TALLYTACS:
AN INTELLIGENT TRANSACTION VALIDATION SYSTEM FOR ENHANCING ACCURACY IN ACCOUNTING SIMULATION PROJECTS

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ABSTRACT
Accounting education at the foundational level often emphasizes conceptual understanding; however, students frequently encounter difficulties in constructing accurate and complete business transactions that meet assignment requirements. In UiTM basic financial accounting courses such as ACC106 and ACC117, students are required to prepare a first-month business transaction list as part of accounting simulation projects. Many submissions are incomplete, inconsistent, or incorrectly classified, which disrupts the entire accounting cycle, including journal entries, ledgers, and trial balance. This not only affects students' performance but also increases lecturers' workload due to manual verification. To address this issue, this study introduces TallyTacs, an Excel-based intelligent transaction validation system that ensures completeness, accuracy, and compliance at the initial stage. The system integrates a Transaction Builder, a Rule-Based Validation Engine, a Real-Time Feedback System, and a Lecturer Dashboard. TallyTacs adopts a preventive approach by detecting and correcting errors before students proceed further. This innovation enhances learning accuracy, promotes self-directed learning, and improves confidence in executing accounting tasks, while shifting the lecturer's role toward facilitation. Furthermore, TallyTacs demonstrates strong commercialization potential as an adaptable digital solution that can be integrated into learning management systems, or developed into a standalone learning application, thereby contributing to more efficient and technology-enhanced accounting education.

KEYWORDS: Accounting Education, Digital Learning Innovation, Error Prevention System, Transaction Validation, TallyTacs

INTRODUCTION
Accounting education at the foundational level plays a critical role in shaping students' understanding of financial processes and business decision-making. In basic financial accounting courses such as ACC106 and ACC117 at Universiti Teknologi MARA (UiTM), students are required to complete accounting simulation projects that involve constructing a full accounting cycle, beginning with the preparation of business transactions.

However, despite having adequate conceptual knowledge, many students face difficulties in preparing accurate, complete, and logically structured transaction lists. The issue is particularly evident at the transaction preparation stage, where students must fulfil specific assignment criteria, including various categories of transactions such as capital contributions, purchases, sales, expenses, and returns. Failure to meet these requirements results in incomplete or incorrect transaction sets, which subsequently

affect journal entries, ledgers, and ultimately lead to an unbalanced trial balance. This not only impacts students' academic performance but also increases lecturers' workload, as manual checking is required to verify each submission.

PROBLEM AND OBJECTIVE

The main problem lies in the mismatch between students' prepared transaction lists and the assignment requirements. Many submissions are incomplete, incorrectly classified, or do not fulfil the required number and types of transactions. These errors at the initial stage propagate throughout the accounting cycle, leading to inaccurate financial outputs. As a result, students struggle to understand the full accounting process, and their performance in assignments is negatively affected. From the lecturers' perspective, this issue creates a significant burden, as each submission must be manually reviewed to ensure compliance with assignment criteria. This process is time-consuming, inefficient, and limits the ability of lecturers to focus on higher-level teaching and guidance. This issue highlights the need for a system that can assist both students and lecturers in ensuring accuracy at the initial stage. Hence, the primary objectives of this innovation are to improve the accuracy and completeness of transaction preparation, ensure compliance with assignment criteria, provide real-time feedback to students, reduce lecturers' workload, and enhance students' confidence and understanding of the accounting process.

DESIGN DESCRIPTION

TallyTacs is an Excel-based intelligent transaction validation system designed to support students in preparing accurate and complete transaction lists before proceeding to the accounting cycle. The system is developed using a structured and user-friendly Excel template, making it easily accessible and cost-effective for educational institutions. The target users of TallyTacs include accounting students, lecturers, and higher education institutions. Its key strength lies in transforming a complex manual checking process into an automated, guided, and efficient system.

VISUALS

Figure 1 presents the interface and introduction of the TallyTacs system, highlighting its purpose in helping students create complete, correct, and compliant transaction lists based on assignment criteria. Figure 2 illustrates how TallyTacs functions as an innovative education solution through a structured workflow. The system begins with the Smart Transaction Builder, where students input their first-month business transactions using a guided Excel template. This is followed by the Rule-Based Validation Engine, which automatically checks each transaction against assignment criteria, including transaction type, quantity, and classification. The Real-Time Feedback System then provides immediate feedback by highlighting missing, extra, or incorrectly classified transactions, and suggesting necessary corrections. The Lecturer Dashboard allows educators to monitor submissions, review validation summaries, and track student progress efficiently. Finally, the system produces a Compliant and Ready Output, ensuring that all criteria are fulfilled before students proceed to the next stage of the accounting cycle. Overall, Figure 2 demonstrates how TallyTacs transforms a complex and error-prone process into a guided, intelligent, and efficient learning system.

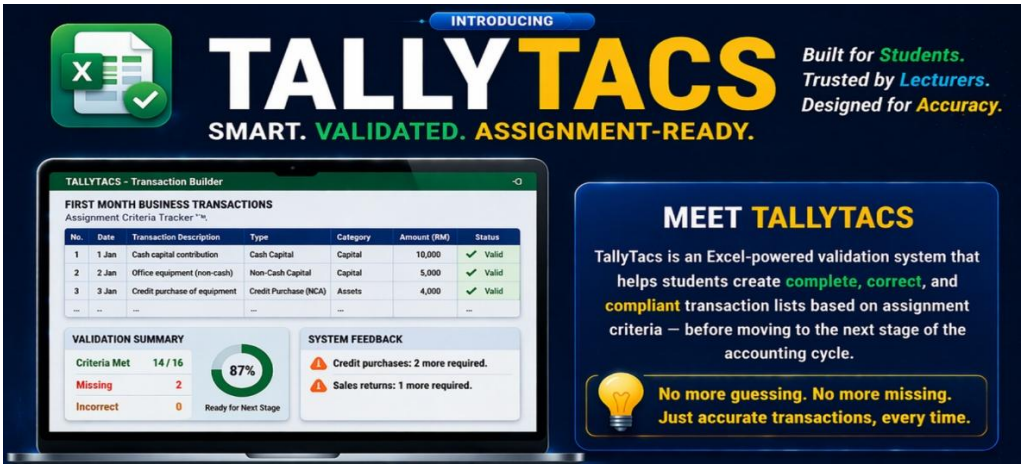


Figure 1: TallyTacs Introduction Interface

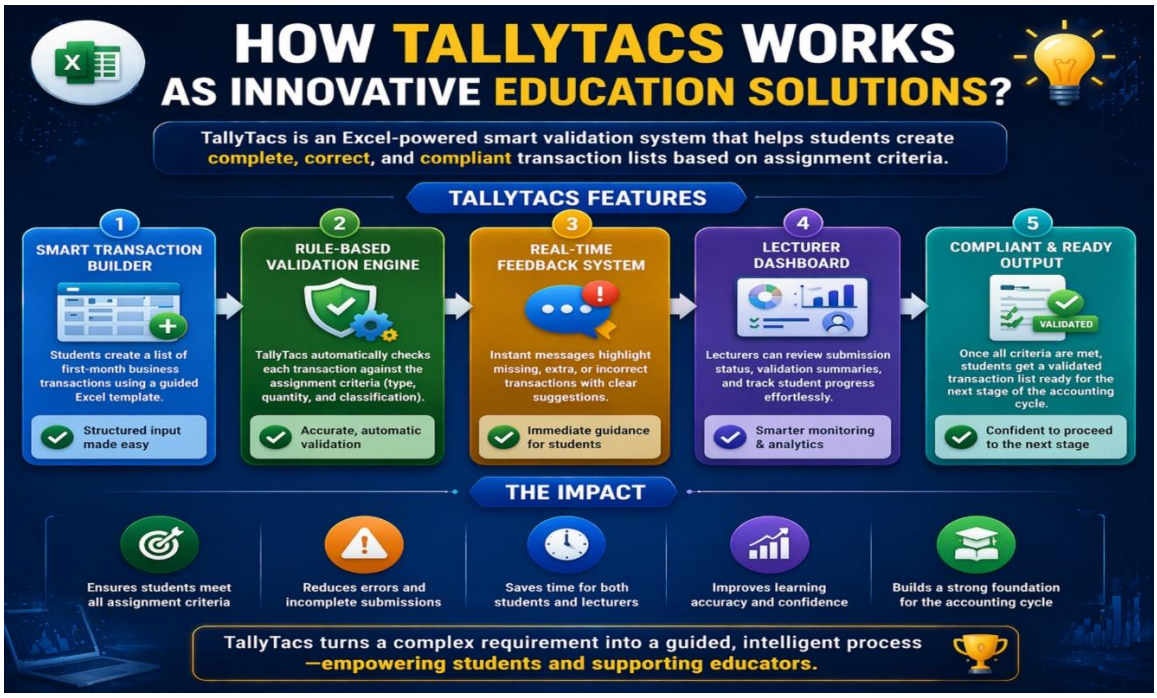


Figure 2: Workflow and Key Features of TallyTacs as an Innovative Education Solution

NOVELTY AND UNIQUENESS

The key novelty of TallyTacs lies in its shift from error correction to error prevention. Traditional accounting education approaches often identify mistakes after students complete the accounting cycle. In contrast, TallyTacs ensures that errors are detected and corrected at the transaction preparation stage. The integration of a rule-based validation system with real-time feedback provides a proactive learning experience that improves accuracy and understanding (Qadir et al., 2025). Furthermore, the inclusion of a Lecturer Dashboard introduces an innovative approach to assessment by enabling error-focused review, reducing unnecessary workload. This innovation aligns with the growing emphasis on digital learning tools and intelligent systems in education, which aim to enhance learning effectiveness and efficiency (Amdan et al., 2024).

BENEFITS TO MANKIND

TallyTacs enhances accounting education by improving students' accuracy, confidence, and problem-solving abilities. It reduces learning frustration and promotes independent learning through guided feedback. For educators, it minimizes manual workload and improves teaching efficiency. By integrating digital validation tools, the system contributes to producing more competent graduates equipped with relevant digital and analytical skills required in modern accounting environments (Keevy, 2026; Al-Hattami, 2025).

COMMERCIAL POTENTIAL

TallyTacs has strong commercialization potential as a scalable digital solution for accounting education. It addresses a real and widespread problem, making it suitable for adoption across institutions. The system can be offered through student and institutional licensing models, with opportunities for premium features. With increasing demand for digital learning tools and technology-enhanced education, TallyTacs is well-positioned for market adoption and expansion.

CONCLUSION

TallyTacs provides an innovative solution to improve accuracy at the transaction preparation stage in accounting education. By ensuring completeness and correctness before progressing to the accounting cycle, the system enhances learning outcomes and reduces lecturers' workload. Moving forward, TallyTacs has strong potential to be expanded into a standalone application or integrated into learning management systems. This innovation represents a shift toward intelligent, technology-driven accounting education that is more efficient, accurate, and aligned with future learning needs.

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