ENHANCING LECTURER PERFORMANCE: THE ROLE OF AGILITY IN TECHNO-ADAPTABILITY FOR DISTANCE EDUCATION

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Received: 21/02/2025 **Accepted:** 11/04/2025

ABSTRACT

The rapid integration of technology into distance education has resulted in an incomplete understanding concerning techno-adaptability and lecturer performance. Despite the topical nature of technology adoption, the role of agility or a multidimensional capability concerning cognitive, operational, and strategic responsiveness remains underexplored in the literature. This study investigates the moderating effect of agility on the relationship between techno-adaptability and lecturer performance in distance education. In this paper, the authors have used a quantitative explanatory design in which the data were gathered from 109 permanent lecturers through online questionnaires from the Mahardhika School of Economics, Surabaya City, Indonesia. The saturated sampling technique was used for the research study. The data were then analyzed using Structural Equation Modeling (SEM). The findings indicate that techno-adaptability significantly influences lecturers' performance, while agility enhances this relationship. Agility itself also boosts performance directly because it enables the lecturer to adapt dynamically to teaching environments. These contributions are made within the Resource-Based View and the Dynamic Capabilities Theory by introducing agility as a critical moderator within the techno-adaptability-performance framework. The present research offers practical insights into designing professional training programs combining technological skills with the enhancement of agility for optimizing lecturer effectiveness and further enhancing remote learning outcomes.

Keywords: Agility, digital competence, distance education, lecturer performance, technology adaptability.

INTRODUCTION

In the rapidly changing world of higher education, integration of technology has become an integral component in maintaining both quality and competitiveness. The integration of technology, especially in teaching and learning, has moved from an optional advantage to an absolute necessity, especially in the context of distance education and open learning. Recent global disruptions, such as the COVID-19 pandemic, have made it imperative for institutions of higher learning to invest in innovative technologies and agile strategies that ensure continuity and effective delivery of education. This is as indicated by Mishra et al. (2020) and Nissim & Simon (2020). Such shifts have placed technology at the core of modernizing educational methodologies and improving learner outcomes.

The integration of technology into education goes beyond infrastructural deployment. It all basically depends on the ability of educators to adapt and then integrate these technologies into effective pedagogical practices. This is very important in distance education because the infusion of technology and teaching methods greatly influences students' participation and outcomes (Eze et al., 2018). The findings indicated that in a technology-rich environment, teachers' effectiveness is significantly affected by their technological adaptability-or the ability to seamlessly embrace and use educational technologies-with much ease (Mandasari, 2020; Thai et al., 2017). The assurance of quality in technology-based teaching does not stop at making tools accessible but demands continuous professional development and adaptability to keep up with rapidly changing technologies.

This is a critical challenge that seems to be in the missing link between the adoption of technologies and noticeable improvements in lecturer performance, especially in the distance learning contexts. The emergence of higher integrities of technologies in a range of studies evidences that beneath such a relationship, there is often an undercurrent- an important limited focus on the role of agility. Agility is an enabling ability to respond quickly and efficiently to the dynamic environment. It may be a critical factor that influences the success of technology adoption in educational settings (Howard, 2017; Masa'deh et al., 2017). In the absence of agility, the benefits of integrating technology could not be reaped, and this may negatively affect lecturer effectiveness and subsequently reduce student outcomes (Lyn Chan & Muthuveloo, 2021).

This present study responds to these lapses in the literature by examining the moderating effect of agility on the techno-adaptability and lecturer performance relationship in distance education settings. This framework of research has considered the multidimensionality of agility; therefore, how the various facets of agility-namely cognitive, operational, and strategic agility-interact with technological adaptation in determining teaching effectiveness is put into question. This novelty little coincides with the wide purposes of research into distance education, which aims at the optimization of educational practices in novel strategies and technologies.

The contribution of this study lies in several aspects: filling the critical research gap regarding the interplay of techno-adaptability and lecturer performance in the framework of agility. While previous studies have separately focused on organizational agility and integration of technology in education, this study will analyze the combined effect of these factors in distance education, which is presently very rare (Hamid et al., 2020; Menon & Suresh, 2021). The research contributes to educationalists and policymakers by providing possible ways to utilize agility as a facilitator that enhances the potential of technological investment in remote learning environments.

By suggesting an overarching framework that integrates technological adaptation-agility-lecturer effectiveness, this study further contributes to theoretical insight. It challenges the traditional linear model, which views technology as a simple driver of performance and postulates that the relationship is nonlinear and significantly moderated by the flexibility of instructors and institutions. The concept of resilient pedagogy, which has been highly discussed during the COVID-19 pandemic, insists on the urgent need to promptly adapt teaching approaches in response to a crisis. It means the use of online learning formats and maintaining continuity in education despite disruptions (Clum et al., 2022).

In fact, this study identifies agility as an important enabler in the successful integration of technology into distance education. The study presents recommendations for practice that would potentially enhance agility, techno-adaptability, and lecturer performance through its multidimensional investigation of their mutual relationship regarding innovative strategies, policies, and practices to help raise the standard of delivery in all forms of distance learning education.

LITERATURE REVIEW AND HYPHOTESIS DEVELOPMENT

Theoretical Framework

This study applies the Resource-Based View (RBV) and Dynamic Capabilities Theory. RBV argues that unique, valuable, and inimitable resources are the main factors that determine organizational performance (Barney, 1991). Meanwhile, Dynamic Capabilities Theory emphasizes the significance of resource adjustment and reconstruction in response to environmental changes (Teece et al., 1997). These theories explain, within the context of higher education, how techno-adaptability and agility add to improving the performance of lecturers, especially in distance learning environments (Lyn Chan & Muthuveloo, 2021).

Conceptual Framework

The following figure is the conceptual framework used in this research:

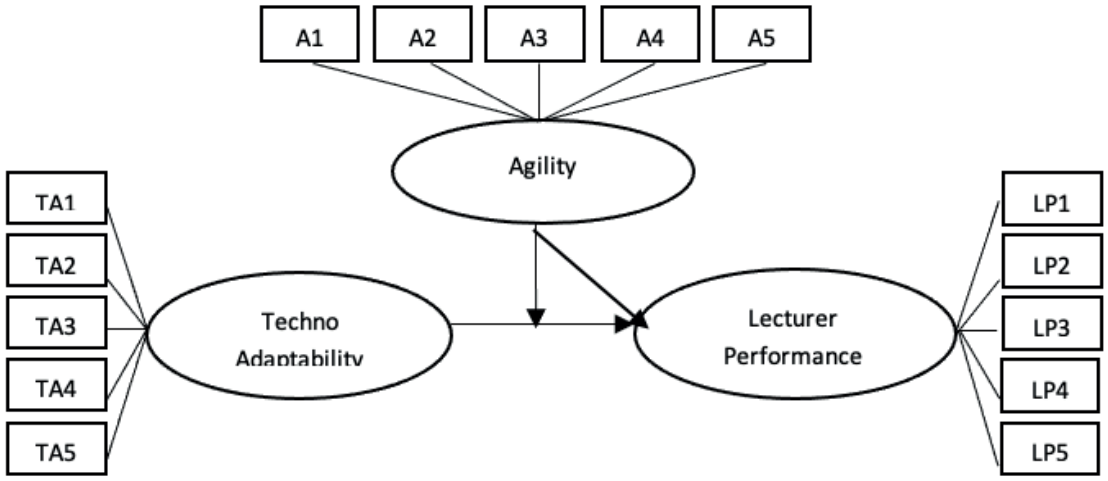

Figure 1. Conceptual Framework

Techno-Adaptability and Lecturer Performance

Adaptability to technologies then essentially refers to the ability of lecturers to integrate technologies into their teaching and, importantly, use them effectively. The ability here refers to one of the key elements in ensuring quality learning within modern educational settings. Mardiana (2020) explains that, in the context of distance education, the effectiveness of teaching is highly influenced by the technological adaptability of a lecturer. This study shows that technological adaptation enables lecturers to present materials more effectively, even with the limitations in face-to-face interactions. Thai et al. (2017) agree with this by establishing that lecturers' use of technology positively impacts students' learning outcomes.

On the other hand, Eze et al. (2018) noted that the use of e-learning facilities not only enhances the process of learning but also makes the learning environment more interactive for students. ELsaeed & Mahmoud (2022) also indicated that technological adaptation heightens students' engagement; therefore, it enhances the lecturers' teaching capabilities. This is evidenced by Jazuly et al. (2022), who established that techno-adaptability contributes to innovation in learning approaches. Friyanto et al. (2021) have shown that this is not limited to technology-based education but also extends its benefits across disciplines. Finally, Zhou et al. (2024) have pointed to the relevance of techno-adaptability in situations such as the COVID-19 pandemic, where lecturers needed to acquire new educational technologies in the shortest time possible. Through these findings, therefore, it should be deduced that techno-approach holds great relevance to lecturers' performances, particularly in technology-based education settings.

From the description above, the following hypothesis can be drawn: H1: Techno adaptability has a significant effect on lecturer performance.

Agility and Lecturer Performance

Agility in the higher education perspective refers to the potential of the lecturers to respond promptly and efficiently to whatever changes might be encountered without compromising the quality of education. According to Nissim & Simon (2020), agility has become highly significant during the sudden transition to distance learning due to the COVID-19 pandemic. Findings showed that highly agile lecturers are in a better position to overcome the challenge of distance learning than the less agile ones. The above statement also supports the arguments by Clum et al. (2022), where workforce agility, in case of lecturers, also was noticed to have an influence on individual performance.

Howard (2017) augmented this to state that an agile approach in teacher training allows prospective educators to demonstrate better teaching performances. Mardiana (2020) also support the same issue of agility, stipulating that this ability gives the lecturers continuous assimilation towards the change in technology and student needs. For instance, adopting agile methodologies fosters creative teaching methods, like blended learning, which supports adaptability and student independence, thereby improving teamwork (Fitsilis et al., 2023). Further, Pocsova et al. (2020) stated that the agile approach enhances the efficiency of teaching staff and general learning outcomes. For example, Sadijah et al. (2023) conclude that agility is one of the key attributes, which help lecturers adapt to rapid changes in the higher education system. On the whole, the findings of the study indicate the strong impact of agility on the performance of the lecturers.

From the description above, the following hypothesis can be drawn: H2: Agility significantly influences lecturer performance.

The Role of Agility as Moderator

While techno-adaptability may be an important factor in improving lecturer performance, the dynamics of changing technological developments indeed require supporting factors to strengthen this relationship. Agility, as a moderating factor, enables lecturers to adapt their technological capabilities to the evolving educational needs. Fitsilis et al. (2023) indicated that agile teaching methodology increases the effectiveness of implementing new technologies in teaching. Agility helps lecturers to be more responsive to change and, thus, enhances the quality of learning. Blair et al. (2016) highlighted that flipped classes implemented through the agile approach provide better learning outcomes. Yilmaz & Ozgenel (2023) mentioned that agility in leadership improves the effectiveness of technology implementation in educational settings. Pane et al. (2024) have indicated that technology integration is highly correlated with the practice of vocational high schools, and thus improved teacher performance requires agile practices in adapting to change.

Ahmed et al. (2023) also reported that the agility of the lecturers increased performance in the digital-based educational environment. Leung (2019) expressed that the impact of technology training on learning effectiveness could be enhanced with agility. Finally, Ahmed & Saberi (2024) underlined that through agility, the lecturer succeeded better in adopting new technologies within higher education. From this, it would then seem that agility is an antecedent condition which reinforces the positive relation between techno-ability and lecturer performance in that its higher degree will enhance the size of that relationship.

From the description above, the following hypothesis can be drawn: H3: Agility mediates the relationship between techno adaptability and lecturer performance.

METHOD

This research will be a quantitative study using an explanatory design to understand the relationship between the technology adaptability and agility and the performance of lecturers. The hypothesized relationships are to be tested through SEM, hence validating the theoretical framework.

The population in this study consisted of all permanent lecturers at the Mahardhika School of Economics, Surabaya, Indonesia, totaling 109 people. The sampling technique used is saturated sampling. It means that all population members are included in the research population. In Figure 1, the structural paths are obtained, namely direct paths (2 paths): Techno Adaptability to Lecturer Performance, Agility to Lecturer Performance and moderation paths (1 path): Agility * Techno Adaptability to Lecturer Performance. According to Hair et

al. (2022), the minimum sample size for SEM_PLS is 10 times the number of the most significant structural paths leading to the latent construct in the model. In this model, the latent construct with the most paths is Lecturer Performance, which has 2 paths leading to Lecturer Performance so that the minimum sample size is = 10 x 5 = 50 respondents so that with a total sample of 109 respondents, it is still proper. The data collection method used was through a questionnaire using online media from Google Forms. Participation by respondents was free; anonymity and confidentiality of personal data were stringently guaranteed.

Table 1. Respondents' Demographic Profile

	Frequency	Percentage
Academic Position		
• Not yet have an academic position	56	51.4%
• Asistant Profesor	52	47.7%
• Associate Profesor	1	0.9%
Age (years)		
• 25-35	10	9.2%
• 36-45	38	34.9%
• 46-55	42	38.5%
• > 56	19	17.4%
Education Background		
• Masters Degree	108	99.1%
• Doctoral Degree	1	0.9%

The demographic profile of respondents in this study on Table 1 reflects what they had in common with the lecturers perceived in this research on lecturer performance and the role of agility in techno-adaptability for distance education.

From the perspective of academic positions, most respondents (52 persons, or 47.7%) qualify as Assistant Professors, while 56 people (51.4%) do not yet hold an academic rank. Only one person (0.9%) was an Associate Professor. Such data indicate that most respondents are still in the first or, at most, intermediate stages of their academic careers.

The most dominant age group is the 46-55 years, comprising 42 people (38.5%); the second-most populous group is the 36-45 years, with 38 people (34.9%). Meanwhile, 10 people (9.2%) are aged between 25 and 35 years, and 19 (17.4%) are above 56 years. This implies that the majority of those evaluated are in the productive age span by academic standards, 36 to 55 years.

In terms of educational qualification, almost all respondents, namely 108 people (99.1%), have a Master's degree, while just one person (0.9%) has undergone doctoral studies. This means that the majority of lecturers included in the study are in the advancement stage. Overall, the characteristics of the respondents show that most of the lecturers involved are academics still in career-building stages, with this being so in terms of position and educational level, and also falling into the economically productive age group.

The research process began with the formulation of the problem and research objectives identified from the research gaps and backgrounds. Identification of variables was done and categorized as exogenous variables of technology adaptability, endogenous variables of lecturer performance, and moderator variables of agility. A five-point Likert scale questionnaire was developed to measure the constructs, with response options ranging from 1 for strongly disagree to 5 for strongly agree. Items of the questionnaire were developed from measures validated in prior research, adapted to test the use of digital devices for distance education.

A pilot test was conducted beforehand with a view to ensuring the reliability and validity of the instrument. Based on this, further improvements in the questionnaires were made. Later, the final questionnaires' links were distributed amongst all target respondents and the collection was conducted. Data collected was analyzed using the SmartPLS software, appropriately suited for conducting the Structural Equation Modeling technique in this study.

Data analysis took place mainly in two steps. The first worked on the measurement model, better known as the outer model, where reliability and construct validity were measured. Reliability was assessed by Cronbach's alpha and composite reliability, while convergent validity was checked by AVE, and discriminant validity was checked by Heterotrait-Monotrait Ratio (HTMT). The second step consisted of the structural model, better known as the internal model, which indicated the explained variance by the estimated model through R-squared value and checked proposed hypotheses through paths coefficients and t-statistics.

This research has followed each and every step very meticulously. Data collection and analysis follow a logical progression from problem identification and instrument preparation to the actual collection, preprocessing, and statistical analysis. The results of the analysis should be interpreted, and the results discussed in light of previous studies to confirm and derive meaningful relationships. The results of this study carry meaningful implications for understanding the interplay of technology adaptation, agility, and lecturer performance, thus offering practical implications for enhancing digital competence in distance education environments.

This study followed prominent frameworks and techniques to ensure methodological rigor. For instance, the guidelines for SEM analysis, as outlined by Hair et al. (2019) and Henseler et al. (2015), have been followed to validate the constructs and assess the model reliability. Similarly, the theoretical basis of measurement for perceived usefulness and adaptability was borrowed from Davis (1989), generally recognized for pioneering research in user acceptance of technology.

The strong quantitative approach, combined with already validated tools and a methodical system of analysis, ascertains the reliability and validity in its results. Further, this underlines the aspect of adaptability of technology and digital tools to contribute towards knowledge acquisition in distance education.

FINDINGS

Outer Model Test Results

Three main criteria were used to examine the evaluation model: discriminant validity, convergent validity, and consistency reliability. To validate the measurement's internal consistency, each construct's composite reliability score needs to be more than 0.70. An evaluation of a construct's convergent validity is conducted using the average variance extracted (AVE) and outer loading values. Every item should have an outer loading greater than 0.70 and an AVE greater than 0.50 (Eichhorn, 2022). Even though some external loading values are less than 0.70, their AVE values are more than 0.50, so they are considered acceptable. As a result, the study's variables all demonstrated convergent validity. Each construct's AVE needs to be higher than the highest squared correlation it has with other constructs (Martin, 2022). When compared to other constructions, each item should have a larger cross-loading value for its own construct. When the results meet the requirements for discriminant validity, as demonstrated in Table 1, each item's cross-loading value for its construct is greater than the values for other constructs in the same row and column.

Validity and Reliability Test Results

The legitimacy of research findings is determined by the alignment between the collected data and the actual observations on the object of study (Thrane, 2022). Similarly, the dependability of an instrument is established by its consistent provision of the same findings upon measurement. To ensure the validity of the questionnaire, it underwent assessment for discriminant and convergent validity (Taherdoost, 2016). The instrument's dependability is evaluated based on the consistency of item measurement under the same conditions and with the same sample. Maximizing the instrument's dependability involves clear factor conceptualization, precise measurement, and operationalization of each factor group with multiple indicators (Neumayer & Plumper, 2017). To guarantee understanding, the questionnaire was also pre-tested and modified. Using Cronbach's methodologies, the sample's internal consistency was used to evaluate the instrument's dependability (Sarstedt et al., 2021). Item correlation scores were computed and questions were divided into appropriate categories using Cronbach's Alpha. In order to calculate the outer loading value for the convergent validity test of the research model, an indicator is deemed real if its correlation value is more than 0.50 (Roni et al., 2020). Table 2 displays the outcomes of the external loading.

Table 2. Validity Testing based on Loading Factor

Indicators	AGI	LP	TA	TA*AGI
A1	0.750*	0.183	-0.004	0.019
A2	0.858*	0.248	0.090	0.010
A3	0.813*	0.164	0.111	0.017
A4	0.717*	0.206	-0.035	0.009
A5	0.871*	0.241	0.103	0.036
LP1	0.247	0.928*	0.435	0.292
LP2	0.271	0.941*	0.376	0.283
LP3	0.283	0.938*	0.419	0.278
LP4	0.225	0.916*	0.381	0.287
LP5	0.189	0.892*	0.402	0.305
TA * AGI	0.023	0.313	-0.063	1.000*
TA1	0.192	0.313	0.779*	-0.062
TA2	-0.032	0.248	0.740*	-0.068
TA3	0.042	0.453	0.862*	-0.058
TA4	0.049	0.264	0.760*	-0.027
TA5	0.026	0.418	0.899*	-0.043

*Note. *Loading Factor are greater than another construct*

The indication is validated when the target variable's load factor exceeds that of the other variables. The table 2 above demonstrates that the AGI indicators (A1 through A5) have a larger load factor than the other variables. To clarify, the load factor of A1 of AGI is 0.750 higher than the stress factors of LP (0.183), TA (-0.004), and TA*AGI (0.019). The same goes for other indications. As a result, future contracts anticipate one block indicator more accurately than the others. Also, the load factor value of each indicator on the variable is above 0.7.

In the interim, the AVE value establishes construct validity and needs to be greater than 0.50. Table 3 displays the results of the outer loading of each indicator and the average variance of each variable that comprise the structural research model.

Table 3. Results of Convergent Validity and Reliability Testing

Variable	Cronbach Alpha	Composite Reliability	AVE
TA*AGI	1.000	1.000	1.000
LP	0.957	0.967	0.853
AGI	0.862	0.901	0.647
TA	0.870	0.905	0.657

Note. CA > 0.7, CR > 0.7, AVE > 0.5

After that, the AVE value is used to conduct a validity assessment. Reliability testing is the last step in evaluating the outer model. The consistency of measurement of the variables used in the structural model is examined in this reliability assessment. There are two ways to carry out PLS reliability testing: calculating each variable's Cronbach's alpha and composite reliability value. If a variable's Cronbach's alpha value is greater than 0.70 and its composite reliability is high, it is deemed composite reliable. Table 3 shows the Cronbach Alpha and Composite Reliability scores for every research variable used in the model. The ideal AVE value is higher than 0.50 (Muijs, 2022). All AVE values surpass 0.5, indicating that they fulfil the AVE-based validity standard. Subsequently, reliability testing was carried out using the Composite Reliability (CR) value (Leavy, 2022). The recommended CR value is over 0.7. Specifically, all CR values are above 0.7, suggesting that the outcomes met the reliability standard based on CR. The reliability assessment is

then continued using the Cronbach's alpha (CA) score. The recommended CA value is greater than 0.70 (Sarstedt et al., 2021). All CA values were higher than 0.7. Cronbach's Alpha values for all constructs exceed the acceptable reliability standard of 0.70 (Sarstedt et al., 2021; Leavy, 2022; Neumayer & Plumper, 2017). This indicates the instrument's internal consistency. The instrument is suitable for further analysis. The discriminant validity testing was performed using the Heterotrait-Monotrait Ratio (HTMT), as shown in Table 4.

Table 4. Heterotrait-Monotrait Ratio (HTMT)

Variable	AGI	LP	TA	TA*AGI
AGI				
LP	0.285			
TA	0.154	0.458		
TA*AGI	0.024	0.320	0.068	

Note. HTMT < 0.9

Henseler et al. (2015) recommend a threshold value of 0.90 in cases when the path model incorporates conceptually related components. From table 4 it is known that all values are smaller than 0.9 so they are declared to meet the criteria.

Inner Model Test Results

The structural model undergoes testing through path coefficients and R^2 values. A study conducted earlier has established the acceptable R^2 values as 0.75 (substantial), 0.50 (moderate), and 0.25 (weak) (Martin, 2022). R^2 is presented in Table 5. The bootstrapping results for the complete model and the assessment of path coefficients are presented in Table 6.

Coefficient Determination Test Results

The R-squared statistic, ranging from 0 to 1, quantifies the combined impact of independent variables on the value of the dependent variable. It is a numerical value that indicates the extent to which an independent latent variable affects a dependent latent variable (Martin, 2022).

Table 5. R-Square

Variable	R-Square
LP	0.358

It is known that the R-Square value of Lecturer Performance (LP) is 0.358. which means that Agility (AGI) and Techno Adaptability (TA) are able to influence Lecturer Performance (LP) by 35.8%.

Path Coefficient Test Results

When identifying the direction of correlations between variables that is, whether a hypothesis is positive or negative path coefficients are essential. Positive values for these coefficients lie between 0 and 1, while negative values fall between -1 and 0. These coefficients range from -1 to 1. The path coefficients between each external (independent) variable and the endogenous (dependent) variable in the study are shown in Table 5. Table 6 presents the method estimation findings of the research model using SmartPLS Version 3.2.9, which provide an explanation of the inner model evaluation in partial least squares analysis.

Table 6. Path Coefficient Test & Significance of Effect

Description	Original sample	Sample Mean	Standard Deviation	T Statistics	P Values
TA → LP	0.443	0.436	0.104	4.255	0.000
AGI → LP	0.227	0.240	0.117	1.946	0.026
TA*AGI → LP	0.203	0.206	0.082	2.467	0.007

Note. P_values < 0.05

Based on the results in Table 6. the following results are obtained:

- Techno Adaptability (TA) has a positive effect on Lecturer Performance (LP). with a coefficient value (Original Sample column) = 0.443. and significantly. with a P-Values value = 0.000 < 0.05.
- Agility (AGI) has a positive effect on Lecturer Performance (LP). with a coefficient value (Original Sample column) = 0.227. and significantly. with a P-Values value = 0.026 < 0.05.
- Agility (AGI) can moderate the relationship between Techno Adaptability (TA) on Lecturer Performance (LP). with a coefficient value (Original Sample column) = 0.203. and significantly. with a P-Values value = 0.007 < 0.05

Lecturer skills that are proactive in creating opportunities or overcoming obstacles with unique ways of thinking (Agility) have a positive influence on the actions taken by lecturers (Lecturer Performance). Like the teaching and learning process that can enliven the class atmosphere. Skilled in updating modules and conducting research according to current conditions. Techno Adaptability (TA) has a positive effect on Lecturer Performance (LP). With the ability to adapt to technology. there are no obstacles for lecturers in delivering material. they can be quick and familiar with technological changes. especially those related to reporting. research and the teaching and learning process. Agility (AGI) significantly moderates the influence of Techno Adaptability (TA) on Lecturer Performance (LP). The more skilled and agile a lecturer is. the greater the influence of adaptation to technology on improving lecturer performance.

DISCUSSIONS

The findings of this study reveal some important lessons that could be learnt relating to techno-adaptability, agility, and lecturer performance in a distance education context. These findings not only contribute to addressing the lacuna in the existing literature but also have important implications for theory and practice, particularly in higher education institutions.

Techno-Adaptability and Lecturer Performance

The positive and significant relationship between techno-adoptability and lecturer performance is, therefore, in agreement with existing studies that have been highlighting the pivotal role of technology in modern pedagogical practices. With a coefficient value of 0.443 and a p-value of 0.000, it shows that the ability of lecturers to adapt to technological changes significantly influences their performance. The results confirm the studies by Mardiana (2020) that were saying lecturers' technology use in teaching would make their delivery and students' engagement effective. It also corroborates the study conducted by Thai et al. (2017), which identified the integration of technology in improving learning outcomes and developing an interactive learning environment.

In distance education, where face-to-face interactions are minimal, techno-adaptability among lecturers becomes a necessity. Eze et al. (2018) noted that e-learning tools are very important in making education more interactive and accessible. Similarly, Jazuly et al. (2022) found that techno-adaptability facilitates innovation in teaching strategies, which, in turn, improves student outcomes. The findings of this study, therefore, confirm the crucial role of techno-adaptability in the optimization of lecturer performance in the distance education setting.

Agility and Lecturer Performance

Ability characterized by speed and efficiency in responding to dynamic changes-agility-also influences the performance of the lecturers with a coefficient value of 0.227 and p-value of 0.026. These results confirm findings by Nissim & Simon (2020), who, in the context of the COVID-19 pandemic, pointed out the role of agility in the sudden shift toward distance learning: highly agile lecturers are in a better position to face the challenges that come with remote teaching and readjust their methodological approaches to maintain education quality.

Clum et al. (2022) noted that flexibility within the workforce has a great influence on individual performance, especially in dynamic environments. Agility allows instructors to implement continuous changes in technology and the needs of students, as noted by Mardiana (2020). In addition, Fitsilis et al. (2023) commented that agility leads to better interaction among lecturers and their students, which is very important in creating a learning environment that is dynamic. The present research findings are supported through these studies on the same aspects of agility as a characteristic that boosts lecturers' performance.

Moderating Role of Agility

This research additionally demonstrates that agility plays a significant moderating role in the connection between techno-adaptability and lecturer performance, showing a coefficient of 0.203 and a p-value of 0.007. The suggestion is that agility enhances the beneficial impact of techno-adaptability on lecturer performance and bolsters the case for both technological and behavioral skills as crucial for success in distance education.

Previous studies support this moderating role of agility. Fitsilis et al. (2023) proved that the agile methodology in teaching allows for better implementation of new technologies and enhances learning outcomes. In agreement with these findings, Blair et al. (2016) also reported better outcomes in technology-rich environments as a result of agile approaches, such as flipped classrooms. Moreover, Pane et al. (2024) proved that agility amplifies the antecedence of technological adaptation to teaching effectiveness. These findings are in tune with the result of this study, which identifies agility as an important enabler that improves the effectiveness of techno-adaptability.

Theoretical Insights

This work integrates the Resource-Based View (RBV) and Dynamic Capabilities Theory (DCT) into a unified extension of understanding of how technological adaptation and agility impact lecturer performance. The common use of RBV and DCT in business perspectives has worked well to explain how firms use unique resources and capabilities to maintain a competitive edge (Barney, 1991; Teece et al., 1997). Such an approach, however, is extending to the educational context, whereby faculty performance is driven by technology adoption and the corresponding acceptance of change following the quickly evolving teaching environments.

Resource-Based View (RBV) in Education

Thus far, while RBV has been used mostly for the explanation of the competitive advantages of companies, its application for the educational context is, therefore, not just feasible but also paramount. Distance learning technology is the very essence of the contemporary educational setting. RBV emphasizes resources that are valuable, peculiar, hard to imitate, and that withstand substitutability tests in advancing organizations towards long-term goals. Technology would be defined under RBV as a unique and valuable resource in higher education, especially the capacity of lecturers in technology. This resource is not merely teaching competencies or access to digital tools but rather the ability to integrate these technologies into the teaching process and to engage students in ways that optimize learning outcomes.

Above all, those faculty members who have acquired high technological skills such as using learning management systems, associated learning tools, and virtual collaboration portals will be more likely to offer quality education experience. Lecturers refraining from the successful facilitation of teaching regarding these resources effectively end up failing the institution in a competitive academic scenario. Thus, RBV explains

how the technological capabilities, when nurtured and utilized strategically, lead to faculty performance and thus institution performance in the digital age.

Dynamic Capabilities Theory (DCT) and Lecturer Adaptability

It focuses on the possession of valuable resources in the aspects under RBV; however, resources are considered to be an asset, and their processes are by which such resources adapt, integrate, and destroy them with regard to evidence within the dynamic environment of today-organizational resources with activities embedded in them, as Teece et al. (1997) put it. In general, the DCT would provide a good answer to the situation where one can apply it in terms of education since it speaks much about the ability of a lecturer to change as technology continues to evolve as well as pedagogical requirements. As such, a model of dynamic capabilities would suggest that in order for lecturers to maintain their high-performance levels, they will have to sense new opportunities, for example, new technologies, seize these opportunities, for example adopting new tools and methods, and reconfigure their teaching practice to fit them.

In this case, it is the most important moderation aspect. Agility refers to the ability of teachers to modify quickly the teaching methods they are using to adapt to the introduction of a new technological tool to an existing learning environment. It entails a constant modification and movement of their resources (technological skills, teaching strategies, and course materials) when necessary without any adverse effects again from the students and, thus, the overall educational setting. This matches with claims that technology integration into teaching is not just a matter of having the apparatus, but of one's capability in adjusting their practices dynamically in changing educational environments.

Non-linear Relationship and Agility Intermediation

It tackles confusion about models: RBV-DCT integration challenged the standard liner assumption of technology adoption model whereby access to a technology would lead directly and positively to performance. Meanwhile, it calls for a proposition about a non-linear relationship: within this complex interplay of technological competence and agility, the major proposition lies in that competence (technology) forms the basic resource while agility, the ability to respond quickly to technology innovations, becomes the key variable determining how well this resource will be exploited in a dynamic educational environment.

For instance, lectures endowed with advanced technologic prowess might face hurdles in their initial integration of new tools into the respective teaching practices, while the lesser technically skilled lecturer, who possesses greater agility within their teaching methods, would have an advantage by swiftly adapting to and embracing new technologies. This interaction stresses the necessity of technological resource access (RBV) and the agile adaptation and reconfiguration of teaching practices to maintain pace with rapid technological change (DCT).

Practical Implications

The findings have grave implications for the policymakers and educational institutions that seek effectiveness in this mode of study. First, the high influence which techno-adaptability level has on lecturer performance underlines a continuing need for professional development programs that are channeled into technological skills. This means that institutions should invest in training programs that introduce lecturers to the latest tools and techniques for effective online teaching.

This again brings into focus the development of a culture for change within the educational institution, as the critical role of agility. The appropriate interventions would be agile methodologies workshops, mentoring programs, and inclusion of agility metrics in performance evaluations. Encouragement of agile practices by lecturers will help them cope better with the technological and pedagogical changes, thus enhancing their performance.

Thirdly, the moderating effect of agility suggests that efforts to enhance techno-adaptability should be complemented with activities that nurture agility. For instance, there could be developed hybrid training programs where lecturers are simultaneously trained in technological and adaptive skills. More importantly,

setting up a supportive environment where lecturers can try new approaches with encouragement to innovative experiments will grant them confidence in handling the complex aspects that distance education courses throw up.

CONCLUSION

Indeed, this research proves the role of techno-adaptability and agility very critical in maneuvering enhancement lecturer performance in distance education. Findings indicated the need of agility being a party moderating in ways that full advantage of adaptation to technology by lecturers can only be achieved when high agility levels are found in them. This study enriches existing literature as it clarifies the mercy of technology adoption and adaptability in determining lecturer performance in ever-changing educational environments.

However, individual lecturer capabilities like techno-adaptability or agility are most important, but such institutional support mechanisms are equally vital for developing these qualities. It indicated that through factors like the culture of an organization, the kind of leadership styles an institution adopts, and student feedback mechanisms, techno-adaptability could actually be influenced by factors that finally result in performance from individual lecturers. These show the need for a higher-level understanding of the organization setting in light of how those organizations cause change, so that both individual lecturers and institutions can work to build an environment facilitating learning and teaching innovations all time. Longitudinal studies could also be helpful in elucidating how such correlations develop over time; for instance, as ICT becomes ever more sophisticated and educational paradigms shift.

While this research indicates that individual attributes remain essential, the importance of institutional support should not be overlooked. Individual capabilities would be the most central importance in this context establishing techno-adaptability and agility, but dynamic capabilities like agility and technological adaptation come into existence through both individual efforts as well as organizational frameworks for such capabilities that provide the most necessary tools and the most effective type of environment for the thriving of lecturers.

Recommendations

Several strategic actions that university administrators and policymakers can undertake to enhance agility among educators and enable optimal technological adaptation in distance education include implementing comprehensive training programs aimed at teaching about agile teaching techniques. Approaches such as flipped classroom models and design thinking for teaching get into practices that highly lean towards making lecturers more responsive to the continually evolving technological landscape. Institutions bring about a culture of adaptability and innovation by equipping their faculty with the skills to adapt quickly to new technological trends. These professional development programs prepare the way toward ensuring that lecturers are actually able to use sound technology in learner-centered, dynamic methodologies for education.

The environment conducive to technology has also been essential to enabling a lecturer to further embrace digital teaching. So much that universities have to provide the necessary technological resources that include the latest of tools and platforms for distance education, as well as training platforms that foster the discovery and experimenting with new ways of using digital teaching. Equip the institutions with the necessary infrastructures and provide support so that the institutions enable their lecturers to explore and adopt practices that would possibly engage more students and support better learning outcomes. This approach guarantees that lecturers have access to what they need to innovate and be on the cutting edge of educational technology.

In addtion, institutional policies should be fully supporting experimentation of the novelty into digital tools and innovative pedagogy. Encouraging experimentation can lead faculty to develop and even improve upon pedagogies such that it fits with the new emerging trends in technology. And further, recognition and rewards of innovative teaching practices can also motivate risk-taking and continuous change of faculty. By creating an experimentation-encouraged environment, universities can promote ownership and creative freedom to become responsive in addressing students' needs and the changing nature of educational sector.

Like wise, this is a time that universities must equally highly value their digital pedagogical formation. Faculty members should not just develop their capacities through faculty development programs to enhance their facility with new technologies but also connect best pedagogical practices to learning environments that included digital learning environments. The latter would allow lecturers to develop quite well with the technology and also with using it effectively to shape the students' learning experiences. Programs that would effectively prepare the lecturer in the digital teaching complexities would blend technological training with pedagogical strategy adapted for online and blended learning environments

Feedback and evaluation systems should therefore be put in place to enable institutions to facilitate staff in the continuous evaluation and improvement of their digital pedagogy. Incorporating students and peers alike in such systems will serve as an effective barometer for the faculty in terms of acquiring valuable information about their teaching effectiveness and recommendations for improvement. Periodic evaluation can help identify those faculty members who need support. Then, the institutions can offer professional development and resources based on those needs. Through this cyclic feedback and adjustment, lecturers will be able to progressively acquire and nurture their skills to cater to the continuous needs of distance education.

Universities enhance not only the agility and techno-adaptability of their faculty but also engender an environment in which innovation and excellence in distance education are constantly nurtured. Individual development combined with organizational support and a commitment to continuous improvement will guarantee that lecturers are fully equipped to face the challenge of rapidly changing technologies.

Acknowledgements: Thanks to the Head of Mahardhika College of Economics for the opportunity given to conduct this research and also to all the lecturers who contributed to this research.

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