

# Development and Evaluation of an Integrated Spreadsheet-Based Working Paper for Advanced Financial Accounting Practice

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**Abstract:** *This study aims to develop and evaluate an integrated spreadsheet-based working paper for advanced financial accounting practice. This research uses a Research and Development (R&D) approach and adopts the PPE (Planning, Production, Evaluation) model. The research procedure begins with the planning phase, which focuses on analyzing user needs. The subsequent phase is production, which involves building a prototype of the integrated spreadsheet-based working paper application. The process then proceeds to the evaluation phase through direct testing with students, utilizing user response questionnaires as the data collection instrument. Data analysis used a descriptive quantitative approach by comparing actual scores with ideal scores. Based on the analysis, the integrated spreadsheet-based working paper product for advanced financial accounting practice effectively meets practical learning needs. It is deemed feasible from technical, operational, and economic perspectives. This study contributes to developing an integrated spreadsheet-based accounting practice working paper application that meets technical, operational, and economic feasibility criteria, making it suitable for implementation in actual instructional settings.*

**Keywords:** application, financial accounting, practical working paper, research and development, spreadsheet

## I. INTRODUCTION

Digital transformation in education and the accounting profession requires integrating technology into the learning process, particularly in practical accounting instruction. Advances in information technology have shifted the role of accountants from mere transaction recorders to data-driven decision-makers, making proficiency in technologies such as spreadsheets an essential competency for accounting graduates [1], [2], [3]. Furthermore, professional bodies emphasize that digital technology competence is a crucial component of the skill set required for prospective accountants [4].

In higher education in Indonesia, spreadsheets have long been recognized as a powerful, flexible tool that helps students understand accounting concepts through a practical approach. Integrating spreadsheets into the accounting curriculum fosters computational thinking, critical thinking, and problem-solving skills [5], [6]. Spreadsheets enable students to systematically integrate the processes of recording, processing, and preparing financial statements, thereby supporting contextual and application-oriented learning [7], [8]. Additionally, technology-based learning has been proven to enhance student engagement and digital skills. Research demonstrates that technology integration in accounting classrooms increases student engagement, motivation, satisfaction, confidence, and academic performance [9].

Research shows that integrated technology-based learning media can significantly improve student learning outcomes and comprehension. Technology integration in accounting education also contributes to enhancing students' readiness to meet the demands of an increasingly digital workplace [10], [11]. However, implementing technology-based learning still faces obstacles, particularly a lack of integration among the spreadsheet-based learning media used, which hinders a holistic understanding of the accounting process flow. In Indonesia, several educational institutions experience technological infrastructure limitations and varying levels of digital literacy among students and faculty [12]. This can cause students to struggle with comprehensively understanding the accounting process flow, ultimately impairing learning effectiveness [13], [14].

Most prior studies have focused on developing non-integrated spreadsheet applications for isolated accounting topics. Feasibility assessments for these applications often cover only technical and operational

dimensions, neglecting economic aspects necessary to ensure long-term sustainability. Therefore, an integrated spreadsheet-based practical accounting worksheet application needs to be developed and evaluated to improve the effectiveness of practical accounting learning. The application must undergo feasibility testing before use in instruction. This study contributes by developing an integrated spreadsheet-based practical accounting worksheet application that meets technical, operational, and economic feasibility requirements, enabling effective deployment in real classroom settings.

## **II. LITERATURE REVIEW**

### **2.1 Financial Accounting**

Financial accounting is a branch of accounting that provides an entity's financial information to stakeholders. This information is essential for financial statement users in making investment and credit decisions, as well as in understanding the financial position, financial performance, and cash flows [15], [16], [17]. To support the mastery of this material, practical advanced financial accounting instruction is conducted to equip students with comprehensive competencies, including: 1) partnership formation, 2) partnership dissolution, 3) installment sales, 4) consignment, 5) changes in legal entity forms, 6) home office and branch accounting, 7) asset and liability acquisitions, 8) stock acquisitions, and 9) consolidated financial statements.

### **2.2 Spreadsheet-Based Applications**

Spreadsheet applications are software widely utilized across various organizations, both as standalone tools and alongside accounting software or other operational systems [18], [19]. Their flexible nature and ease of operation make them highly reliable for performing a wide range of functional tasks [20], [21], [22]. In the business context, spreadsheets are extensively used for financial reporting and operational processes, thereby requiring accountants to possess adequate proficiency in their application [23], [24]. Nevertheless, like any software product, developed spreadsheet-based applications still require comprehensive feasibility testing prior to implementation [25], [26].

Application feasibility refers to the extent to which a proposed application is considered viable for implementation and continued use within an organizational context. It may be assessed through three complementary dimensions: technical, operational, and economic feasibility. Technical feasibility concerns whether the organization's existing technological environment can support the proposed application and whether it can perform its intended functions effectively. This dimension includes system ease of use, compatibility, integration, processing speed, accuracy, reliability, and maintainability. These indicators are consistent with the information-systems-success literature, which conceptualizes system quality through attributes such as ease of use, reliability, response time, maintainability, interoperability, and technical effectiveness [27], [28], [29]. Operational feasibility refers to the extent to which the proposed application fits the organization's users, work processes, procedures, and day-to-day operating environment. It reflects whether users perceive the application as useful, learnable, implementable, and acceptable, and whether it can improve operational effectiveness and efficiency. Accordingly, operational feasibility can be measured through alignment with user needs, ease of implementation, effectiveness of use, operational efficiency, procedural alignment, learning support, and operational acceptance. This conceptualization is supported by the Technology Acceptance Model, in which perceived usefulness and perceived ease of use are fundamental determinants of technology acceptance [30], [31]. Perceived usefulness refers to the belief that system use enhances job performance, whereas perceived ease of use refers to the belief that the system can be used with minimal effort. Operational fit can also be related to task-technology fit, which links the compatibility between technology functionality and task requirements with individual performance [32]. Economic feasibility refers to the extent to which the proposed application generates sufficient financial and operational value relative to the resources required for its development, implementation, and maintenance. It can be assessed through cost efficiency, paper savings, time efficiency, user productivity, resource efficiency, error reduction, and perceived value and benefits. These indicators represent both direct and indirect benefits of information-system implementation, including reduced administrative costs, lower paper consumption, shorter processing time, improved employee productivity, more efficient resource utilization, fewer errors, and broader organizational benefits [27], [33], [34].

### **2.1 Previous Studies**

Prior accounting studies have generally focused on a limited range of topics, such as those conducted by [35]. In contrast, the literature has extensively explored the use of Excel or spreadsheets for accounting education and practice [36], [37], [38]. Regarding its effectiveness, computer-based practical modules that use a transaction-cycle approach through spreadsheet applications have been shown to enhance student competency, provided the applications meet adequate technical and operational feasibility standards [22], [38], [39]. However, a review of previous literature reveals

a lack of research specifically aimed at designing and evaluating an integrated worksheet application for advanced financial accounting practical courses. Feasibility testing for such applications often covers only technical and operational aspects, neglecting economic dimensions essential for ensuring long-term application sustainability. This limitation represents both the research gap and the primary novelty of this study.

### III. METHODS

This study employs a Research and Development (R&D) approach to produce an integrated, spreadsheet-based practical accounting worksheet application and evaluate its feasibility and effectiveness in learning. The development framework adapts the Planning-Production-Evaluation (PPE) model. The research procedures consist of three main stages based on the PPE model. The process begins with the planning stage, which involves analyzing the needs of both lecturers and students, identifying challenges in accounting instruction, and determining application specifications. The next stage, production, includes designing the spreadsheet-based application structure, developing the integrated practical accounting worksheet prototype, and configuring features that cover the full application. Finally, the study concludes with the evaluation stage, which involves validation through a limited field trial with students. The subjects of this study were application users, specifically students enrolled in the advanced financial accounting practical course. The research instruments included user (student) response questionnaires to evaluate product practicality and effectiveness. Meanwhile, data collection techniques included interviews during the needs analysis phase, questionnaire distribution for validation and user feedback, and document review to support the research. This study used purposive sampling, selecting participants based on the research objectives. The user sample comprised 75 application users. Data were analyzed using percentage analysis techniques, where assessment scores were calculated by dividing the total obtained score by the maximum ideal score and multiplying the quotient by 100% to determine the final percentage.

Table 1. Feasibility Levels and Revision Criteria

| Percentage |            |     | Feasibility Category | Revision Status         |
|------------|------------|-----|----------------------|-------------------------|
| 20%        | $< P \leq$ | 36% | Very Unfeasible      | Major revision required |
| 36%        | $< P \leq$ | 52% | Not Feasible         | Revision required       |
| 52%        | $< P \leq$ | 68% | Adequate             | Revision required       |
| 68%        | $< P \leq$ | 84% | Feasible             | No revision required    |
| 84%        | $< P \leq$ | 100 | Very Feasible        | No revision required    |

### IV. RESULTS AND DISCUSSION

The research procedure in this study consists of three main stages based on the PPE model: planning, production, and evaluation. During the planning stage, the team decided to develop an integrated, spreadsheet-based practical accounting worksheet application for advanced financial accounting practice. This application is intended for sixth-semester students enrolled in the Advanced Financial Accounting practical course. To meet instructional requirements, the worksheet encompasses nine practical assignments: 1) partnership formation, 2) partnership dissolution, 3) installment sales, 4) consignment, 5) changes in legal entity forms, 6) home office and branch accounting, 7) asset and liability acquisitions, 8) stock acquisitions, and 9) consolidated financial statements.

The integrated spreadsheet-based working paper for advanced financial accounting practice was developed based on the needs analysis results. These nine practical tasks are integrated into a centralized menu system. Each task menu comprises several sub-worksheets containing case scenarios and their corresponding practical worksheets. Fig. 1 shows the application menu structure.

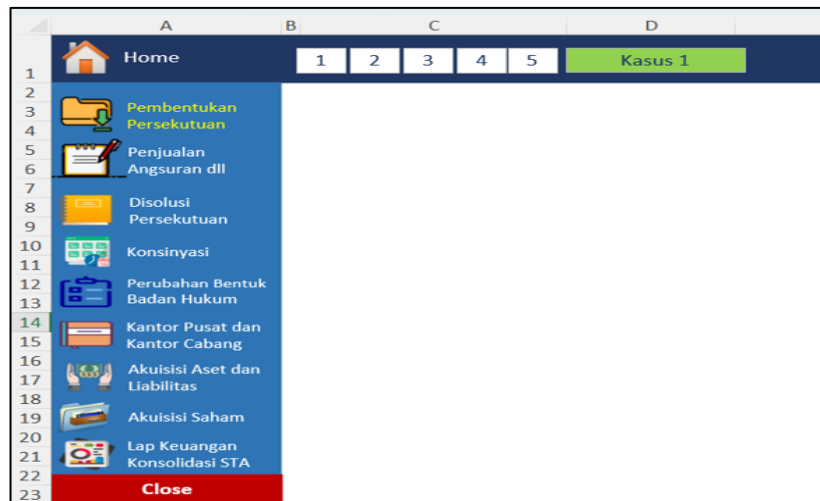


Fig. 1. Application menu

The feasibility evaluation of the practical worksheet application encompassed technical, operational, and economic aspects. This evaluation involved 75 sixth-semester students enrolled in the advanced financial accounting practical course. Of the research subjects, most respondents were female (61, 81.33%), while 14 were male (18.67%). Table 2 presents the feasibility testing results.

Table 2. Feasibility Test Results

| Feasibility                         | Code | Total Ideal | Total Actual | Percentage | Assessment    |
|-------------------------------------|------|-------------|--------------|------------|---------------|
| <b>Technical Feasibility (TF)</b>   |      |             |              |            |               |
| System ease of use                  | TF1  | 375         | 329          | 88%        | Very Feasible |
| System compatibility                | TF2  | 375         | 319          | 85%        | Very Feasible |
| System integration                  | TF3  | 375         | 309          | 82%        | Feasible      |
| System speed                        | TF4  | 375         | 309          | 82%        | Feasible      |
| System accuracy                     | TF5  | 375         | 302          | 81%        | Feasible      |
| System reliability                  | TF6  | 375         | 276          | 74%        | Feasible      |
| Ease of maintenance                 | TF7  | 375         | 307          | 82%        | Feasible      |
|                                     |      |             | Mean         | 82%        | Feasible      |
| <b>Operational Feasibility (OF)</b> |      |             |              |            |               |
| Alignment with user needs           | OF1  | 375         | 326          | 87%        | Very Feasible |
| Ease of implementation              | OF2  | 375         | 331          | 88%        | Very Feasible |
| Effectiveness of use                | OF3  | 375         | 320          | 85%        | Very Feasible |
| Operational efficiency              | OF4  | 375         | 319          | 85%        | Very Feasible |
| Procedural alignment                | OF5  | 375         | 312          | 83%        | Feasible      |
| Learning support                    | OF6  | 375         | 328          | 87%        | Very Feasible |
| Operational acceptance              | OF7  | 375         | 334          | 89%        | Very Feasible |
|                                     |      |             | Mean         | 86%        | Very Feasible |
| <b>Economic Feasibility (EF)</b>    |      |             |              |            |               |
| Cost efficiency                     | EF1  | 375         | 330          | 88%        | Very Feasible |
| Paper savings                       | EF2  | 375         | 357          | 95%        | Very Feasible |
| Time efficiency                     | EF3  | 375         | 340          | 91%        | Very Feasible |
| User productivity                   | EF4  | 375         | 324          | 86%        | Very Feasible |
| Resource efficiency                 | EF5  | 375         | 327          | 87%        | Very Feasible |
| Error reduction                     | EF6  | 375         | 304          | 81%        | Feasible      |
| Value and benefits                  | EF7  | 375         | 321          | 86%        | Very Feasible |
|                                     |      |             | Mean         | 88%        | Very Feasible |

Source: Data processed in 2026

## V. CONCLUSION

Based on the research findings and discussion, the development of the integrated spreadsheet-based practical accounting worksheet application was successfully conducted using the Planning-Production-Evaluation (PPE) model. The integrated spreadsheet-based worksheet application for advanced financial accounting practical courses is highly feasible to implement. All evaluated aspects – technical, operational, and economic – fell within the "Feasible" to "Very Feasible" criteria. The economic aspect performed best (particularly in paper- and time-saving efficiency). In contrast, the technical and operational aspects showed optimal support, ease of use, and high acceptance among students in the accounting learning process.

Although the evaluation results demonstrated a highly positive response, this study has several key limitations. Specifically, the trial subjects were limited to an academic student environment and have not yet been tested directly in professional industry settings. Additionally, the system reliability indicator received the lowest score (74%), highlighting the need for stability enhancements under certain operational scenarios. Therefore, to refine future research and product development, subsequent researchers are advised to enhance system reliability through more rigorous debugging and testing, expand the scope of trial subjects and implementation into real-world workplace environments, and incorporate advanced automation features or cloud-based integration to extend the analytical capabilities of advanced financial accounting.

This application carries significant practical implications for instruction by providing an innovative solution to modernize advanced financial accounting practical courses, boost student productivity, and align the curriculum with the digital skill demands of the workplace. Furthermore, from economic and environmental perspectives, the application makes a tangible contribution toward supporting paperless initiatives through substantial paper savings, while delivering optimal cost, time, and operational resource efficiency for academic institutions.

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