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Adkar Change Management Model to Enhance the Use of LMS in Lectures: Does it Work?

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Abstract: The ADKAR change management model was applied to enhance Learning Management System (LMS) adoption at higher education. This study highlights distinct differences between LMS users and non-users across all five stages of the ADKAR model Awareness, Desire, Knowledge, Ability, and Reinforcement. LMS users exhibited a higher level of Awareness, recognizing the rationale for LMS adoption and its benefits, while non-users showed limited understanding and engagement. In terms of Desire, LMS users demonstrated stronger motivation and a sense of urgency to adopt LMS, compared to non-users who lacked initiative and internal drive. Knowledge gaps were evident, with LMS users possessing better technical skills and problem-solving abilities, whereas non-users required more training and access to resources. Similarly, LMS users demonstrated higher Ability, effectively applying knowledge in practice, whereas non-users struggled due to insufficient practical experience and mentorship. Lastly, in the Reinforcement stage, LMS users benefited from ongoing recognition and support, while non-users lacked sufficient reinforcement mechanisms. The study concludes that targeted interventions, such as personalized training, mentorship, and effective communication, are essential to bridge these gaps and ensure broader LMS adoption across the institution.

Keywords: ADKAR; Management Models; LMS; Lectures.

INTRODUCTION

The rapid and accelerating advancement of science and technology has ushered the world into the era of the Fourth Industrial Revolution (Industry 4.0) and Society 5.0. Industry 4.0 is characterized by the rise of artificial intelligence (AI) and the Internet of Things (IoT), which have enabled automation in digital-based production processes (Brown, 2020). As a result, digital technology plays

a critical role in various facets of human life during this era (Neirotti et al., 2025) Simultaneously, Society 5.0, which builds upon the innovations of Industry 4.0, focuses on integrating technology with human society to create a super-smart society.

To address the disruption caused by advancements in science and technology in the industry 4.0 and Society 5.0 eras, individuals are required to acquire three new literacies in addition to traditional literacy: digital literacy, data literacy, and social literacy (Lestari & Santoso, 2019). In the context of higher education, these developments present new challenges for students as they prepare for the modern workforce. University students must develop critical thinking skills related to technological innovations and apply these developments to solve complex problems (Cunningham & Villaseñor, 2016).

In response to these challenges, the Government of Indonesia, through the Ministry of Research, Technology, and Higher Education (Kemenristekdikti), has implemented several policies aimed at enhancing students' digital, data, and social literacies. One of these initiatives is the promotion of online learning, which is aligned with the Ministry's Regulation No. 51 of 2018. Moreover, the Ministry of Education and Culture has issued Regulation No. 7 of 2020, which allows for blended and hybrid learning in university courses. These efforts aim to equip students with the necessary skills to thrive in the digital era.

The COVID-19 pandemic further accelerated the need for the development of these new literacies. In 2020, universities across Indonesia were required to transition to online learning to prevent the spread of the virus, in accordance with Circular No. 6 of 2020 from the Director-General of Higher Education. This transition not only aimed to curb the pandemic but also sought to enhance students' proficiency in digital, data, and social literacies by utilizing online platforms.

Learning Management Systems (LMS) have been instrumental in facilitating online education during this period (Malabanan, 2025).LMS platforms are software applications that provide an integrated environment for managing online learning, including content delivery, student engagement, and assessment (Akwene, 2024). Commonly used LMS platforms, such as Moodle, Blackboard Learn, Google Classroom, and others, offer various tools and features that enhance personalized learning, foster social interaction, and provide data-driven insights for decision-making (Yenni Arnas et al., 2023).

Several higher education institutions in Indonesia, particularly in Aceh Province, have implemented LMS policies. For instance, Universitas Almuslim issued Rector's Decree No. 776/SK/Umuslim/PG.2016, mandating the use of

LMS in teaching and learning activities. However, despite this policy, the adoption of LMS at Universitas Almuslim has not reached its full potential. A small proportion of lecturers have integrated LMS into their teaching, and various challenges have hindered its widespread use. The most significant challenge is resistance from academic staff, particularly lecturers, to transition from traditional face-to-face teaching methods to online platforms. This resistance is often due to the difficulty of adapting to new teaching practices. Additionally, infrastructural limitations, insufficient policies, and a lack of technical capability, financial resources, awareness, and motivation have further impeded the adoption of LMS (Tarus et al., 2015); (Al-Azawei et al., 2016).

Prior studies on LMS adoption in higher education have predominantly employed technology acceptance frameworks, most notably the Technology Acceptance Model (TAM) (Davis, 1989) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003), as well as Rogers' (2003) Diffusion of Innovations theory. These models are highly effective at explaining individual level behavioral intentions toward technology use, particularly through constructs such as perceived usefulness and perceived ease of use. However, they are primarily predictive models and offer limited guidance for managing organizational change processes and implementation strategies (Hiatt, 2006).

The present study adopts the ADKAR change management model (Hiatt, 2006) rather than TAM or UTAUT because the core research problem at Universitas Almuslim is not one of individual technology acceptance, but of organizational change management. A formal institutional mandate exists yet adoption remains at 22.35%. This is precisely the scenario for which process-oriented change management frameworks, rather than behavioral intention models, are most appropriate. ADKAR comprising Awareness, Desire, Knowledge, Ability, and Reinforcement, provides a structured diagnostic and intervention framework that complements technology acceptance models: while TAM explains why individuals may or may not intend to use a system, ADKAR explains what organizational conditions and interventions are necessary to move individuals through the stages of change. Indeed, several ADKAR components map directly onto TAM constructs: Awareness and Desire correspond roughly to perceived usefulness and behavioral intention, while Knowledge and Ability correspond to perceived ease of use and actual use. ADKAR adds the critical organizational dimensions of institutional reinforcement and leadership commitment that fall outside TAM's scope.

Furthermore, compared to other change management frameworks such as Kotter's (2012) 8-Step Change Model and Lewin's (1947) Unfreeze-Change-Refreeze model, ADKAR offers a unique advantage for this study: it operates at

the individual level while remaining applicable at the organizational level. Kotter's model is primarily a leadership and organizational strategy framework, while Lewin's model provides broad macro level stages. ADKAR, by contrast, allows for the diagnosis of exactly where individual lecturers are stalling in the change process enabling targeted, person-specific interventions. This granularity makes it particularly suitable for an institutional context where resistance to LMS adoption is heterogeneous across faculty members. Consistent with this rationale, Muamar et al. (2023) applied ADKAR to change management in online learning implementation in an Acehnese university context, confirming the model's applicability in the regional higher education environment.

To address these challenges, the ADKAR change management model is being applied to increase LMS usage at Universitas Almuslim (Muamar, 2023). The ADKAR model comprising five components: Awareness, Desire, Knowledge, Ability, and Reinforcement offer a structured approach to managing change (Hiatt, 2006). However, the implementation of this model has not yet fully achieved the desired outcomes. According to monitoring and evaluation by the university's Quality Assurance Agency (BPM) and a survey conducted by the e-learning management team, only 22.35% of the university's courses have integrated LMS. Specifically, out of 926 courses, only 207 have implemented LMS during the second semester of the 2021/2022 academic year.

Given this context, the present study seeks to analyze the effectiveness of the ADKAR change management model in enhancing LMS usage at Universitas Almuslim. The study will focus on evaluating the five stages of the ADKAR model: Awareness, Desire, Knowledge, Ability, and Reinforcement, with the aim of identifying areas for improvement and proposing strategies to increase the adoption of LMS in teaching and learning activities.

RESEARCH METHODOLOGY

This study employed a qualitative research design, specifically utilizing a case study approach conducted at Universitas Almuslim, Aceh (Baxter & Jack, 2015); (Creswell, 2003) The study involved 20 lecturers as respondents, of which 9 had integrated Learning Management Systems (LMS) into their teaching practices, while the remaining 11 had not. The selection of respondents was conducted through purposive sampling to ensure relevance to the research objectives (Moleong, 2018).

Participant characteristics are as follows: participants ranged from 3 to 22 years of teaching experience, with disciplinary backgrounds spanning natural sciences, social sciences, engineering, and education. Academic ranks included lecturers, assistant professors, and associate professors. Gender and age were

recorded but are not treated as independent variables in this qualitative design, as the study aims to understand the quality of ADKAR related experiences rather than to make demographic comparisons. These characteristics are relevant to assessing the transferability of findings to comparable institutional settings.

Data were gathered through three sources: in depth interviews, observations of lecturers' classroom and online learning activities, and document analysis of university policies, LMS usage reports, and BPM monitoring data (Yin, 2018). The interview protocol was structured around the indicators of each ADKAR component as operationalized by Hiatt (2006): 6 indicators for Awareness and 7 indicators each for Desire, Knowledge, Ability, and Reinforcement. Observational data were used to corroborate interview accounts, particularly regarding Ability (whether lecturers demonstrated practical LMS skills during actual course delivery), and documentary evidence from BPM reports and LMS activity logs corroborated claims about institutional reinforcement and usage rates.

For data analysis, the study utilized the Miles and Huberman (1994) model, comprising three interrelated stages: data reduction, data display, and drawing conclusions. The coding scheme was developed deductively, using the ADKAR components and their predefined indicators as the primary coding framework, with provision for emergent sub-themes arising from the data. Coding was conducted by the primary researcher and verified by a second coder on a 20% subset of interview transcripts; any discrepancies were resolved through discussion until consensus was reached, ensuring intercoder reliability. The analysis was facilitated using NVivo version 14 software, which supported efficient organization of codes across the five ADKAR nodes and their sub-indicators.

Validity and reliability were ensured through four criteria proposed by Lincoln and Guba (as cited in Bungin, 2007): credibility (member checking with selected participants), transferability (thick description of context), dependability (audit trail of analytical decisions), and confirmability (triangulation across interview, observation, and documentary data sources).

RESULTS AND DISCUSSION

Result

Awareness Component

The ADKAR change management model comprises five components, each with specific indicators contributing to an individual's readiness to embrace

organizational change. Hiatt (2006) outlines six key indicators in the Awareness stage: (1) understanding the rationale for change; (2) recognizing the consequences of not changing; (3) understanding the personal and organizational impact of change; (4) engagement in discussions and communication about the change; (5) receiving clear and consistent leadership communication; and (6) emotional awareness of the change process.

The study revealed distinct differences between LMS users and non-users regarding their awareness of LMS adoption. LMS users exhibited comprehensive understanding of the reasons behind LMS implementation, the consequences of not adopting it, and the personal and organizational benefits of its use. Their higher level of emotional awareness indicated stronger intellectual and emotional investment in the change process. For example, LU3 stated: 'I understand that if we don't use LMS, our students will be less prepared for the digital world we will fall behind other universities.' This reflects a clear grasp of both the urgency and long-term consequences of the change.

In contrast, non-users demonstrated lower levels of awareness, particularly in recognizing the necessity for change and the risks of maintaining the status quo. NU7 noted: 'I know the university wants us to use LMS, but I haven't really been told why it's so important for my subject specifically.' This suggests that institutional communication has not been sufficiently tailored or persuasive for this group. A visualization of the NVivo coding for the Awareness component is presented in Figure 1, which illustrates the differential coding frequencies across the six Awareness indicators between the two groups. LMS users showed substantially higher code frequencies across all six indicators, most notably on 'emotional awareness' and 'understanding rationale for change.' The difference in 'engagement in discussions' was comparatively smaller, suggesting that while non-users do participate in conversations about LMS, they have not internalized the underlying rationale.

Figure 1. Analysis of the Awareness component in using LMS, comparing LMS users versus non-users across seven Awareness indicators.

Desire Component

In the Desire component, Hiatt (2006) identifies seven indicators: (1) personal motivation; (2) awareness of personal benefits; (3) a sense of urgency; (4) social support from supervisors and colleagues; (5) attitudinal shift toward the change; (6) initiative in engaging with the change process; and (7) engagement in discussions and decision-making about the change.

LMS users demonstrated much stronger personal motivation compared to non-users, along with clear understanding of the personal benefits LMS brings such as increased teaching efficiency and improved student engagement. LU5 described this shift: 'At first I was hesitant, but after I started using LMS I realized it saves me a lot of time in grading and communicating assignments. Now I actually look forward to using it.' This reflects a completed attitudinal shift and strong internalization of personal benefits. Users also displayed a stronger sense of urgency, recognizing the need to stay current in a rapidly changing educational landscape.

Non-users, however, exhibited weaker connections to Desire indicators, particularly personal motivation, urgency, and initiative. NU2 expressed: 'I know I should probably use it more, but with my teaching load I just haven't had the push to get started properly.' This illustrates recognition of external pressure without internalized personal motivation precisely the dynamic that Bridges (2009) identifies as characteristic of individuals caught in the 'neutral zone' of transition. Figure 2 presents the NVivo coding frequency for the Desire component, showing particularly large gaps in 'personal motivation,' 'sense of urgency,' and 'initiative,' whereas 'social support' coding frequencies were comparatively closer between the two groups, indicating that external encouragement exists but has not yet translated into intrinsic motivation for non-users.

Figure 2. Analysis of the Desire component in using LMS, comparing LMS users versus non-users across seven Desire indicators.

Knowledge Component

In the Knowledge stage, Hiatt (2006) identifies seven critical indicators: (1) understanding how to implement the change; (2) having access to relevant information; (3) possessing technical skills; (4) receiving appropriate training; (5) being aware of knowledge gaps; (6) demonstrating problem solving abilities during the change process; and (7) consistently applying acquired knowledge in daily tasks.

The study showed significant disparities between the two groups. LMS users aligned strongly with Knowledge indicators, displaying clear understanding of the steps required to implement LMS and the technical skills necessary to utilize it effectively. LU1 noted: 'I know how to set up a course, upload materials, create quizzes, and respond to student messages it took time to learn but I've had enough training to manage most problems on my own.' Non-users, by contrast, showed weaker connections to these indicators. NU9 shared: 'I attended one training session, but it was too fast and too general I still don't know how to do the basic setup for my type of course.' This illustrates both inadequate training design and lingering knowledge gaps. Figure 3 presents the Knowledge component coding frequencies, demonstrating particularly large disparities in 'technical skills,' 'training received,' and 'problem-solving ability.'

Figure 3. Analysis of the Knowledge component in using LMS, comparing LMS users versus non-users across seven Knowledge indicators.

Ability Component

In the Ability stage, Hiatt (2006) emphasizes the practical application of knowledge. Indicators include: (1) application of knowledge in real-world situations; (2) practical skills for performing new tasks; (3) competence in

performing new tasks; (4) ability to overcome barriers; (5) consistent performance; and (6) integration of new skills learned during training.

LMS users demonstrated stronger connections to Ability indicators, particularly in applying knowledge in real world contexts and demonstrating practical skills for LMS implementation. LU7 observed: 'When I encounter a technical problem for example, a student cannot access an assignment I know how to diagnose the issue and usually resolve it without needing to contact technical support.' This reflects both competence and adaptive problem solving. Non-users, by contrast, showed difficulty translating theoretical knowledge into practical application. NU4 explained: 'I know the theory from the training, but when I sit in front of the computer to actually set things up, I get confused and there's nobody there to help me in the moment.' This highlights the critical role of just in time mentorship, as emphasized by Eraut (2004), who notes that informal workplace learning through mentorship and guided practice is essential for building competence in complex task environments. Figure 4 presents Ability coding frequencies, with the largest disparities observed in 'application of knowledge,' 'overcoming barriers,' and 'consistent performance.'

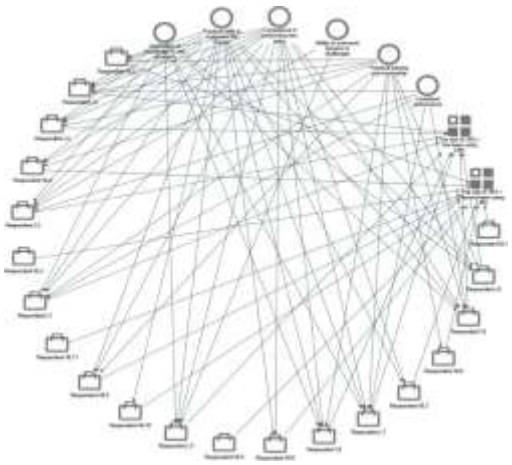

Figure 4. Analysis of the Ability component in using LMS, comparing LMS users versus non-users across seven Ability indicators.

Reinforcement Component

In the Reinforcement stage, Hiatt (2006) underscores the importance of recognizing and sustaining successful change. Key indicators include: (1) recognition of successful change efforts; (2) rewards or incentives; (3) ongoing training and support; (4) regular evaluation of change outcomes; (5) strong management commitment; and (6) removal of systemic barriers.

LMS users benefited from stronger alignment with Reinforcement indicators, receiving regular recognition and institutional incentives for their efforts. LU6 reported: 'The faculty leadership acknowledges LMS use in performance evaluations and we get priority in training programs, which makes it feel worthwhile to keep using it.' Non-users, in contrast, showed weaker connections to these Reinforcement mechanisms. NU6 stated: 'I don't think there's any difference for me whether I use LMS or not anybody checks, and I don't get any support when I try.' This absence of recognition and accountability is particularly problematic because, as Kotter (2012) notes, without reinforcement mechanisms, newly adopted behaviors are likely to revert to previous patterns. Figure 5 presents Reinforcement coding frequencies, with the greatest gaps observed in 'rewards and incentives,' 'regular evaluation,' and 'removal of barriers.'

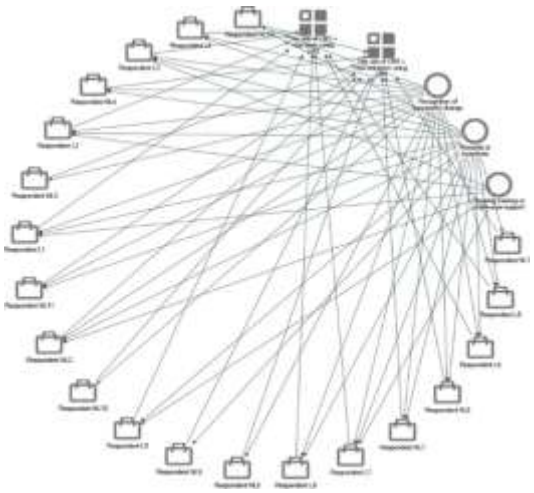

Figure 5. Analysis of the Reinforcement component in using LMS, comparing LMS users versus non-users across seven Reinforcement indicators.

Discussion

The analysis of respondents' awareness and engagement regarding LMS adoption, using Hiatt's ADKAR model as a framework, reveals significant distinctions between LMS users and non-users, indicating the need for targeted interventions to foster successful change implementation. Across all five ADKAR components, LMS users demonstrated consistently stronger alignment with indicators than non-users. Critically, the most pronounced gaps were observed in the Awareness (particularly emotional awareness), Desire (personal motivation and urgency), and Reinforcement (recognition, evaluation, and barrier removal) components — suggesting that the ADKAR model is indeed functioning as a diagnostic instrument identifying where institutional

interventions are most urgently needed. However, the overall 22.35% LMS adoption rate indicates that as an implementation framework, ADKAR has not yet 'worked' in the sense of producing widespread adoption; the framework has diagnosed the problems more effectively than the institution has addressed them.

LMS users exhibit higher levels of Awareness, demonstrating a stronger understanding of the rationale behind adopting LMS, the risks associated with not adopting it, and greater emotional investment in the change process. This is consistent with Hiatt (2006), who argues that users who have already integrated a new system into their professional routines are better positioned to recognize its benefits and understand the consequences of maintaining outdated practices. In contrast, non-users display a weaker understanding of these aspects, highlighting the need for more effective communication addressing both practical and emotional reasons for change. Emotional engagement is particularly critical: as Krauter (2023) finds, emotions significantly influence individuals' willingness to engage with new technologies, and those who have not yet used LMS may exhibit fear or apprehension a common barrier in organizational change (Cunningham & Villaseñor, 2016; Lestari & Santoso, 2019). Hall and Hord (2006) also note that without addressing emotional barriers, resistance to change is likely to persist.

While both groups engage in discussions about LMS adoption, non-users are less connected to key Awareness indicators, suggesting that organizational communication efforts have not been sufficiently persuasive or comprehensive for this group. According to Kotter (1996), communicating the urgency and importance of change is critical to ensuring that all stakeholders are aligned with organizational goals. Leveraging LMS users as change champions could be highly effective: experienced users who have integrated LMS into their workflows can offer peer-to-peer support, easing the transition for non-users. Peer influence is particularly impactful in reducing resistance, as it provides relatable real-life examples of success that can bridge emotional and knowledge gaps (Turnbull et al., 2020; Rogers, 2003). Fullan (2011) emphasizes the role of collaboration in fostering adoption, particularly in educational contexts where peer support accelerates change acceptance.

The Desire stage highlights a motivational gap between LMS users and non-users. LMS users show strong personal motivation, awareness of the system's benefits, and proactive engagement with the change process. This attitudinal shift, from initial resistance to active support, aligns with Kotter's (1996) assertion that successful change requires a personal connection to the benefits of the change. Users demonstrate that they have internalized the need

for LMS, likely as a result of experiencing its practical advantages, such as improved teaching efficiency or better student outcomes.

In contrast, non-users lack the same level of personal motivation and initiative, which indicates that while they may recognize external pressures to adopt LMS, they do not yet perceive its personal advantages or feel a strong sense of urgency. Research on change management suggests that individuals are more likely to resist change when they do not perceive clear personal benefits To address this gap, institutions must focus on creating a stro (Cunningham & Villaseñor, 2016). nger sense of urgency for non-users, emphasizing the personal and professional risks of failing to adopt digital teaching technologies. This sense of urgency can be fostered through clearer communication that highlights personal benefits such as time savings, improved student engagement, and professional development opportunities, as well as through emotional encouragement (Hiatt, 2006; Kotter, 1996). Research by Bridges (2009) also emphasizes the importance of transition management, particularly in addressing the personal implications of change, which can help reduce resistance.

The Knowledge stage is particularly critical in understanding the preparedness of both LMS users and non-users for the adoption process. The diagram reveals that LMS users are better equipped with the necessary knowledge, skills, and access to relevant information to successfully adopt and implement LMS. Their alignment with key indicators such as understanding how to implement change, technical skills, and problem-solving abilities highlights their capacity to navigate challenges and integrate LMS into their teaching practices. These findings are consistent with the literature on technology adoption, which emphasizes the importance of technical training and continuous access to resources in ensuring successful technology implementation (Turnbull, Chugh, & Luck, 2020). By regularly applying their knowledge, LMS users reinforce their learning and become more adept at using the system, thus building their confidence and problem-solving capabilities, both of which are essential for sustained adoption (Rogers, 2003).

Non-users, on the other hand, display significant knowledge gaps, particularly regarding technical skills, access to resources, and awareness of their own limitations. This lack of preparedness is a major barrier to change, as individuals who feel underprepared or unsupported are more likely to resist new systems (Kotter, 1996). Addressing these knowledge gaps through targeted interventions such as structured training programs focused on practical application and access to continuous resources is vital in helping non-users bridge the knowledge gap (Hiatt, 2006; Turnbull et al., 2020). Moreover, research by Eraut (2004) highlights the importance of informal learning in the

workplace, suggesting that non-users could benefit from ongoing support through mentorship and experiential learning to build their technical skills.

Ability, as the next stage in the ADKAR model, shows a stark contrast between LMS users and non-users. Users demonstrate stronger practical skills, training, and competence, allowing them to effectively apply their knowledge in real-world contexts. They exhibit higher problem-solving abilities and adaptability, which are essential for overcoming the inevitable challenges that arise during system implementation (Cunningham & Villaseñor, 2016). This aligns with findings from organizational change research, which underscores the importance of hands-on training and mentorship in building practical skills (Turnbull et al., 2020). In contrast, non-users lack these abilities, particularly in translating theoretical knowledge into practical application. This gap is exacerbated by their minimal connection to problem-solving capabilities, indicating that they may lack the confidence to independently address challenges. Such limitations highlight the need for enhanced mentorship and peer-led guidance to support non-users in developing these crucial skills (Lestari & Santoso, 2019). Training strategies that focus on practical, task-based learning have been proven effective in promoting technology adoption and addressing knowledge-to-application gaps. Additional research by Senge (2006) supports this approach, emphasizing the value of experiential learning in enabling individuals to build competencies in complex environments.

Finally, the Reinforcement stage in Hiatt's model emphasizes the long-term sustainability of LMS adoption. LMS users benefit from consistent reinforcement, including regular recognition of their achievements, rewards, and ongoing training and support. These reinforcement mechanisms are critical for maintaining the momentum of change, as they ensure that new behaviors are embedded into the organization's culture (Hiatt, 2006; Kotter, 1996).

Non-users, however, exhibit weaker connections to these reinforcement mechanisms, suggesting that they may not receive the same level of recognition or support, potentially causing disengagement. The absence of ongoing reinforcement, such as continuous training, may lead non-users to revert to old habits and resist further attempts at LMS adoption. The role of management commitment is particularly important in this stage, as ongoing leadership support is essential for reinforcing the importance of LMS and embedding its use into daily practices (Lestari & Santoso, 2019). Additionally, the removal of barriers, such as technical challenges or unclear expectations, is crucial for non-users to fully engage with the system (Kotter, 1996). Institutions must focus on providing targeted reinforcement strategies, such as periodic evaluations, tailored training, and the recognition of progress, to ensure long-term LMS adoption across all stakeholders (Turnbull et al., 2020). Research from Rogers

(2003), Fullan (2011), and Senge (2006) highlights the importance of continuous reinforcement and structured feedback loops in sustaining long-term technological change and innovation.

CONCLUSION

The study highlights significant differences between LMS users and non-users across the ADKAR model's stages. LMS users exhibit stronger Awareness, understanding the need for change and showing greater emotional investment, while non-users demonstrate limited recognition of the change's importance. In the Desire stage, users display higher motivation and urgency, whereas non-users lack the drive to adopt LMS. Knowledge gaps are evident, with users possessing the technical skills and training needed, unlike non-users who require additional support. In the Ability stage, users effectively apply their skills, whereas non-users struggle due to insufficient practical experience and mentorship. Lastly, Reinforcement shows users benefiting from recognition and ongoing support, while non-users need stronger reinforcement mechanisms.

In answer to the central question Does ADKAR work? the evidence suggests that ADKAR functions effectively as a diagnostic framework for identifying adoption barriers: it successfully distinguishes the experiences of users from non-users across all five components and reveals precisely where institutional support has been insufficient. However, as an implementation framework, ADKAR's effectiveness at Universitas Almuslim has been partial, primarily because Reinforcement the stage critical for sustaining change remains underdeveloped for non-user lecturers. ADKAR can work, but only when all five components are systematically implemented and sustained at the institutional level.

Furthermore, Targeted interventions are necessary to bridge the gaps in Awareness, Desire, Knowledge, Ability, and Reinforcement for non-users. Addressing these gaps through improved communication, training, mentorship, and reinforcement strategies will ensure broader adoption of LMS, ultimately leading to enhanced performance and more successful change implementation across the institution.

Limitation

This study is subject to several limitations that readers should consider when interpreting findings. First, the single institution design limits the generalizability of findings beyond institutions with comparable characteristics. Second, data were collected cross-sectionally, preventing before after comparisons that would more directly demonstrate ADKAR's causal impact. Third, the study relies primarily on self-report interview data, which is subject to

social desirability bias. Fourth, the sample size (n=20) is appropriate for qualitative case study research but limits statistical generalizability. Fifth, the pre-existing nature of the user/non-user groups means this study identifies associations between ADKAR component alignment and LMS adoption, but cannot establish causal attribution: the two groups were not randomly assigned, and observed differences may partly reflect self-selection factors.

Future Research Directions

Several directions are proposed for future research. First, longitudinal studies that track LMS adoption before and after ADKAR-based institutional interventions are needed to directly test ADKAR's effectiveness as an implementation tool. Second, multi-university comparative studies — particularly across different provinces of Indonesia and across public and private institutions — would strengthen the external validity of these findings. Third, quantitative measurement of ADKAR components using validated scales (building on instruments developed in related change management research) would enable statistical testing of relationships between ADKAR components and adoption outcomes. Fourth, future research should investigate contextual factors specific to Acehnese higher education culture — including organizational hierarchy, religious values influencing change attitudes, and regional resource constraints — that may moderate ADKAR's effectiveness in this setting.■

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