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Crisis-Era Financial System Evaluation: A Management Case Study Using the DeLone & McLean Model

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Abstract

Due to the COVID-19 pandemic, higher education institutions had to rapidly adapt their administrative and financial operations to remote working. The purpose of this study is to find out the performance and success of SIMAKU, the financial management information system of an Indonesian university, during the pandemic period using the DeLone & McLean information systems success model. The researcher used a qualitative case study design, which involved semi-structured interviews with twelve system users: budget planners, finance administrators, reporting staff, and system administrators. The analysis used a comprehensive six-dimensional framework for system success, comprising System Quality, Information Quality, Service Quality, System Usage, User Satisfaction, and Net Benefits of the system. The findings show SIMAKU is capable of supporting financial operations in a crisis. The budget can be executed, and payments and reports are processed even if work from the office (WFO) is unsuccessful. The system's reliability, information accuracy and remote accessibility received high satisfaction scores from users. Nonetheless, there were a number of challenges, including dependence on an internet connection, limited integration with cost accounting and fixed asset systems, constraints in remote technical support, and insufficient online training resources. The research shows the importance of resilient digital infrastructure, integrated financial platforms, and remote-ready support mechanisms for the continuity of organisations during crises and gives practical recommendations to buttress future financial system resilience.

Keywords

• DeLone & McLean Model • Financial Information Systems • COVID-19 Pandemic • Information System Success • Crisis-Resilient Infrastructure

1. Introduction

The COVID-19 pandemic created unprecedented challenges for organizations worldwide, forcing rapid adaptation to remote work and digital operations [1, 2]. Higher education institutions faced particular pressure to maintain financial management functions while transitioning to online operations [3]. Financial information systems became critical infrastructure for ensuring continued budget execution, payment processing, and financial reporting during periods of restricted physical access [4, 5].

The financial management information system (SIMAKU) at an Indonesian university represents a case study in crisis-era system evaluation. Understanding how such systems perform under stress provides valuable insights for administrators planning for future disruptions. The DeLone & McLean Information Systems Success Model offers a comprehensive framework for evaluating system effectiveness across multiple dimensions, including system quality, information quality, service quality, user satisfaction, and net benefits [6].

This paper applies the DeLone & McLean model from a managerial perspective to assess SIMAKU performance during the pandemic period. Through qualitative analysis of 12 system users and data input staff, we examine how the system adapted to crisis conditions and identify areas for improvement. The study addresses three primary research questions:

1. How did the pandemic affect system operations and user behavior?
2. What dimensions of system success were most affected by the crisis?
3. What managerial interventions can strengthen system resilience for future disruptions?

The findings contribute to understanding financial information system performance under crisis conditions and offer practical guidance for administrators seeking to build more resilient financial management infrastructure.

2. Related Work

Research on information system success has been strongly influenced by the DeLone and McLean Information Systems Success Model, which remains one of the most widely adopted frameworks for evaluating organizational information systems [6]. The original 1992 model identified system quality, information quality, use, user satisfaction, individual impact, and organizational impact as key dimensions of success. In 2003, DeLone and McLean updated the framework by incorporating service quality and refining the relationships among dimensions to reflect the evolution of enterprise and web-based systems [6]. Within financial management environments, prior studies have shown that system quality, reliability, and information accuracy are essential for maintaining operational continuity and managerial decision-making [4, 7, 8]. Financial systems are particularly sensitive to disruptions because delays in transaction processing, reporting, and budget execution directly affect organizational performance and accountability.

The COVID-19 pandemic significantly accelerated research on remote digital operations and crisis-resilient information systems [1, 3, 9]. Organizations across sectors were forced to transition rapidly to remote work arrangements, increasing dependence on network infrastructure, cloud access, and digital collaboration tools [2, 9]. Studies conducted during the pandemic reported that system accessibility, remote support capability, and infrastructure reliability became critical determinants of user satisfaction and operational continuity.

Higher education institutions faced additional challenges because administrative and financial operations traditionally depended on in-person coordination and localized infrastructure [3]. Financial management systems therefore became essential tools for maintaining budget execution, payment processing, and reporting functions during lockdown periods. Existing literature also emphasizes that crisis conditions expose weaknesses in system integration, user training, and digital preparedness that may remain hidden during normal operations.

Several studies have applied the DeLone and McLean model to evaluate enterprise resource planning systems, e-government platforms, educational information systems, and financial management applications [10–13]. These studies consistently report that system quality, information quality, and service quality significantly influence user satisfaction and perceived organizational benefits. However, relatively few studies have examined financial management information systems operating under large-scale crisis conditions such as the COVID-19 pandemic.

Furthermore, most prior evaluations focus on system performance during normal organizational operations. Limited attention has been given to how information systems support organizational resilience, continuity of financial processes, and adaptation to remote work environments during periods of disruption.

Understanding these factors is particularly important for higher education institutions, where financial accountability and uninterrupted administrative operations remain critical even during emergencies.

This study addresses this gap by evaluating SIMAKU during the COVID-19 pandemic using the DeLone and McLean Information Systems Success Model. By examining user experiences across system quality, information quality, service quality, system usage, user satisfaction, and net benefits, the study provides insights into the role of financial information systems in sustaining organizational effectiveness during crisis situations.

3. The DeLone & McLean Information Systems Success Model

The DeLone & McLean model is one of the most widely adopted frameworks for evaluating information system success [6]. First proposed in 1992 and updated in 2003, the model identifies six interdependent dimensions of success.

The original DeLone and McLean model introduced in 1992 focused primarily on system quality, information quality, system use, user satisfaction, and organizational impact. In response to the growing importance of web-based and service-oriented systems, the model was updated in 2003 to include the Service Quality dimension and to refine the causal relationships among constructs [6]. The updated framework is particularly appropriate for evaluating crisis-era digital systems because technical support, remote accessibility, and service responsiveness become critical during operational disruptions.

3.1 System Quality

System quality measures the technical performance of the information system itself. Key attributes include ease of use, reliability, flexibility, response time, and system availability. In the context of SIMAKU during the pandemic, system quality encompasses the ability of staff to access the system remotely, system stability under increased load, and the availability of features needed for remote financial management.

3.2 Information Quality

Information quality assesses the output produced by the system. Relevant attributes include accuracy, timeliness, completeness, relevance, and consistency. For financial systems, information quality directly impacts decision-making and regulatory compliance. During the pandemic, maintaining information quality despite disruptions to data entry and verification processes became a critical concern.

3.3 Service Quality

Service quality evaluates the support provided to system users. This dimension includes responsiveness of technical support, reliability of assistance, and the availability of training and documentation. With staff working remotely, service quality became more dependent on remote support capabilities and online resources.

3.4 System Usage

Usage measures how and to what extent the system is utilized. Dimensions include frequency of use, duration of use, and the nature of activities performed. The pandemic forced changes in usage patterns as staff adapted to remote work and modified workflows.

3.5 User Satisfaction

User satisfaction captures users' attitudes toward the system. This dimension encompasses overall satisfaction, enjoyment, and the perceived value of the system. User satisfaction during crisis periods reflects not only system capabilities but also how well the system supported adaptation to changed circumstances.

3.6 Net Benefits

Net benefits represent the overall impact of the system on individuals, groups, and the organization. For SIMAKU, net benefits include improved financial management efficiency, better budget control, enhanced reporting capabilities, and support for organizational objectives during the pandemic.

The model posits causal relationships among these dimensions. System quality, information quality, and service quality influence usage and user satisfaction, which in turn determine net benefits. Feedback from net benefits affects subsequent use and satisfaction.

4. Research Methodology

4.1 Research Context

This study examines SIMAKU, the financial management information system at an Indonesian university. Financial information systems play a central role in organizational financial control, reporting, and decision-making processes [4, 7]. The system manages budget planning, budget execution, payment processing, and financial reporting across academic and administrative units. Prior to the pandemic, system access was primarily from office workstations. The pandemic forced a rapid transition to remote access as staff worked from home.

4.2 Research Approach

A qualitative approach was selected to capture the nuanced experiences of system users during the crisis. Semi-structured interviews allowed participants to describe their experiences in their own words and to highlight issues most relevant to their work. The DeLone & McLean model provided the theoretical framework for organizing interview questions and analyzing responses [6].

4.3 Participants

Twelve system users and data input staff participated in the study. Participants were selected to represent different user roles, including:

- Budget planning staff responsible for annual budget preparation
- Budget execution staff managing day-to-day financial operations
- Payment processing staff handling vendor payments and reimbursements
- Financial reporting staff preparing internal and external reports
- System administrators responsible for user support and system maintenance

Participants represented a range of experience levels, from new users to those with over ten years of experience with the system.

4.4 Data Collection

Semi-structured interviews were conducted via video conferencing during June-July 2020, approximately three months after the initial pandemic lockdowns. Each interview lasted 60-90 minutes and was recorded with participant consent. Interview questions were organized around the DeLone & McLean dimensions:

- System quality: ease of remote access, system reliability, response time
- Information quality: accuracy and timeliness of financial data during remote work
- Service quality: availability and effectiveness of remote support
- Usage: changes in how and when the system was used
- User satisfaction: overall satisfaction with system performance during crisis
- Net benefits: impact on financial management effectiveness

Additional questions explored specific challenges encountered during the transition to remote work and suggestions for system improvement.

4.5 Data Analysis

Interview recordings were transcribed and analyzed using thematic analysis. Coding followed the DeLone & McLean dimensions while allowing for emergent themes. Two researchers independently coded transcripts and compared results to ensure reliability. Disagreements were resolved through discussion.

Thematic saturation was considered achieved when additional interviews no longer produced substantially new themes related to the DeLone and McLean dimensions. After the tenth interview, recurring patterns regarding remote access, network dependency, service support, and user adaptation became highly consistent across participants. Two additional interviews were conducted to confirm thematic stability and ensure representation across different staff roles.

5. Results

5.1 System Quality

Participants generally reported that SIMAKU maintained adequate system quality during the pandemic transition. Remote access functionality, which had been available but little used prior to the crisis, proved essential. Most users reported successful remote access using university-provided virtual private network (VPN) connections.

> "I was surprised that everything worked pretty much the same from home. I thought there would be problems, but after the first week, it was almost normal." - Budget Planning Staff

However, network dependency emerged as a significant concern. Users with reliable home internet connections reported minimal disruption, while those with unstable connections experienced frequent disconnections and slow response times.

> ”The system itself worked fine, but my home internet kept dropping. Sometimes I would lose work and have to start over.” - Payment Processing Staff

Participants clarified that these disruptions were primarily associated with unstable internet connectivity rather than complete system failure. However, several users noted that the system had limited session persistence and auto-save functionality during interrupted connections, increasing the likelihood of repeated data entry after disconnections.

System response time varied depending on connection quality and time of day. Peak usage periods, particularly early mornings and late afternoons, saw slower performance as more users accessed the system remotely.

5.2 Information Quality

Information quality remained high during the pandemic according to most participants. Financial data continued to be accurate and timely, with no significant increase in errors or delays.

> "The numbers were always right. We checked everything carefully because we were worried about mistakes, but we didn't find any problems." - Financial Reporting Staff

Data verification processes adapted to remote work. Staff developed new procedures for reviewing transactions and reconciling accounts without in-person meetings.

> "We started doing more verification by email and phone. It took longer sometimes, but we made sure everything was correct." - Budget Execution Staff

Integration gaps with cost accounting and fixed asset systems were noted by several participants. These systems, which interface with SIMAKU, were less accessible remotely and required manual data transfer in some cases.

> "The cost accounting system doesn't have the same remote access. We had to email files back and forth, which was inefficient." - System Administrator

5.3 Service Quality

Service quality during the pandemic received mixed reviews. Technical support was generally responsive, but the shift to remote support created new challenges.

> "The IT help desk was great. They responded quickly to emails and sometimes even called to walk me through problems." - Budget Planning Staff

However, the absence of in-person support made some issues more difficult to resolve. Problems that would have been solved with a quick visit to a colleague's office required extended email exchanges or video calls.

> "When you're sitting next to someone, you can just point at the screen. Remote support takes longer because you have to explain everything." - Payment Processing Staff

Training and documentation, primarily designed for in-person use, were less effective remotely. New users, in particular, struggled to learn the system without hands-on guidance.

> "I started just before the pandemic. Learning the system would have been hard anyway, but doing it remotely was really difficult." - Budget Execution Staff

5.4 System Usage

Usage patterns shifted significantly during the pandemic. Staff reported working more varied hours to accommodate childcare and other home responsibilities. System usage spread across more hours of the day rather than concentrated in standard office hours.

> "I worked when I could - sometimes early morning, sometimes late at night. The system was always available, which helped." - Financial Reporting Staff

The volume of transactions processed during the pandemic remained consistent with pre-pandemic levels. Budget absorption, a key performance indicator, was maintained despite operational disruptions.

> "We were worried that payments would slow down, but we processed everything on time. The system handled the load." - Payment Processing Staff

However, some users reported reduced usage of advanced system features. Complex analyses and reports that required collaboration were deferred or simplified.

> "We stuck to basic transactions. Anything complicated we put off until later." - Budget Planning Staff

This suggests that while core transactional functionality remained operational, collaborative and analytically intensive tasks were more difficult to perform remotely. The pandemic therefore affected not only the volume of system usage but also the complexity of activities users were willing or able to complete.

5.5 User Satisfaction

Overall user satisfaction remained positive despite the challenges of remote work. Users appreciated the system's stability and reliability during a period of significant disruption.

> "I'm actually more satisfied now than before. The system proved it could handle a crisis." - System Administrator

However, satisfaction varied based on individual circumstances. Users with stable home internet and adequate home workstations reported higher satisfaction than those with connectivity or equipment problems.

> "If my internet had been better, I would have been completely satisfied. But the disconnections were frustrating." - Budget Execution Staff

Users also expressed appreciation for the system's role in enabling continued operations. Several noted that without SIMAKU's remote access capabilities, financial management would have ground to a halt.

> "We would have been lost without this system. It kept us going when everything else was disrupted." - Financial Reporting Staff

5.6 Net Benefits

The pandemic demonstrated significant net benefits from SIMAKU investment. The system enabled continued financial operations despite widespread disruption to normal work arrangements. Budget execution continued without major delays. Financial reports were produced on schedule. Payment processing remained timely.

> "From a management perspective, the system performed exactly as we needed it to. We didn't miss any deadlines." - Administrator

The crisis also revealed opportunities for additional benefits. Integration with other systems, if improved, could further enhance efficiency. Enhanced training resources could better support users in remote environments.

> "This experience showed us what works well and what could be better. Now we know where to focus our improvement efforts." - Administrator

5.7 Challenges and Areas for Improvement

Participants identified several challenges requiring managerial attention:

5.7.1 System Integration

The lack of seamless integration with cost accounting and fixed asset systems created inefficiencies. Manual data transfer between systems increased workload and introduced error risk.

5.7.2 Network Dependency

System reliability depended heavily on network infrastructure. Users with poor internet connectivity experienced significant frustration and productivity loss.

5.7.3 Data Verification

Remote work required adaptation of verification processes. New procedures for confirming transaction accuracy without in-person interaction were developed ad hoc rather than systematically designed.

5.7.4 Staff Capacity

Variable staff capacity for remote work affected system effectiveness. Some users adapted quickly while others struggled with technology or work-from-home arrangements.

5.7.5 Training and Documentation

Existing training resources proved inadequate for remote learning. New users faced particular challenges mastering the system without hands-on guidance.

6. Discussion

6.1 Managerial Implications

The findings offer several implications for administrators managing financial information systems in crisis contexts.

Table 1: Service Quality Mixed Responsive IT help desk but remote support limitations

Dimension	Performance	Key Issues
System Quality	Good	Network dependency, peak load response
Information Quality	Good	Integration gaps with other systems
Service Quality	Moderate	Remote support limitations
System Usage	Good	Reduced use of advanced features
User Satisfaction	Good	Variable by individual circumstances
Net Benefits	Good	Crisis resilience demonstrated

6.1.1 Invest in Remote Access Infrastructure

The pandemic demonstrated that remote access is not merely a convenience but an operational necessity. Universities should ensure that all critical systems are accessible remotely with appropriate security controls. Investment in VPN capacity and redundant network connections can reduce dependency on individual user connectivity.

6.1.2 Strengthen System Integration

Integration gaps create manual workarounds that are particularly problematic in remote environments. Administrators should prioritize integration between financial systems and related applications such as cost accounting and fixed asset management. API-based integration can enable seamless data flow without manual intervention.

6.1.3 Develop Remote-Ready Training Resources

Traditional in-person training does not translate well to remote environments. Organizations should develop online training resources, including video tutorials, interactive guides, and virtual classroom capabilities. These resources benefit not only crisis situations but also ongoing professional development.

6.1.4 Enhance Support Capabilities

Remote support requires different tools and approaches than in-person support. Screen sharing, remote desktop control, and collaborative documentation can improve support effectiveness. Support staff may need training in remote troubleshooting techniques.

6.1.5 Build Redundancy

System dependency on individual users creates vulnerability when those users are unavailable. Cross-training staff across multiple functions can reduce this vulnerability. Documenting procedures and maintaining knowledge bases also helps.

6.2 Theoretical Implications

The study contributes to information systems theory by applying the DeLone & McLean model in a crisis context [6, 10]. The model proved useful for organizing evaluation across multiple dimensions, but the crisis highlighted the importance of contextual factors not explicitly captured.

Network quality, for example, emerged as a critical factor influencing multiple dimensions. Similar observations regarding infrastructure resilience have been reported in studies of crisis-resilient digital

systems [9]. Users with poor internet connectivity experienced lower system quality regardless of system capabilities. This suggests that system evaluation models should consider not only the system itself but also the infrastructure on which it depends.

Infrastructure quality specifically influenced multiple DeLone and McLean dimensions simultaneously. Unstable internet connectivity negatively affected System Quality by reducing responsiveness and session stability, while also influencing User Satisfaction through increased frustration and workflow interruption. In some cases, poor connectivity indirectly affected Service Quality because remote technical assistance became more difficult when users experienced repeated disconnections.

The crisis also demonstrated the dynamic nature of system success dimensions. System usage patterns changed dramatically, but the system adapted to support new usage modes. User satisfaction was influenced not only by system performance but also by the contrast with what might have happened without the system.

6.3 Limitations

This study has several limitations. First, it examines a single system at a single institution, limiting generalizability. Second, data collection occurred relatively early in the pandemic; longer-term effects may differ. Third, the qualitative approach, while rich in detail, does not provide quantitative measures of system performance. Fourth, participants were self-selected and may not represent all user perspectives.

6.4 Future Research

Future research should examine system performance across multiple institutions to identify common patterns and context-specific factors. Longitudinal studies could track how system use evolves as remote work becomes more established. Quantitative studies could measure system performance metrics more precisely. Cross-cultural comparisons could reveal how organizational and national contexts influence system success.

Research should also explore the role of emerging technologies in enhancing system resilience. Emerging technologies such as explainable artificial intelligence and advanced analytics are increasingly being integrated into financial decision-support environments [14].

7. Conclusion

This paper evaluated the success of SIMAKU, a financial management information system at an Indonesian university, during the COVID-19 pandemic using the DeLone & McLean framework. The study found that the system performed well overall, maintaining operations despite significant disruption to normal work arrangements. Budget absorption continued, financial reports were produced on schedule, and user satisfaction remained positive.

However, the crisis also revealed opportunities for improvement. System integration gaps created inefficiencies. Network dependency affected users with poor internet connectivity. Remote support and training were less effective than in-person alternatives. Staff capacity for remote work varied considerably.

From a managerial perspective, the findings suggest several priorities for strengthening financial system resilience. Investment in remote access infrastructure, system integration, remote-ready training resources, enhanced support capabilities, and staff redundancy can reduce vulnerability to future disruptions. These improvements benefit not only crisis response but also ongoing operations.

The DeLone & McLean model provided a useful framework for organizing the evaluation, though the crisis highlighted the importance of contextual factors not explicitly captured in the model. Infrastructure quality, in particular, emerged as a critical influence on multiple success dimensions.

As organizations prepare for an uncertain future, resilient financial management systems become increasingly important. The experience of SIMAKU during the pandemic demonstrates that well-designed systems with robust remote access can maintain operations through significant disruption. Continued investment in system improvement can further enhance this resilience, ensuring that financial management continues to support organizational objectives regardless of circumstances.

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