT support and infrastructure affect process feasibility. Without this consideration, proposed solutions may be impractical in under-resourced settings.

Secondly, the perspectives of key stakeholders, especially students and non-academic administrative staff, are frequently underrepresented. Most research tends to focus on institutional or faculty viewpoints, neglecting the voices of those who directly experience and manage the evaluation process. This omission can result in frameworks that lack practical insight and user-centric design.

Lastly, there is limited exploration of the quality assurance and policy implications of adopting standardised methods like BPMN and RACI in education. While these tools are popular in business and IT domains, their regulatory and academic implications in higher education are not fully explored. Questions remain about how such tools align with institutional goals, national policies, or accreditation standards.

Filling these secondary gaps is crucial for building a holistic, inclusive, and policy-aligned framework that can truly transform student evaluation systems in diverse educational contexts.

Theme 4: Institutional Variations in Evaluation Practices (RQ4) How Do Practices for Designing and Approving Student Evaluation Processes Vary Across Different Institutions and Contexts?

Analysis shows significant variation influenced by culture, policy, and administrative structures:

Centralised vs. Collaborative Approaches: A noteworthy observation in the literature is the range of approaches institutions have taken in the design and approval of student evaluation processes. On one end are centralised, policy-driven models, where a centralised set of decision-makers, most likely in a central administrative office or quality assurance unit, have the authority to make recommendations and choices about student evaluation practices. On the other end are institutions that prefer a collaborative, decentralised approach, whereby faculties or departments have considerably more decision-making power with respect to evaluation practices. As pointed out by Ahmed (2018) and Osmani Weerakkody, & Hindi (2017), this variety is not happenstance; rather, it is an outcome of the structure of the institution, the philosophy towards leadership within the institution, and the national higher education policies that guide institutional behaviour.

In centralised models, the evaluation systems are consistent across the faculties of the institution, and the evaluation is prescriptive as to how it must be implemented across the institution. The advantages of centralised models are consistency, standardisation, and more efficient reporting processes for accreditation and/or government sponsorship and funding. It has also been suggested, however, that the higher education evaluation system, as a centralised evaluation approach, can sometimes be too prescriptive and limit the evaluation of the unique needs of a department or academic program.

In contrast, collaborative models typically defer much responsibility to faculty committees or course coordinators in research or progressive institutions. This often engenders a sense of greater ownership and engagement from academic staff, which allows them to maintain the integrity of discipline-specific pedagogy in their assessment practices. However, there are challenges with collaborative frameworks as they often lack a consistent overall structure or direction from institutional policy.

It is crucial to understand both sides of the partnership model when developing or evaluating a framework, as it

addresses the idea that one model will not serve all institutions. Frameworks need to locate a middle ground between quality and uniformity. Institutionally, they need to create a framework that addresses administrative philosophy, while holding the institution accountable to a quality and comparative standard.

Hybrid Practices: While institutions are often situated between centralised and decentralised systems, they frequently utilise hybrid structures for the purposes of student evaluation. That is, while every institution has an institutional policy context around student evaluation, it is the local context of departments and schools that is, in many ways, most salient in enacting that policy. As reported by Tukiran, Sofi, & Prat (2025), "hybrid structures mean that while some guidelines might be set by a top-down source such as a centralised quality assurance unit, or the institution's senate, how, or if those guidelines are enacted lies with local departments and is specific context." This structure allows consistency of purpose while allowing for contextual customisation, especially with respect to evaluation tools, data collection techniques, and feedback. In the case of the institutional policy requiring end-of-term evaluation of courses, one school may allow for courses to be evaluated online or on paper or what questions were asked, as long as they follow an institutional framework.

Hybrid models are seen as more appealing because they support both institutional accountability and academic freedom. They also provide opportunities for vertical and horizontal communication between stakeholders, improving the quality of feedback and enhancing the implementation of feedback. That said, hybrid models can run into issues if institutional agent communication channels are not explicit, capacity building is inconsistently done, and formative assessment is not used to track if the flexible approaches are functioning well with the broader institution.

Hybrid practices indicate an important shift towards thinking about modular frameworks that allow institutions to consider jointly and separately required and optional microelements in their practices that they perceive as relevant to their capacity, context and operational/strategic vision.

Cultural and Policy Influences: The culture and policy environment within which organisations operate is likely the most significant factor determining how evaluation regimes are developed in practice; in different contexts, approaches to student evaluations can vary significantly and are also shaped by the administrative traditions, governance norms, and regulatory environments that exist in different countries and regions. For example, student evaluation at many Middle Eastern universities is centralised and compliance-oriented in nature, imposed primarily by national education authorities and used as part of the assessment of staff performance (Ahmed, 2018).

In contrast, many European institutions (e.g., Finland, the Netherlands, and Germany) tend toward a consultative and participatory approach, where developments in evaluation design are conditioned by faculty councils, student unions, and various professional bodies that can represent an array of stakeholders and are concerned with dialogue and mutual accountability rather than direct surveillance and control. There are also variations within regions; for example, while many UK universities embody both apparent regulatory oversight with locations of strong institutional distance and autonomy, Eastern European systems seem, in some limited examples, still influenced by some measure of centralised arrangements.

Such cultural and policy differences affect not only who is involved in the evaluation process but also how seriously results are considered, how feedback loops are closed, and whether evaluation is seen as formative or summative. Therefore, any framework aiming to standardise or guide evaluation practices must take these contextual variables into account.

To be effective and sustainable, frameworks must be adaptable to local governance models, able to accommodate different role definitions, and sensitive to the formal and informal power structures within educational institutions.

The analysis of institutional variation in student evaluation practices reveals that there is no universally optimal model. Instead, evaluation systems are shaped by administrative structure, academic culture, stakeholder expectations, and policy environments. These differences highlight the importance of developing context-aware, adaptable frameworks for evaluation, rather than rigid templates. Future models must be sensitive to these variations, offering structured guidance without limiting the institutional autonomy or creativity that is vital for effective educational practice.

This systematic review provides a comprehensive view of the role of process modelling and role assignment techniques in designing and approving Student Evaluation Processes in Higher Educational Institutions — a previously underexplored area in education.

The first research question (RQ1) underscores key challenges as a lack of standardisation, poor stakeholder engagement, policy-practice gaps, and technological barriers, which collectively undermine fairness and credibility in student evaluation. The second (RQ2) shows that combining BPMN and RACI techniques can help clarify responsibilities, streamline workflows, and foster collaboration. This approach provides a clear structure for designing and approving student evaluation criteria and processes. The third (RQ3) highlights critical gaps in the literature, including the lack of empirical validation, a standardised framework, adaptability to context, and consideration of policy and technological factors, which future research must resolve. The fourth (RQ4) underscores that practices vary by institution and policy context, reflecting different administrative structures and cultures. Therefore, a flexible framework must account for these variations

CONCLUSION

This systematic literature review aims to conduct a well-structured SLR on the design and approval of the student evaluation process using BPMN and RACI. The study used

PRISMA guidelines to select and review a total of 15 articles from an initial pool of nearly 150 studies. The thematic analysis of these 15 studies provided a meaningful impact to the mentioned key problems, strategies, gaps and institutional variations.

For better understanding, the results section is divided into two separate parts after analysis. The first part included the results of the PRISMA statement, and the second part discusses the characteristics of each included study. Moreover, to provide a deeper understanding of the effectiveness of BPMN and RACI frameworks in SEDAP, a thematic analysis was conducted based on selected studies which were aligned with research questions. Those findings directly answer the research questions and provide a strong basis for further research in the same field.

For RQ1 (Key challenges in SEDAP), the review highlights persistent issues such as a lack of standardisation, poor stakeholder engagement, and technological barriers. These weaknesses undermine the fairness, consistency, and credibility of the evaluation mechanism across institutions. For RQ2 (How can BPMN and RACI be effectively integrated?), the study underscores that combining BPMN with RACI can help clarify roles, responsibilities, and workflows. The use of these frameworks not only brings greater transparency and structure to the process but also strengthens collaboration and communication amongst stakeholders. For RQ3 (How to develop a systematic framework), the results illuminate a significant gap in the form of underdeveloped, standardised models for applying these techniques in education. There is a clear need for further empirical research to produce a scalable, adaptable framework that can be tailored to different institutional contexts. For RQ4 (How do practices vary across institutions?), the review reveals that institutional practices diverge due to organisational, cultural, and policy factors. Some institutions follow a more centralised, policy-centric approach, while others employ a participatory, department-centric model. Hybrid models have also emerged, blending both models.

Together, these findings underscore the potential of BPMN and RACI to enhance the student evaluation process, while also pointing to the necessity for context-specific application and further empirical validation.

This systematic review makes a new contribution to knowledge by offering a comprehensive view of the role of process modelling and responsibility assignment in designing and approving student evaluation systems, which is a previously underexplored area in education. Furthermore, the study highlights gaps in the literature and paves the way for future research to develop and implement standardised, adaptable frameworks in higher education.

In a future direction, the knowledge gained from this review can serve as a foundation for developing a prototype student evaluation system tailored to institutional needs. The framework could be implemented to improve fairness, transparency, and efficiency in student evaluation processes, and this can be particularly valuable for administrators and policy makers who aim to align their practices with best practices and international standards.

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