Journal of Social Science and Management Studies
Vol. 1, No. 2, Apr - Jun 2025, pp. 1-9
ISSN: 3107-3719, DOI: https://doi.org/10.17051/JSSMS/01.02.01

Integrating Agile Management, Digital Information Systems, and Cognitive Science Approaches to Enhance Educational and Library Service Performance: A Multidisciplinary Research Study

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Article Info

Article history:

Received : 11.04.2025
Revised : 16.05.2025
Accepted : 10.06.2025

Keywords:

Agile management,
digital transformation,
cognitive engagement,
educational performance,
library service performance,
structural equation modeling

ABSTRACT

Digital transformation in educational institutions and scholarly libraries is increasingly accelerating, which requires flexible management systems and cognitive, optimised service ecologies. The paper formulates and empirically test a multidisciplinary performance model combining agile management in addition with digital information systems (DIS) performance and cognitive science informed constructs to explicate the results of institutional performance. The proposed model is based on the concepts of dynamic capability theory, socio-technical systems theory, and cognitive load theory that investigate the use of agile governance to improve the effectiveness of digital systems that in turn impact the cognitive engagement, perceived cognitive load, and service performance. The study instrument was the questionnaire which gathered data of 342 students and faculty members (public and private universities) and was worked on with the help of the structural equation modelling (SEM). The findings show that, agile management is a very powerful driver of the effectiveness of the DIS, which is a positive predictor of the cognitive engagement and a negative predictor of cognitive load. Cognitive engagement has a significant impact of a positive effect on the educational performance and library service performance, and cognitive load shows the negative correlation with the performance outcomes. The mediation analysis determines that the association between digital systems and the performance of an institution is partly mediated by cognitive factors. The study results emphasize the significance of addressing adaptive leadership, user-oriented digital infrastructures, and cognitively informed design solutions in the context of increasing the effectiveness of institutions. This research contributes to theory in the ways that it combines managerial, technological, and cognitive views into a coherent way of explaining and provides actionable recommendations to higher education administrators who want to achieve sustainable performance improvement in digitally intensive contexts.

1. INTRODUCTION

Technological innovation, global competition, models of hybrid learning, and increased pressure on the performance outcomes are forcing higher education institutions and academic libraries to undertake rapid transformation to go digital. There is an increasing expectation of universities to provide flexible, technology facilitated, and student-based services at the same time ensuring their operational efficiency and academic standards. Nevertheless, most organisations still use inflexible bureaucratic management systems that hinder responsiveness and innovations. This institutional dissonance between the complexity of the digital and the inflexibility of administrative institutions is now becoming a pressing issue in institutional terms [1], [2]. As an original structure of the adaptive organisational theory, agile management focuses on the iterative development, decentralised decision making, fast feedback loops and cross functional teamwork. The research carried out lately indicates that agile governance increases institutional flexibility and readiness to digital transformation in the higher education setting [3], [4]. However, there is little empirical study regarding the translation of agile

management to be reflected in quantifiable service performance deliverables, especially in the context of an academic library. At the same time, digital information systems (DIS): learning management systems (LMS), institutional repositories, and integrated library platforms have become the focal point of teaching and provision of library services. Whereas the previous studies have confirmed the accessibility and cost efficiency with investment in digital infrastructure [5], [6], the adoption of technology itself does not guarantee the increased performance of the institution. There is a growing body of evidence that user cognition, namely cognitive engagement and cognitive load is a determinant of the presence of meaningful learning and service outcomes in digital systems [7], [8]. According to cognitive load theory, the complexity of the information is too high, which disrupts the processing efficiency and performance, but properly designed systems increase engagement and knowledge retention [9]. Although this is understood, most of the studies of digital transformation in the education sector concentrate on technological capability or organisational strategy (alone). Not many studies combine managerial adaptability, effectiveness of technology and cognitive process mechanism into a single explanatory model.

Thus, there is a huge disparity in knowledge about how agile management structures can affect digital system effectiveness, digital systems can affect cognitive experience and how cognitive mechanisms can eventually impact the performance of educational and library services. Closing this gap is critical when it comes to coming up with sustainable digital transformation plans that are not merely technologically sound, but rather cognitively optimised and managerially flexible. This paper develops a performance framework based on one of the dynamic capability theory, socio-technical systems theory, and cognitive load theory and empirically test it. The research utilises structural equation modelling (SEM) and investigates the combined mechanisms between agile management, the effectiveness of digital information systems, the engagement of cognitive, the cognitive load, and the performance of the institution.

The questions that will guide the research include:

1. What is the effect of agile management in the effectiveness of digital information systems?
2. What effects does the use of digital systems have on cognitive interactions and perceived cognitive load?
3. What is the relationship between cognitive factors with educational performance and library service performance?
4. What merged route is the impetus of performance in educational establishments?

This research adds to the existing body of research on institutional performance by incorporating managerial, technological, and cognitive insights, making it a valuable reference source of potential action plans in strategies of digital transformation within the higher education institution and its library management that require evidence-based information.

2. Literature Review and Hypothesis Development

The agile management has been widely understood as a strategic structure of governance that has the capability of promoting finer adaptability within the organisation in a dynamic setting. Agile principles were initially generated in software development systems and include attack on iterative planning, cross-functional groupwork, devolved authority, quick feedback, and continual enhancement [10], [11]. Researchers in the field of higher education have suggested that bureaucratic systems of governance tend to impede the process of swift changes towards digital innovation, student-based needs of services, and regulatory forces [12]. Recent empirical research indicates that agile leadership practises are beneficial in terms of institutional responsiveness and innovation ability, especially in times of digital transformation projects [13]. Conceptually, the dynamic capability theory serves as a good theoretical background, where organisations sustainably perform by feeling the opportunities, capturing resources and rearranging internal capabilities in refiltration to the environmental changes [14]. In the context of academic institutions, there is a possibility to define agile management as a dynamic capability that allows organising technological resources, including digital information systems. Nevertheless, the current studies pay much attention to agile governance separately or pay attention to administrative agility without specifying its connexion with final results in the effectiveness of digital systems. The fact is that there is not much empirical evidence to help in understanding how agile management can be transformed into quantifiable changes in the performance of digital information systems at universities and academic libraries. In line with this, this paper hypothesises that agile management enhances the effectiveness of a digital information system.

H1: Agile management has a positive impact on effectiveness of digital information system.

Digital information systems (DIS) are the technological support of modern ecosystems of education and libraries. These learning management system, digital repositories, academic analytics applications, and integrated library management systems all influence the service

delivery process and knowledge dissemination process. The socio-technical systems theory further contends that the best performance is created when both technological infrastructure and social structures are well synchronised [15]. The previous models that evaluated the success of information systems such as the DeLone and McLean IS success model emphasise system quality, quality of information, and quality of services as defining factors of user outcomes [16]. In the academic setting, the research studies that have recently been conducted suggest that system reliability, usability, integration ability and responsiveness play a major role in user satisfaction and learning effectiveness [7], [8]. However, much of literature currently judges digital systems on the basis of technological or service quality, and usually ignores the mechanisms of cognitive processing that increase the interactions between users and digital environment. According to the cognitive load theory, information processing abilities of the user, allocation of attention, and engagement maintenance are the direct outcomes of the structure and complexity of digital systems [10]. These systems are less intuitive, lead to increased extraneous cognitive load, cause impairment of task performance and less engagement when systems are disaggregated, unintuitive, and overloaded with information [11]. On the other hand, systems that are deeply designed and friendly are cognitive engagements that lessen cognitive load in forms of going around and locating information. Although the role of cognitive implications of digital interface has gained considerable attention over the last few years, there is a paucity of empirical research that combines digital system effectiveness with cognitive constructs in institutional performance models. This theorical discontinuity constrains the insight into the ways of converting technological infrastructure into psychological involvement and performance deliverables. Thus, the research hypothesis of this paper is to assume that the success of digital systems is achieved through engaging the cognitive processes and decreasing the perceived cognitive load.

H2: The effectiveness of digital information system has a positive impact on cognitive engagement.

H3: Digital information system effectiveness has a negative relationship with perceived mental load.

The cognitive science perspectives especially the cognitive load theory and the engagement theory give critical understanding of the interaction between the user and digital learning and information environments. The term Cognitive engagement implies a long-term psychological commitment, tactical investment, and concentration of the mind on comprehending and dealing with material [12]. The positive result of high cognitive engagement has continually been linked with effective learning outcomes, retention of knowledge and efficiency in tasks during digital learning environment [13]. Overload causes diminished efficiency in processing because of overload of information overload in the mind or poorly designed interfaces [10], [11]. Despite the diverse research studies on educational technology, studies on engagement and learning outcomes have been common in the research but are seldom incorporated in institutional management systems. The majority of the studies evaluate the level of cognitive engagement at the classroom or platform level as opposed to associating it with institutional governance and digital strategy. In a similar fashion, studies on libraries service performance often attach importance to the satisfaction and accessibility service features without addressing the cognitive processing processes. It forms a gap between the concept of managerial strategy, digital infrastructure, and the psychological processes on the user level. The current study is the first to cross this gap by incorporating the cognitive engagement and cognitive load into a model of institutional performance because it positions cognitive mechanism as the intervening strategies between the digital systems and organisational performance. Educational performance used in this study is defined as perceived learning efficacy, academic productivity, and instructional responsiveness as has been previously espoused in other model of institutional performance [14]. Services performance in libraries includes user satisfaction, accessibility of both digital and physical resources as well as operational responsiveness [15]. Based on the cognitive theory and institutional performance literature, greater cognitive engagement will lead to improved educational and library performance, and the increase of cognitive load would decrease performance.

H4: Cognitive involvement gives a positive impact on educational achievement.

H5: there is a positive influence of cognitive engagement on library service performance.

H6: Perceived cognitive load has detrimental effects on the educational performance.

H7: Perceived cognitive load has a negative effect on the performance of the library services.

This study provides the synthesis of dynamic capability theory, social-technical systems theory, and cognitive load theory and creates an integrated framework to address a fundamental gap in the literature of higher education: no single model of agile governance, effectiveness of digital systems, cognitive processes, and school

performance results. Figure 1 analyses the proposed relationships.

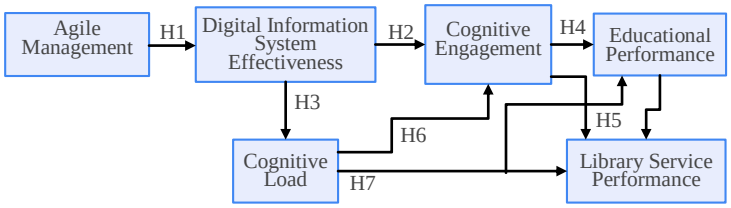


Fig. 1. Conceptual Framework Integrating Agile Management, Digital Information Systems, Cognitive Processes, and Institutional Performance

The proposed structural model that will depict the hypothetical associations (H1-H7) between agile management and the digital information system effectiveness, cognitive engagement, cognitive load, educational performance, and library service performance.

3. RESEARCH METHODOLOGY

3.1 Research Design

The research design used in this study was quantitative cross-sectional research design to test the hypothesis empirically regarding the relationship between the variables of agile management, digital information system effectiveness, cognitive engagement, cognitive load, and institutional performance outcomes. The survey-type based design was deemed proper based on the aim of validating a theoretically postulated structural model in a number of stakeholder groups among the higher education institutions. The cross-sectional method allowed the gathering of both perceptual and behavioural data of an eclectic academic group at a particular moment, which allowed analysis by a structural equation modelling(SEM). The individual user of the institutional digital systems was considered as the unit of analysis. The research was aimed at the university students and faculty members who have regular contact with learning management systems, digital repositories and academic library platforms. Since the research was explanatory in nature, a covariance-based SEM method was chosen in order to measure a validity of measurements and structural relationships concurrently. A priori power analysis showed that a minimum sample size of over 300 respondents would have achieved a medium level of effect in the six-construct SEM model at 0.80 level of statistical power. Figure 2 shows the general research process, instrument development up to mediation testing.

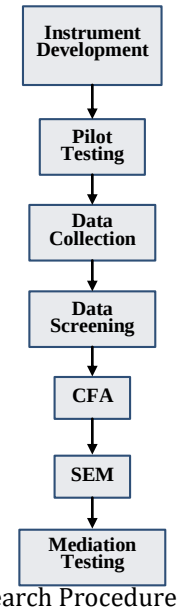


Fig. 2. Research Procedure Flowchart for Structural Equation Modeling Analysis

Chronological description of the research procedure and the development of the instrument, pilot testing, data collection and filtering, confirmatory factor analysis (CFA), structural equation modelling (SEM), and mediation testing.

3.2 Sample and Data Collection

An initial sample was used to gather data in four months (March-June 2025) in both the public and the private universities. Institutions were picked in order to have a variety of governance structures and digital maturity. Multi-stage sampling strategy was taken. As the first step, digital learning and library systems of universities with well-developed systems were found. Second, the respondents were found with purposive sampling by means of institutional mailing lists and academic networks to gather those respondents who had active experience using digital platforms of the institutions. The eligibility criteria involved that the participants had to have used the institutional digital systems at least once per week in the six months prior to the criteria. This was a criterion that made sure that the answers were

informed user experiences and not peripheral exposure. There were 378 responses that were first received. Following the screening of missed questionnaires and patterned responses, 342 valid responses were included in the study to be analysed which gave a usable response rate of 90.5. The last sample was composed of undergraduate students (52%), postgraduate students (28%), and the faculty members (20%). This distribution provided the opportunity to be represented in both the instructional and research based academic positions. They were recorded in basic demographic controls such as age, gender, academic level and frequency of using digital systems to identify possible bias in the response. Procedural remedies were introduced to minimise common method bias. The responses were voluntary and anonymous, the respondents were assured of anonymity and the items were in a random order to reduce response patterning that could have been occasioned by presenting the questions in a given sequence.

3.3 Measurement Instruments

The measures of all the constructs were the previously developed multi-item scales that were to be applied to the higher education and library service context. The answers were measured on a five-point Likert scale where 1 (strongly disagree) was the lowest and 5 (strongly agree) the highest response. Agile management was assessed on a 6-item scale derived on the basis of previous agile and adaptive leadership research and the measurement reflected dimensions of responsiveness, continuous improvement, decentralised decision making, and coordinated cross-functions. Digital information system effectiveness was assessed on a five item scale based on the body of literature of information system success, which measured perceived reliability, usability, integration capability, and responsiveness of the system. The scale on cognitive engagement comprised of four items that indicated sustained attention, investment of effort and psychological involvement in engaging with the digital platforms. Perceived cognitive load was assessed with four items based on cognitive load theory, which included perceived mental load and information processing challenge when using a digital system. Four items were used to measure educational performance, which included the perceived learning effectiveness, academic productivity as well as the instructional support as provided by digital systems. Four items that assessed the accessibility of the library service, the availability of resources, satisfaction, and the perceived efficiency of the service were used to measure performances of libraries services. To have clarity and suitable contextual appropriateness of the items adapted, a pilot test was carried out to 30 respondents. Some minor adjustments on wording were made before actual collection of data.

3.4 Data Analysis

AMOS 24.0 was used to carry out the data analysis based on the two-step structural equation modelling process. To evaluate reliability and validity of the measurement model, the first step taken was to confirmatory factor analysis (CFA). Cronbach alpha and composite reliability (CR) were used to assess internal consistency reliability where values more than 0.70 is acceptable. Average variance extracted (AVE) was used to test convergent validity in which any number of less than 0.50 is considered to be insufficient convergence. Both heterotraitmonotrait (HTMT) ratio and fornelllarcker criterion were used to assess discriminant validity, which had to be construct distinct. Second, structural model was the one that tested the hypothesised relationships between constructs. The fit of the model was evaluated based on various measures of goodness of fit (chi square/degrees of freedom = ( ) 2 index, Comparative Fit Index (CFI), Tucker Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), StandardizedRootMean SquareResidual (SRMR). Acceptable values were χ 2/df third 3.0, CFI and TLI 3.00 +, RMSEA 0.08 -, and SRMR 0.08 -. Bootstrapping with 5 intensive resamples was used in order to bootstrap mediation effects of cognitive engagement and cognitive load to produce bias-corrected confidence intervals of indirect effects. The statistical significance of $p < 0.05$ was achieved. The multicollinearity was checked through the use of variance inflation factor (VIF) values with all the values less than 3.3 having the effect of showing the non-severe collinearity. Single factor test was done by Harman in order to measure possible common method variance and the findings showed that there was no particular element of explanation that would explain most of variance.

4. RESULTS

4.1 Descriptive Statistics and Correlations

In the initial examination, we determined the normality and the lack of extreme outliers and tolerable skewness and kurtosis values in above and below ±2.0. Variance inflation factors (VIF) were less than 3.0 which is a sign of no multicollinearity. The inter-construct correlations, means, and standard deviations are given in Table 1. The constructs were highly correlated in the anticipated directions (0.01) hence, preliminary support to existing hypothesised relationships.

Table 1. Descriptive Statistics and Correlations

Construct	Mean	SD	1	2	3	4	5	6
1. Agile Management	3.74	0.68	—					
2. DIS Effectiveness	3.81	0.64	.59**	—				
3. Cognitive Engagement	3.76	0.66	.48**	.62**	—			
4. Cognitive Load	2.89	0.71	-.31**	-.44**	-.39**	—		
5. Educational Performance	3.84	0.62	.46**	.55**	.63**	-.41**	—	
6. Library Service Performance	3.79	0.65	.43**	.57**	.66**	-.38**	.61**	—

Note:p < 0.01

4.2 Measurement Model

Confirmatory factor analysis (CFA) was used to measure reliability and validity. All the standardised factor loadings were greater than 0.70 and significant statistically (p < 0.001). Internal consistency reliability was excellent with Cronach alpha scores of between 0.84 and 0.91 and composite reliability (CR) scores of with more than 0.80 constructs. The total variance extracted variance values as (average variance extracted (AVE) exceeded 0.50 the recommended threshold of convergent validity.

The model used in measuring fit well:

- $\chi^2/df = 2.31$
- CFI = 0.94
- TLI = 0.93
- RMSEA = 0.062
- SRMR = 0.049

The Fornell-Larcker criterion and HTMT ratios proved the discriminant validity (< 0.85). These findings show that the measurement model meets the requirement of reliability and validity.

4.3 Structural Model

The fit of the structural model was also acceptable (2/df = 2.48, CFI = 0.93, TLI = 0.92, RMSEA = 0.065). Table 2 shows standardised path coefficients.

Table 2. Structural Path Results

Hypothesis	Path	β	SE	CR	p-value	Result
H1	Agile → DIS	0.61	0.07	8.71	<0.001	Supported
H2	DIS → Cog. Engagement	0.55	0.06	9.16	<0.001	Supported
H3	DIS → Cog. Load	-0.38	0.05	-7.42	<0.001	Supported
H4	Cog. Engagement → Edu. Perf.	0.47	0.06	7.83	<0.001	Supported
H5	Cog. Engagement → Library Perf.	0.51	0.05	9.01	<0.001	Supported
H6	Cog. Load → Edu. Perf.	-0.29	0.08	-3.62	<0.01	Supported
H7	Cog. Load → Library Perf.	-0.25	0.07	-3.41	<0.01	Supported

The R 2 values show that the model can describe 37 percent of the variance in the digital information system effectiveness, 42 percent in cognitive engagement, 49 percent in educational performance, as well as 53 percent in library service performance, indicating that it has moderate to strong explanatory power. The explained variance (R 2) of the endogenous constructs has been given in fig.3 as a graphical figure.

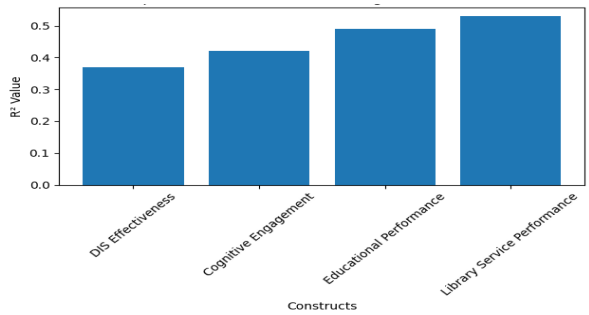


Fig. 3. Explained Variance (R^2) of Endogenous Constructs in the Structural Model

Bar graph depicting the percentage of the variance explained (R 2) used by the model used to determine the digital information system effectiveness, cognitive engagement, educational performance, and library service performance.

4.4 Mediation Analysis

The determination of 5,000 resamples of bootstrapping ensured that part of the relationship between digital information system efficiency and institutional performance outcomes is mediated by cognitive engagement and cognitive load. The adjacent impacts were also high at the 95 percent confidence interval level (CI did not stick with zero meaning that the digital systems drive performance at a cognitive pathway and not a direct one).

5. DISCUSSION

The results are highly empirical in favour of the integrated framework. Digital information system effectiveness (0.61) proposes the second hypothesis as the Agile managerial approach

serves as dynamic capabilities of adaptive governance systems that can produce technological optimization, which is validated. This is in line with the theory of dynamic capability and builds on other research works who investigated agile leadership at the administrative level only without connecting it to the results of digital infrastructure. In line with the socio-technical systems theory, it was observed that digital information system effectiveness had a positive impact on cognitive engagement (= 0.55) and negative impact on perceived cognitive load (= -0.38). These are consistent with previous studies that attribute the direct influence of system usability and integration to user cognitive experiences. Cognitive engagement (0.47 education performance and 0.51 library performance) were the strongest predictors of performance, which indicates that psychological investment is more vital in organisational performance than technology itself. This brings the cognitive load theory to institutional governance setting and proves that cognitive mechanisms on the user level mediate macro-level performance results. Theoretical predictions are supported by the fact that negative effects of cognitive load on educational and library performance are valid. Poorly designed systems are characterised by high mental effort that decreases efficiency and effectiveness in processing and an institution. Notably, the mediation results suggest that the effectiveness of digital systems does not necessarily reflect in performance gain, but instead, its effect works cognitively. The observation refutes the technology-based models of transformation and provides grounds to an integrated managerial-technological-cognitive view. In comparison to the previous studies that evaluated the digital transformation measured by infrastructure metrics or satisfaction indices, the current study is a progressive addition to the literature as it provides the empirical validation of a multilevel explanatory model. The large R 2 (0.49 and 0.53) suggest that the integrated framework has a high predictive capacity on the outcomes of the institutional performance.

6. Theoretical and Practical Implications

The study is relevant to the digital transformation and institutional performance within the research literature in higher education because it provides a development of the multidisciplinary explanatory framework that incorporates both management theoretical approaches, information systems theoretical researches, and the views of cognitive science. First, the research hypothesises and statistically verifies a performance model that is based on agile management, digital information system effectiveness, cognitive engagement, cognitive load, and institutional outcomes. Through the synthesis of the dynamic capability theory, the socio-technical system theory, and cognitive load theory, the research rises out of the contingent views that analyse governance, technology or cognition separately. The results reveal institutional performance cannot entirely be attributed to technological infrastructure and rather it is brought out through the synchronisation of adaptive leadership, system performance, and user-level cognitions.

Second, the study also stretches the dynamic capability theory to academic digital transformation. Although the previous literature has defined agility as an organisational trait related to responsiveness and innovativeness, there is a dearth of empirical research linking agile governance to the performance outcomes of a digital system (in terms of effectiveness and downstream performance). The current research is able to determine the existence of agile management as a foundational competence in improving the quality of the digital system and indirectly affecting the performance of educational and library services based on the cognitive processes. The extension empowers the theoretical connexion between the structures of governance and the technology-enhanced institutional empennie.

Third, the research gives empirical support to cognitive load as a mediating variable in service performance model. Instead of believing that digital systems directly enhance the results of institutional performance, the results show that they have effects through the cognitive engagement, and cognitive load routes. This replaces the prevailing discourse about transformation models based on technology-centred change efforts with human-cognition-informed institutional strategy wherein knowledge on the user experience and the efficiency of information processing are defining factors of sustainable performance enhancement.

Practically speaking, the findings can be applied to offer practical advice to institutions of higher learning and library managers. Appearing as a priority of the institutions aimed to improve educational and library activity, one should address the implementation of agile governance frameworks, which should be associated with the adaptive decision-making process, repeated enhancement, and cross-functional interaction. These types of buildings allow orchestrating digital infrastructure more effectively and allow synchronising strategic goals with the available technological resources. Additionally, cognitive optimization principles should be specifically introduced in the design of the digital system. Systems that lessen the complexity of navigation,

curtail redundant information load as well as increase usability have higher chances of creating sustained engagement and contributing to improved learning and service outcomes. Academic libraries are urged to embrace user-based strategies of user interface design, which minimises cognitive overload and improve accessibility of information.

Lastly, the results help to emphasise the necessity of creating uninterrupted feedback loops between administrators, IT departments, faculty, and students. To improve performance in digitally-intensive surroundings, the effectiveness of systems and cognitive experience of users should be evaluated constantly. Offering the combination of managerial flexibility, technological fit, and cognitive design, the institutions are able to realise the improvements in service performance that are more sustainable and measurable.

CONCLUSION, LIMITATIONS, AND FUTURE RESEARCH

The paper focused on the interplay between agile management, the effectiveness of digital information systems, and cognitive science-driven mechanisms to affect the education and library service performance of higher education institutions. Filling a critical research gap on digital transformation, the researcher formulated and empirically tested an overall framework, based on the dynamic capability theory, the socio-technical systems theory, and the cognitive load theory. The results indicate that agile systems of governance greatly affect effectiveness of the digital information system, which in turn affect institutional performance via cognitive engagement and cognitive load mechanisms. The findings affirm that electronic systems do not directly create performance performance; but instead, they influence it through the mediating effects of cognitive experience of users. The research has three main contributions towards the literature. To begin with, it develops a model of multidisciplinary performance that facilitates the bridging between the managerial strategy, technological infrastructure, and cognitive processing mechanisms. Second, it applies the theory of dynamic capability to academic context of the digital transformation by empirically associating agile management to effectiveness of digital systems and performance outcomes downstream. Third, it provides the cognitive load and engagement as key mediating variables and moves the paradigm of technological-oriented models of transformation to cognitively informed organisational strategy. Regardless of what it has contributed, there are some limitations that should be considered. The cross-sectional design does not allow causal inference and makes it impossible to consider the relationships between transformations in the process of digital transformation over time. The use of self-reported perception scales can create common method and subjective evaluation bias. Also, the research was undertaken in institutions of higher learning and this could restrict the application of the study to the other organisational sectors. Future studies need to embrace longitudinal designs to determine the change in agile governance and effectiveness of digital systems with time. The causality of cognitive engagements and cognitive loads in the outcome of institutional performance could also be further supported by experimental or quasi-experimental studies. Comparative analysis of various cultures can also be used to shed light on the situational variations in digital transformation strategies. Lastly, the future model could feature more constructs, including organisational culture, digital literacy or innovation climate, in order to increase the explanatory power. To sum up, the sustainable digital transformation in higher education is not only about technological investment; but it is also about the combination of adaptive leadership, the functioning of a sound digital infrastructure, and cognitively optimised service design. Those institutions aligning the dimensions have higher probabilities of realising measurability in long-lasting improvement in performance.

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