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The Role of Innovation Culture as a Leadership Effort in Improving Adaptive Performance: A Mediation and Moderated Model

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Abstract

Micro-foundation in dynamic capabilities refers to the most basic level or elements that form an organization's ability to adapt and change in the face of a dynamic organizational environment. The variables examined in this study are flexible leadership, innovation culture, workplace spirituality, and adaptive performance. This study was conducted at a secondary school owned by a Foundation (private) in East Java Province, Indonesia, with a sample of 100 school leaders accredited A. This study uses the Partial Least Square Structural Equation Modelling (PLS-SEM) statistical technique using the Smart PLS program as an analysis tool. The results of the hypothesis testing revealed that: 1) Flexible leadership significantly increases innovation culture; 2) Innovation culture significantly increases adaptive performance; 3) Innovation culture acts as a full mediation of the positive impact of flexible leadership on adaptive performance; 4) Workplace spirituality strengthens the positive impact of innovation culture on adaptive performance. These findings reveal the important role of innovation culture in encouraging leaders and subordinates to think creatively, take risks, and develop new ideas so as to increase adaptive performance which in turn contributes to improving overall organizational performance. Innovation culture can be enhanced through flexible leadership practices and strengthening workplace spirituality in daily work life.

Keywords: *Flexible Leadership, Innovation Culture, Spirituality, Adaptive Performance.*

Introduction

Private educational institutions in Indonesia are faced with the problem of maintaining competitive advantage in getting students, so that the sustainability of the school is guaranteed. In the VUCA Era, the innovation cycle occurs rapidly, and there is continuous change, so that private schools are required to be able to increase flexibility and change so that private schools can create competitiveness and resilience. Facing these demands, it is necessary to increase workplace spirituality (Paul et al., 2020). School sustainability as a long term, namely competitive advantage that is not only for today but must continue to run continuously by maximizing all potential owned by the school's internal and then adjusting it to the external conditions of the school. Performance, especially adaptive performance, is important for the sustainability and development of schools.

According to Borman and Motowidlo (1997) Performance is behaviour that can be assessed as having a positive or negative impact on an individual or organization's effectiveness. The performance of school employees individually can have an impact on school performance both directly and indirectly. Therefore, when an employee is unable to carry out his duties properly and behaves in a way that is not in accordance with the expectations of the organization, this can have a negative impact on the sustainability of the processes that occur within the organization. Individual performance is one of the success factors in building an organization (Koopmans et al., 2016).

Performance consists of three dimensions (Pradhan & Jena, 2017), namely task performance, contextual performance (Borman & Motowidlo,1997)), and adaptive performance (Charbonnier-Voirin & Roussel, 2012). Pulakos et al. (2000) stated that adaptive performance is an individual's ability to adapt to changes that occur in work. Charbonnier-Voirin and Roussel (2012) stated that adaptation in the context of work is related to many variables that are relevant to the work itself, including behaviour in various different task demands (for example, new coworkers and teams, new problems, cultural differences, new technologies,

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and challenging physical conditions).

Innovation provides a competitive advantage for schools in the long term. Innovation culture can help schools improve adaptive performance. Innovative schools respond more quickly to market changes and customer needs. Innovation in schools can increase if the school has a strong innovation culture. Capon et al. (1992) stated that key aspects of innovation culture are creativity, openness and acceptance of new ideas, risk taking, and an entrepreneurial mindset. Hurley and Hult (1998) stated that innovation culture includes the intention to be innovative, the extent to which individuals are oriented towards learning new ways of doing things and thus have an influence on the orientation to find new ideas and implement them. Hilmarsson et al. (2013) reported a positive relationship between innovation culture and innovation performance. Li et al. (2018) stated that positive cultural characteristics are very important for agility, innovation, and creativity. Innovation culture results from the interaction between innovation and organizational culture (Duygulu et al., 2015).

A strong innovation culture can be realized by cultivating values that encourage the intention to innovate, creating innovation infrastructure, paying attention to the determinants of customer-oriented and value-added innovation, and implementing the innovation ideas that are formed, so that it can improve adaptive performance in the organization. Empirical studies on the direct relationship between innovation culture and adaptive performance are still limited, for example, Stańczyk (2017) stated that adaptive performance is influenced by the innovation climate. Organizational learning, which is one of the infrastructures of innovation culture, can improve adaptive performance (Riza et al., 2020). Bataineh et al. (2022) revealed that innovation work behavior improves adaptive performance. Nurhaliza and Abadiyah (2022) revealed that innovation culture improves employee performance.

Innovation culture can be enhanced through flexible leadership practices. Leadership practices play an important role in shaping organizational culture and the organizational environment, such as influencing employee attitudes, behaviours, and overall well-being. Through certain leadership practices, such as flexible leadership, according to Zhang (2024), leaders can create a work environment that is full of innovation, respects diversity, tolerates failure, and values feedback. Leadership is the foundation of innovation culture. Bataineh et al. (2022) revealed that inclusive leadership has an impact on innovation work behaviour. Kaur Bagga et al. (2023) reported a positive relationship between transformational leadership and organizational culture, while Udin (2023) reported that transformational leadership improves organizational learning culture.

Gerlach et al. (2021) reported the impact of flexible adaptation of leader behaviour on innovative performance. While Jia et al. (2022) reported that the results of the study showed that exploitative knowledge seeking and exploratory knowledge seeking partially mediate the relationship between ambidextrous leadership and organizational innovation. Effective leaders encourage a mindset of curiosity and experimentation, ensure that innovation is embedded in the organizational structure, provide a vision, create a safe environment for taking calculated risks, and celebrate success and failure as important learning experiences. Thus, leaders not only inspire but also empower work teams or subordinates to innovate consistently.

Spirituality in the school environment can moderate the relationship between innovation culture and adaptive performance. Workplace spirituality is an individual's effort to find self-value in life and align those values with workplace values (Mitroff & Denton, 1999). Workplace spirituality is defined as a workplace that allows individuals to express their inner life by doing meaningful work in the context of community (Milliman et al., 2003). Workplace spirituality often fosters values such as creativity, curiosity, and the courage to try new things, where these values are in line with innovation culture, so they are effective in driving adaptive performance. A spiritual work environment tends to encourage collaboration and mutual trust, which are key to the innovation process. Strong spirituality in the workplace allows members of the organization to feel connected to each other and have a common purpose, will be more open to sharing ideas and working together to find innovative solutions.

This study explores dynamic capabilities from the human aspect and individual behaviour in the context of

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strategic management, which according to Salvato (2009) is still relatively limited. This study is a micro-level behavioural analysis (individual leader level) as an empirical study of increasing adaptive performance capabilities at the individual leader level as a consequence of innovation culture by involving flexible leadership as an antecedent of innovation culture and workplace spirituality as a moderator of the relationship between innovation culture and adaptive performance. The objects of the study are high schools and vocational schools managed by foundations operating in the East Java Province.

Theoretical Framework and Hypothesis Development

Flexible Leadership and Innovation Culture

The theory underlying the relationship between flexible leadership and innovation culture is rooted in contingency theory, which states that an effective leadership style will adapt to the situation and needs of the team or subordinates. According to Yukl and Mahsud (2010), contingency theory is relevant to flexible leadership because it provides insight into how to diagnose situations and identify forms of behaviour that may be effective for a leader. Flexible leadership is the ability to adjust or adapt leadership styles, methods, or approaches in response to different or changing contextual demands to facilitate group performance (Kaiser & Overfield, 2010). Flexible leadership is a skill that involves the ability to understand situational requirements for effective leadership and be flexible in adapting to changing conditions and crises (Mumford et al., 2007).

Increased flexibility and adaptability, leaders require broader capabilities, including predictive capabilities (Zulu & Khosrowshahi, 2021), experience and technical (Barnes et al., 2021), and managerial capabilities (Schiuma et al., 2021), where flexible leadership theory provides a theoretical basis for leadership practice in facing the demands of flexibility, adaptability, and effective managerial capabilities (Zhu & Jin, 2023). Flexible leadership requires a broad set of behaviours that can be adjusted to various situations and demands knowing when to apply each behaviour and skill to complete the actions needed to solve new challenges in complex realities (Hoch & Bentolila, 2021).

Dynamic capabilities are the theory underlying the relationship between flexible leadership and innovation culture. The dynamic capabilities theory was created to help organizational leaders successfully adapt the basic organizational resources they have to change (Barinua & Ogolo, 2022). Flexible leadership is one way to activate the organization's dynamic capabilities, which will ultimately encourage the creating of a strong innovation culture. Innovation is influenced by certain social and cultural values, norms, attitudes, and behaviours that can be described as innovation culture (Eynde et al., 2015; Davies & Buisine, 2022). Flexible leaders create an environment that allows individuals in the organization to develop and use their dynamic capabilities, through innovation culture such as encouraging experimentation, providing autonomy, and supporting new initiatives, so that the organization becomes more resilient and able to respond to environmental changes.

Empirical studies on the relationship between flexible leadership and innovation culture are still very limited. Several leadership approaches that are implicitly reported to be able to improve innovation culture include: Bataineh et al. (2022) revealed that inclusive leadership has an impact on innovation work behaviour; Kaur Bagga et al. (2023) reported a positive relationship between transformational leadership and organizational culture; Udin (2023) reported that transformational leadership improves organizational learning culture. This study explores the impact of flexible leadership practices on innovation culture in private high schools in East Java, with the formulation of the first hypothesis (H1) as follows:

H1. Flexible leadership significantly improves innovation culture.

Innovation Culture and Adaptive Performance

Dynamic capabilities underlie the relationship between innovation culture and adaptive performance. Dynamic capabilities are likened to an organization's ability to continuously adapt, change, and create innovation. This ability is crucial in connecting innovation culture with adaptive performance. Adaptive

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performance in the workplace refers to adjustment and understanding of changes in the workplace (Pulakos et al., 2000). In general, researchers show that adaptive performance is a component of overall performance that can be distinguished from task performance and contextual performance (Charbonnier-Voirin et al., 2010).

If an organization has a culture that encourages innovation, then individuals in the organization will be accustomed to thinking creatively, taking risks, and seeking new solutions, and this will stimulate the development of dynamic capabilities such as: 1) Learning, the organization continues to learn from experience and mistakes; 2) Experimentation, the organization dares to try new things; 3) Integration, the organization is able to integrate new ideas into business processes. Strong dynamic capabilities, the organization is able to: 1) Responsive to change, the organization can quickly adapt to changes in the business environment; 2) New products and services, the organization is able to create innovations that are relevant to market needs; 3) Increase efficiency, the organization can optimize resources and business processes.

The theory underlying the relationship between innovation culture and adaptive performance is the theory of learning organizations, which emphasizes the importance of an organization's ability to learn and adapt to environmental changes. Chiva et al. (2014) stated that organizational learning is a process in which organizations change or modify mental models, rules, processes or knowledge they have, maintaining or improving organizational performance. A strong innovation culture is the foundation for organizations to continue to grow and adapt. Organizations with an innovation culture are better prepared to face change and uncertainty. Innovation culture encourages continuous learning, so that individuals in the organization can develop new skills and relevant knowledge.

Empirical studies on the relationship between innovation culture and adaptive performance are still very limited. Several empirical results that implicitly support the relationship between the two, such as Hilmarsson et al. (2013) revealed a positive and significant relationship between innovation culture and innovation performance; Stańczyk (2017) stated that innovation climate determines adaptive performance; Tang et al. (2020) reported that innovation culture significantly increases organizational performance; Riza et al. (2020) reported that organizational learning, which is one of the infrastructures of innovation culture, can increase adaptive performance. Furthermore, Al Taweel dan Al-Hawary (2021) revealed that the role of innovation capability is directly related to organizational performance. Furthermore, Bataineh et al. (2022) revealed that innovation work behaviour increases adaptive performance, while Nurhaliza and Abadiyah (2022) reported that innovation culture increases employee performance. This study explores the relationship between innovation culture and adaptive performance in private high school leaders in East Java, with the formulation of the second order hypothesis (H2) as follows:

H2. Innovation culture significantly increases adaptive performance.

Flexible Leadership and Adaptive Performance: Innovation Culture as a Mediator

Adaptive performance is an important part of work performance, especially in environments that experience rapid change (Bonini et al., 2024). The mediating role of innovation culture in the relationship between flexible leadership and adaptive performance can be explained with the following example: for example, an organization is like a ship sailing in a dynamic business ocean, then flexible leadership is the captain who is able to adjust the direction of the ship according to changes in wind and current, while innovation culture is a compass that helps the ship find new and more efficient routes, while adaptive performance is the speed and agility of the ship in maneuvering. Flexible leaders create an environment conducive to innovation by giving autonomy to individuals in the organization, encouraging collaboration, and supporting experimentation. Organizations with a strong innovation culture are better prepared for change because the organization has a habit of thinking creatively, finding new solutions, and learning from mistakes, so that individuals in this organization are more skilled at adapting to uncertain situations.

The empirical results of previous researchers have not found the role of innovation culture that mediates the relationship between flexible leadership and adaptive performance. However, there are several reports

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of previous research results that imply that the relationship between the three is empirically supported, for example: Bataineh et al. (2022) revealed that inclusive leadership has an indirect impact on adaptive performance through innovation work behaviour; Kaur Bagga et al.(2023) reported that organizational culture partially mediates the relationship between transformational leadership and change management among virtual team employees; Udin (2023) reported that organizational learning culture is able to mediate and moderate the relationship between transformational leadership and employee performance. Furthermore, Sumarmi et al. (2024) showed that dynamic adaptive capabilities mediate authentic leadership and team performance. (Zada et al. (2024) reported that servant leadership significantly affects employee task performance with employee promotive voice as a mediator. This study explores how the impact of the role of innovation culture in mediating the relationship between flexible leadership and adaptive performance with the formulation of the third hypothesis (H3) as follows:

H3. Innovation culture mediates the relationship between flexible leadership and adaptive performance.

Innovation Culture and Adaptive Performance: Workplace Spirituality as a Moderator

The relationship between workplace spirituality, innovation culture, and adaptive performance complement and reinforce each other. Workplace spirituality can be a catalyst for a strong innovation culture, which will ultimately improve the organization's ability to adapt to change and achieve superior performance. The spiritual aspect of organizational change can support the organization's efforts to make work and the workplace environment a better everyday experience (Liu & Robertson, 2011).

Resource-based theory underlies the moderating role of workplace spirituality in the relationship between innovation culture and adaptive performance. Spirit at work is viewed as an intangible capability within the Resource-based view (RBV) framework towards competitive advantage (Barney, 1991). This theory states that unique and valuable resources, such as workplace spirituality, can provide a competitive advantage for organizations. The strategic value of this intangible spiritual capability comes from its rarity (Barney & Hesterly, 2006). Workplace spirituality is considered a valuable resource, which can enhance an organization's ability to innovate and adapt. Spirituality can be viewed as a resource that can enhance adaptive performance. Iksan et al. (2020); Jena (2022); Saeed et al. (2022); Ekowati et al. (2022) reported that workplace spirituality is a unique approach to improving employee performance.

Workplace spirituality often links work to a purpose greater than just financial gain, workplace spirituality can provide a sense of meaning and purpose in the work of each member of the organization, so that members of the organization are more motivated to adapt to change and contribute to the success of the organization. Milliman et al. (2003) conceptualize workplace spirituality: the level of interaction of individuals, groups, and organizations, where the three core dimensions of workplace spirituality include purpose in work or "meaningful work" (individual level), having a "sense of community" (group level), and "alignment with the values and mission of the organization" (organizational level). Workplace spirituality as aspects of the workplace, whether in individuals, groups, or organizations, that increase feelings of individual satisfaction through transcendence (Giacalone & Jurkiewicz, 2003).

Conceptually, dynamic capabilities can be the basis of the theory of the moderating role of workplace spirituality in the relationship between innovation culture and adaptive performance. As an extension of the RBV theory, dynamic capabilities assume that organizations have a mix of financial and non-financial technological resources, skills, knowledge, and experience and their creative integration and wise use provide competitive advantages for organizations (Teece, 2007; Teece et al., 1997). Workplace spirituality can create work environment conditions that support innovation and creativity by providing greater meaning and purpose to work, so that these conditions can motivate individuals in the organization to continue learning and developing.

Dynamic capabilities enable organizations to harness the innovation potential that emerges from workplace spirituality. With the ability to manage change and uncertainty, organizations can be more effective in implementing new ideas. A strong innovation culture can strengthen dynamic capabilities by encouraging experimentation, learning, and the development of new capabilities. Adaptive performance is the end result

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of the process in which workplace spirituality, innovation culture, and dynamic capabilities interact. Dynamic capabilities create the conditions that enable workplace spirituality to have an impact that strengthens the relationship between innovation culture and adaptive performance.

Spillover theory can also apply in the context of the moderating role of workplace spirituality in the relationship between innovation culture and adaptive performance. The spillover hypothesis states that any change in one area will impact other areas; therefore, when individuals have a strong spiritual drive, they are more adaptable and enthusiastic about their respective jobs (Staines, 1980). Values and behaviours developed in a work environment with strong spirituality can have an impact or side effect on employees' personal lives, so that employees are more likely to be innovative and adaptive individuals in various aspects of life.

Researchers' exploration of previous studies that reported the moderating role of workplace spirituality in the relationship between innovation culture and adaptive performance has not been found, but there are several reports of previous research results that use workplace spirituality as a moderation, including: Malik et al. (2016) reported that organizational values moderate the relationship between ethical leadership and employee performance; Ertemsir et al. (2024) found that workplace spirituality moderates the effect of organizational justice on job satisfaction, where employees with high workplace spirituality are more satisfied than employees with low workplace spirituality. Referring to the description in the previous paragraph, it is stated that the increase in adaptive performance caused by innovation culture can increase with the strength of workplace spirituality. The formulation of the fourth hypothesis (H4) is as follows:

H4. Workplace spirituality moderates the relationship between innovation culture and adaptive performance

This study is to conduct testing and analysis with a conceptual framework formed in one analysis process with SEM modelling with second order techniques. Referring to the explanation that has been described, the research model in this study is shown in Figure 1.

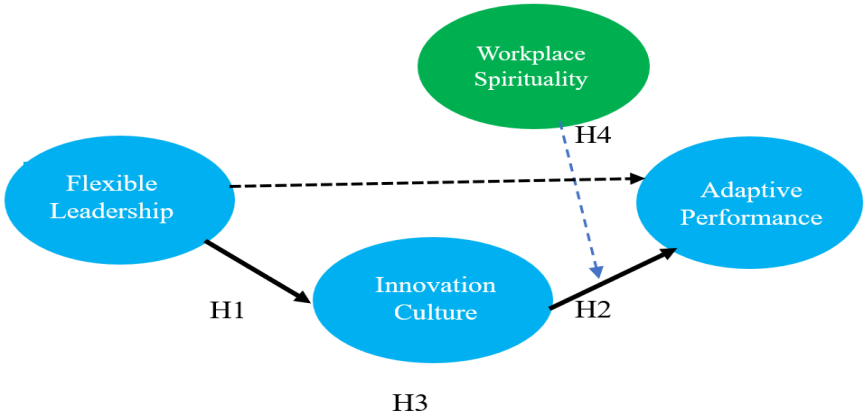

Figure 1. Research Model

Research Methods

Population and Sample

The population in this study were private high schools and vocational schools located in the East Java Province, consisting of 37 districts and 9 cities, with a total of 7,249 private high schools and 10,571 private vocational schools ((https://dapo.kemdikbud.go.id/). The sampling technique used non-probability sampling with purposive sampling technique, namely purposive sampling is a data source sampling technique with certain considerations (Sugiyono, 2016), where methodological considerations for selecting samples in private high schools and vocational schools accredited A and located in nine cities (9) municipalities (Batu city, Blitar city, Kediri city, Madiun city, Malang city, Mojokerto city, Pasuruan city,

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Probolinggo city, and Surabaya city). The samples taken were private high schools and vocational schools accredited A located in nine (9) municipalities. The number and data of schools that were sampled were obtained from data searches on the Basic Education Data website (https://dapo.kemdikbud.go.id/) as of October 2023, there are 185 schools accredited A, consists of 100 Senior High Schools and 85 Vocational High Schools. The sample in this study was taken from school leaders including the principal and/or vice principal.

The operational definition and measurement of the variables studied are described as follows:

Flexible Leadership

The operational definition of flexible leadership refers to Mumford et al. (2007); Kaiser & Overfield (2010); namely the abilities and skills that are requirements for effective and flexible leadership in adapting to changing conditions and crises, as measured by aspects of leadership traits, leadership tactics, and leadership goals. The statement items for measuring flexible leadership are adapted from the flexible leadership measurement indicators developed by Korhani (2021) who developed three (3) dimensions of flexible leadership measurement including leadership traits, leadership tactics, and leadership goals. The measurement of variables uses a semantic differential scale of 1-5 (points) with alternative answers ranging from small possibility (1) to large possibility (5).

Innovation Culture

The operational definition of innovation culture refers to Eynde et al. (2015); Davies and Buisine (2022), namely innovation influenced by certain social and cultural values, norms, attitudes and behaviours. The measurement of innovation culture adapts valid and reliable innovation culture dimension measurement items from Dobni (2008), namely: 1) innovation intention (9 statement items); 2) innovation infrastructure (5 statement items); 3) innovation influence (4 statement items); and 4) implementation context (2 statement items). The measurement of variables uses a five-point Likert scale (1-5) with answer choices ranging from strongly disagree (scale 1) to strongly agree (scale 5).

Workplace Spirituality

The operational definition of workplace spirituality refers to Giacalone and Jurkiewicz (2003); Milliman et al. (2003) which is a set of spiritual values and work culture in an organization that encourages each individual in the organization to connect with each other, bring out their best potential, and achieve meaning in the context of the work community. The measurement of workplace spirituality adapts 17 valid and reliable measurement items from Rego and Cunha (2008) as a development of Milliman et al. (2003); Ashmos and Duchon (2000), which include the following dimensions: a) Individual level: 1) sense of enjoyment at work (2 statement items); 2) sense of contribution to the community (3 statement items); b) Team level: 3) team's sense of community (5 statement items); c) Organization level: 4) alignment between organizational and individual value (5 statement items); 5) opportunities for inner life (2 statement items). The variable measurement uses a five (1-5) point Likert scale with answer choices ranging from strongly disagree (scale 1) to strongly agree (scale 5).

Adaptive Performance

Referring to Pulakos et al. (2000); Charbonnier-Voirin and Roussel (2012); Jundt et al. (2015), adaptive performance is operationalized as work behaviour in handling emergency or crisis situations, managing work stress, solving problems creatively, and dealing with uncertain and unpredictable work situations. The measurement of adaptive performance adapts the instrument developed by Stokes (2008); Pulakos et al. (2000) namely:1) proactive which includes the dimensions: handling emergencies/crisis situations and solving problems creatively; 2) reactive which includes the dimensions: training and learning effort and interpersonal adaptability; and 3) tolerant which includes the dimensions: managing work stress and dealing with uncertain and unpredictable. The measurement of variables uses a semantic differential scale of 1-5 (points) with alternative answers ranging from small possibility (1) to large possibility (5).

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In this study, the process of adapting the measurement items of the variables (research instruments) was carried out starting by translating the measurement items of the variables (research instruments) from English research articles used as references (forward translation) into Indonesian. After that, the results of the translation into Indonesian were translated back into English (back translation) to ensure that the translation results were in accordance with the original meaning. The next stage was to ask for the opinion of a linguist regarding the translation results, and the linguist could provide an alternative translation or approve the existing translation. After that, the results of the confirmation of the opinion of the linguist and the initial translation research instrument were compared to choose a translation that was easy to understand without eliminating the meaning of the original measurement items. The next step is to conduct a preliminary study on 30 respondents, and the last step is the process of adjusting the questionnaire. After that, the duplication of the questionnaire or posting of the online survey, continued data collection will be held directly or online.

The quality of research data is very important because the data is an interpretation of the variables studied and functions as a means of testing hypotheses that have been formulated by referring to theoretical and empirical foundations. Validity and reliability are requirements needed to ensure that the research instruments used are reliable, the constructs or instruments referred to from previous studies have been tested for validity and reliability, but by considering the theoretical and empirical gaps that are improvements to the novelty of this research, the reliability and validity tests of the instruments will still be carried out.

Results and Discussion

The application for research permit was done by sending a letter of application to the East Java Provincial Education and Culture Office. Furthermore, the letter of permission given by the office, a cover letter from the researcher, a poster for filling out the data collection, and a questionnaire were sent to 185 target schools via postal delivery services, e-mail, WhatsApp, and some were sent directly. The questionnaire was filled out by respondents in two ways, namely online and offline. Data collection was carried out for 3 months. A total of 52 schools (29 Senior High Schools and 23 Vocational High Schools) or 28.11 percent of the 185 schools, responded to the request for data collection permit. The number of respondents who participated in filling out the questionnaire was 100 school leaders consisting of 28 principals and 68 vice principals. Table 1 below shows the profile of school leaders who were the research samples according to their last level of education, gender, and school area.

Table 1. Profile of School Leaders Who Were Respondents

Education	Total	Percentage
S1	66	66
S2	33	33
S3	1	1
Total	100	100
Gender	Total	Percentage
Male	50	50
Female	50	50
Total	100	100
School Area	Total	Percentage
Batu	5	5
Blitar	2	2
Kediri	5	5
Malang	17	17
Madiun	15	15

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Mojokerto	7	7
Pasuruan	10	10
Probolinggo	3	3
Surabaya	36	36
Total	100	100

Table 1 shows the profile of school leaders who were the research samples according to their last education level, gender, and school area. respondents (66 percent S-1, 33 percent S2, and 1 percent S3), with 50 percent male and 50 female, with the largest school area coming from the city of Surabaya (36 leaders), second place from the city of Malang (17 leaders), third place from the city of Madiun (15 leaders), fourth place from the city of Pasuruan (10 leaders), followed by the city of Mojokerto (7 schools), then the cities of Batu and Kediri, each with 5 leaders, then 3 school leaders from Probolinggo, and 2 leaders from the city of Blitar.

Table 2. Discriminant Validity, Composite Reliability, and Convergent Validity

Variable	Dimension	Items	Outer Loading	α	CR	AVE	FLC
Flexible Leadership	Leadership traits (Trait)	Trait1	0.733	0.806	0.813	0.634	0.786
		Trait2	0.760				
		Trait3	0.859				
		Trait4	0.827				
	Leadership Tactics (Tactic)	Tactic1	0.799	0.734	0.850	0.654	0.809
		Tactic2	0.861				
		Tactic4	0.782				
	Leadership Goals (Goal)	Goal1	0.739	0.792	0.865	0.617	0.796
		Goal2	0.745				
		Goal3	0.835				
		Goal4	0.818				
Innovation Culture	Innovation Intention (Int)	Int7	0.758	0.710	0.838	0.591	0.796
		Int8	0.858				
		Int9	0.770				
	Innovation Infrastructure (Infra)	Infra1	0.751	0.757	0.846	0.634	0.782
		Infra2	0,830				
		Infra3	0.737				
		Infra5	0.724				
	Innovation Influence (Inf)	Inf1	0.832	0.766	0.851	0.580	0.787
		Inf2	0.744				
		Inf3	0.744				
		Inf4	0.744				
	Implementation Context (IC)	IC1	0.932	0.818	0.892	0.591	0.857
		IC2	0.917				
		IC3	0.706				
	Sense of enjoyment at work (SEW)	SEW1	0.930	0.775	0.897	0.814	0.900
		SEW2	0.873				
	Sense of contribution to the community (SCC)	SCC1	0.833	0.814	0.869	0.689	0.830
		SCC2	0.875				
		SCC3	0.778				

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Workplace Spirituality	Team's sense of community (TSC)	TSC1	0.773	0.883	0.915	0.683	0.826
		TSC2	0.838				
		TSC3	0.891				
		TSC4	0.834				
		TSC5	0.791				
	Alignment between organizational & individual values (AOI)	AOI1	0.910	0.730	0.880	0.786	0.833
		AOI3	0.862				
	Opportunities for the inner life (OFI)	OFI1	0.942	0.873	0.940	0.888	0.842
		OFI2	0.942				
Adaptive Performance	Handling emergencies/crisis situations (HEC)	HEC1	0.774	0.813	0.889	0.729	0.854
		HEC2	0.918				
		HEC3	0.918				
	Solving problems creatively (SPC)	SPC2	0.843	0.789	0.868	0.688	0.821
		SPC3	0.759				
		SPC4	0.881				
	Training and learning effort (TLE)	TLE1	0.731	0.883	0.915	0.683	0.820
		TLE2	0.836				
		TLE3	0.750				
		TLE4	0.944				
	Interpersonal adaptability (IA)	IA1	0.823	0.868	0.911	0.720	0.849
		IA2	0.860				
		IA3	0.754				
		IA4	0.946				
	Managing work stress (MWS)	MWS1	0.827	0.905	0.934	0.780	0.883
		MWS2	0.887				
		MWS3	0.860				
		MWS4	0.954				
	Dealing with uncertain and unpredictable work situations (DwU)	DwU1	0.741	0.662	0.815	0.594	0.771
		DwU2	0.807				
		DwU3	0.763				

Evaluation of reliability and validity of the variable measurement instruments shown in Table 2 are the results of retesting the instruments that have been tested in the pilot test. Several measurement items that have a loading factor <0.700 were removed from the final stage of testing (Table 2), such as: item tactic3 in the leadership tactic dimension; item int1-6 in the innovation intention dimension; infra4 in the innovation infrastructure dimension; 3 measurement items in the alignment between organizational and individual values dimension; item SPC1 in the solving problems creatively dimension; and MWS5 in the managing work stress dimension.

The results of the internal consistency reliability evaluation are seen from: 1) α of each measurement dimension of all variables (flexible leadership, innovation culture, workplace spirituality, and adaptive performance) has a value of >0.600; 2) Consistency reliability (CR) of each measurement dimension of all variables has a value of >0.700 (Hair et al., 2014), so that all measurement instruments used meet the reliability requirements.

The results of the convergent validity test (Table 2) are seen from 1) the outer loadings of the measurement items used have a value of >0.700 (Chin et al., 1997); 2) the AVE value of each measurement dimension used has a value of >0.500 (Muhson, 2022), so that the measurement instruments of all variables in this study meet convergent validity. Discriminant validity testing for the measurement dimensions of all variables is carried out by looking at the Fornell-Larcker Criterion (FLC) value in Table 2 and each

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dimension has the highest value in each latent construct tested with other latent constructs and does not exceed the threshold (0.900), meaning that each indicator can be predicted well by each latent construct.

Multicollinearity between Latent Variables

This study uses a survey method at one point in time for data collection (cross sectional), there is a possibility of common method bias (Podsakoff et al., 2003), so a test is carried out for the presence or absence of common method bias, namely by examining the presence or absence of multicollinearity between variables with the Inner variance inflated factor (VIF) (Kock, 2017). The VIF value is less than 5 (Sarstedt et al., 2017), while Kock (2015); Kock (2021) states that the VIF value threshold is usually 3.3.

Table 3. Collinearity Statistics (VIF)-Inner Model

	FL	WPS	InC	AP
Flexible Leadership (FL)				1.290
Trait	1.000			
Tactic	1.000			
Goal	1.000			
Workplace Spirituality (WPS)				1.005
SEW		1.000		
SCC		1.000		
TSC		1.000		
AOI		1.000		
OFI		1.000		
Innovation Culture (InC)				1.343
IC			1.000	
Inf			1.000	
Infra			1.000	
Int			1.000	
Adaptive Performance (AP)				
HEC				1.000
SPC				1.000
TLE				1.000
IA				1.000
MWS				1.000
DwU				1.000

The results of the VIF evaluation in Table 3 show that the overall score is <3.3, this indicates that the structural model formed is free from multicollinearity symptoms. The researcher did not find a VIF value that exceeded the threshold (3.3), indicating that there was no significant CMB in the data collected in the study.

Determination Coefficient (R-square = R^2) and Effect Size (f^2)

The R^2 value shows the variance explained in each endogenous construct. The F-Square value or f^2 effect size shows the measure used to assess the relative impact of an influencing variable (exogenous) on the influenced variable (endogenous).

Table 4. Results of Evaluation of Determination Coefficient (R^2) and Effect Size (f^2)

Equation	R^2	*Adjusted* R^2	f^2
AP= α+FLβ1+ InCβ2+ WPS*InCβ3+e2	0.244	0.224	0.322

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R^2 in the adaptive performance model (AP = α + FLβ1 + InCβ2 + WPS*InCβ3 + e2) of 0.244 indicates that in the sample, 24.4 percent of the adaptive performance variance is explained by its exogenous variables (flexible leadership, innovation culture, and WPS moderation). Referring to Ozili (2023) who stated that in social science research, R^2 between 0.10 and 0.50 (or between 10 percent and 50 percent) can be accepted only when some or most of the explanatory variables are statistically significant, then the R^2 value in this study is stated as reasonable. Table 4 shows the f^2 value of 0.322 or 32.21 percent which indicates that the impact of flexible leadership, innovation culture, and workplace spirituality moderation tends to be large. This refers to Cohen (1988) about the criteria in the assessment of f^2 are: 1) If the value of $f^2 = 0.02$, it means the effect of the exogenous variable on the endogenous is small; 2) If the value of $f^2 = 0.15$ means the effect of the exogenous variable on the endogenous is moderate; 3) If the value of $f^2 = 0.35$ means the effect of the exogenous variable on the endogenous is large.

The summary of the results of the hypothesis testing of direct influence, indirect influence, and moderating influence in this study can be seen in Table 5.

Table 5. Path, Mediating, and Moderating Analysis

	β	Standard Deviation (STDEV)	T Statistics	P-Values	Information
Direct effect					
FL→ InC	0.912	0.022	5.607	0.000	Significant
InC→ AP	0.254	0.091	2.786	0.006	Significant
FL→ AP	0.175	0.106	1.657	0.098	Not significant
Indirect effect					
FL→InC→AP	0.107	0.046	2.308	0.021	Significant
Moderating					
WPS*InC → AP	0.291	0.104	2.791	0.005	Significant

The results of the hypothesis test of direct influence and moderating influence in this study can also be seen in Figure 2.

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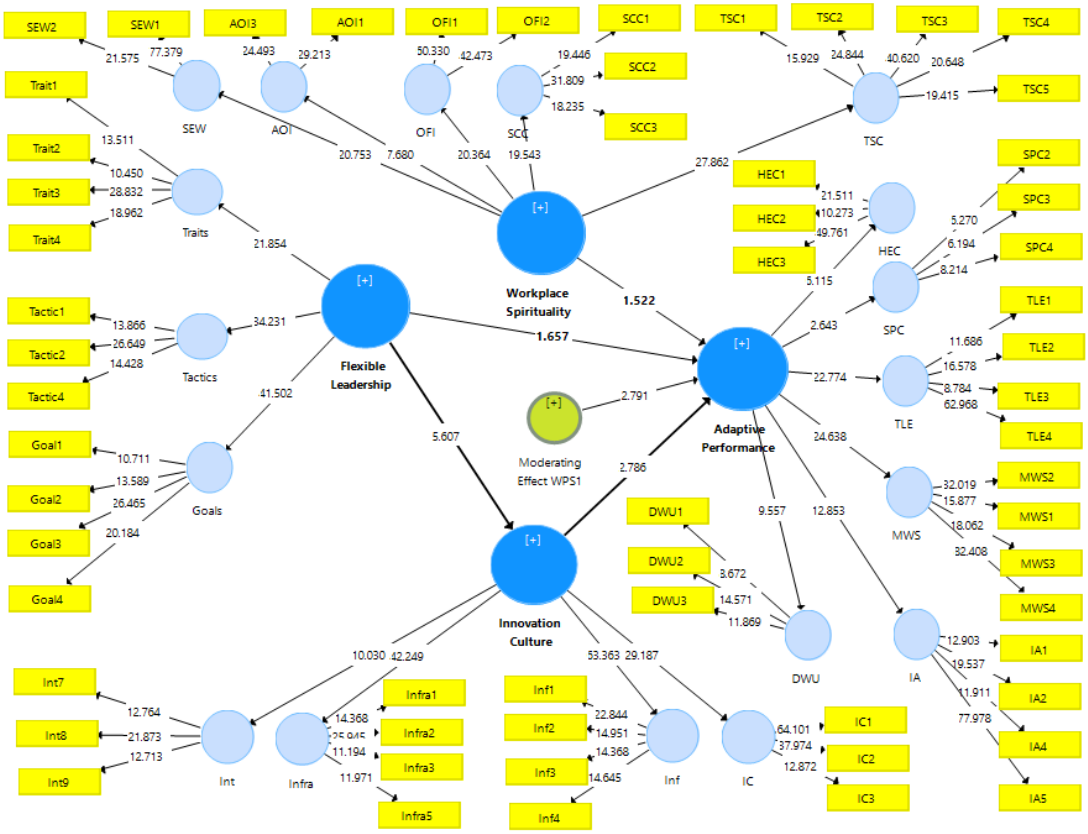

Figure 2. Direct and Moderating Effect Test

Table 5 and Figure 2 show that hypothesis 1 (H1) which states that flexible leadership significantly increases innovation culture, is accepted. This result can be seen from the path coefficient value (β) of the influence of flexible leadership on innovation culture of 0.204 and t statistic of 5.607> t-table 1.660 (df = 100-5 = 95, one-sided test, α = 0.05) and p-value of 0.000 <0.050. Likewise, hypothesis 2 (H2) which states that innovation culture significantly increases adaptive performance is accepted, this can be seen from the β value of 0.254, and the t statistic value of 2.786> 1.660, and p-value of 0.000 <0.050.

Hypothesis 3 (H3) which states that innovation culture mediates the influence of flexible leadership on adaptive performance, is accepted. This can be seen from the test results on the indirect effect showing a β value of 0.107 with a t statistic value of 2.186>1.660 and a p-value of 0.044<0.050. Referring to Nitzl et al. (2016) this finding shows that innovation culture as a full mediator of the influence of flexible leadership on adaptive performance, because the indirect effect of flexible leadership on adaptive performance is significant and the direct effect of flexible leadership on adaptive performance is not significant (Table 5 and Figure 2) with a β value of 0.175 and a t statistic value of 1.657<1.660, and a p-value of 0.098>0.050.

Table 5 and Figure 2 also show that hypothesis 4 (H4) which states that workplace spirituality moderates the relationship between innovation culture and adaptive performance, is accepted. This is indicated by the β value in the interaction between workplace spirituality and innovation culture of 0.291 (greater than the β value = 0.254 in innovation culture), and the acquisition of a t-statistic value of 2.791> t-table 1.660 and a p-value of 0.005 <0.050. These results mean that innovation culture significantly increases adaptive performance and its impact is further strengthened by workplace spirituality.

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Discussion

Increasing Innovation Culture through Flexible Leadership

Flexible leadership significantly improves the adaptive performance of middle-level private school principals in East Java. The findings of this study are an improvement novelty regarding the positive impact of flexible leadership on organizational culture, especially innovation culture, because this can be seen from several previous empirical studies that are still limited and have not used flexible leadership to measure leadership practices, for example: Bataineh et al. (2022) revealed that inclusive leadership has an impact on innovation work behaviour; Kaur Bagga et al.(2023) reported that transformational leadership improves organizational culture; Udin (2023) reported that transformational leadership improves organizational learning culture.

This finding supports contingency theory which states that an effective leadership style will adapt to the situation and needs of the team or subordinates, where flexible leadership practices are a manifestation of effective leadership. Flexibility is the core of effective leadership (Vaari, 2015). This finding also confirms the basic micro elements that form dynamic capabilities that underlie the relationship between flexible leadership and innovation culture. Flexible leadership is one way to activate dynamic capabilities in an organization, which will ultimately encourage the creation of a strong innovation culture in an organization. This finding strengthens Wilkens and Sprafke (2019)) regarding their empirical study that leadership behaviour is one of the micro-level resources in dynamic capabilities.

Flexible leadership creates an environment conducive to the growth of innovation culture. Flexible leadership creates a work environment that encourages creativity and innovation. Flexible leaders provide space for work teams or subordinates to try new ideas and take risks. Flexible leadership builds trust, so that work teams or subordinates feel more empowered and have the autonomy to contribute to innovation. Flexible leaders focus more on achieving goals than on processes, so that work teams or subordinates feel freer to find innovative solutions. Flexible leaders see failure as a learning opportunity, not as the end of everything.

Improving Adaptive Performance through Innovation Culture

Innovation culture creates an environment that supports creativity, innovation, and openness to change, which are important factors in improving the readiness of human resources to adapt to change. The findings of this study show that the findings of this study are an improvement novelty regarding the positive impact of innovation culture on adaptive performance, because there are still limitations to previous empirical studies that examine the relationship between the two, for example: Hilmarsson et al. (2013) revealed that innovation culture increases innovation performance; Stańczyk (2017) reported that innovation climate determines adaptive performance; Tang et al. (2020) reported that innovation culture significantly increases organizational performance; Riza et al. (2020) reported that organizational learning significantly increases adaptive performance; Al Taweel and Al-Hawary (2021) revealed that the role of innovation capability is directly related to organizational performance; Bataineh et al. (2022) revealed that innovation work behaviour increases adaptive performance; Nurhaliza and Abadiyah (2022) reported that innovation culture increases employee performance.

The results of this study support the theory of positive behavioural management from the perspective of micro-foundations on dynamic capabilities (Sprafke et al., 2012), at the managerial level, and the perspective of adaptive performance (Ployhart & Bliese, 2006; Han & Williams, 2008). Organizations with strong dynamic capabilities tend to have a strong innovation culture. This finding also supports the theory of learning organizations, which emphasizes the importance of the ability to continuously adapt and innovate through the creation of an organizational environment that encourages experimentation and learning, so that individuals in the organization feel safer to take risks and try new things according to environmental demands.

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Innovation Culture Mediation on the Impact of Flexible Leadership on Adaptive Performance

Innovation culture plays a role as a full mediating on the relationship between flexible leadership and adaptive performance of middle-level private school leaders in East Java. This means that the impact of flexible leadership on adaptive performance is more significant through innovation culture, because when viewed from the t statistic value of 1.657 it is not too far from the t table value (1.660), this indicates that the magnitude of the direct influence of flexible leadership on adaptive performance is moderate. Flexible leadership is a leadership practice that is able to adapt to changing situations, encourage creativity, and support innovation. Innovation culture acts as a bridge between flexible leadership and adaptive performance. The meaning of this finding is that the creation of an environment that encourages creativity and experimentation can be realized through flexible leadership practices because it can trigger a strong innovation culture, and in turn, allows organizations to adapt to change more quickly and effectively, thereby increasing adaptive performance.

This finding is an improvement novelty about the role of innovation culture in mediating the relationship between flexible leadership and adaptive performance, because in previous studies, the role of innovation culture that mediates the relationship between flexible leadership and adaptive performance has not been found, there are only a few empirical studies that imply that the relationship between the three is empirically supported, for example: Bataineh et al. (2022) revealed that inclusive leadership has an indirect impact on adaptive performance through innovation work behaviour; Kaur Bagga et al.(2023) reported that organizational culture partially mediates the relationship between transformational leadership and change management among virtual team employees; Udin (2023) reported that organizational learning culture is able to mediate and moderate the relationship between transformational leadership and employee performance; Sumarmi et al. (2024) showed that dynamic adaptive capabilities positively mediate authentic leadership with team performance.

Moderation of Workplace Spirituality on the Impact of Innovation Culture on Adaptive Performance

The test results show that workplace spirituality strengthens the positive impact of innovation culture on adaptive performance. This finding is an improvement novelty, because there have been no similar research results reported. These results support resource-based theory where unique and valuable resources, such as workplace spirituality, can provide a competitive advantage for organizations, because workplace spirituality can strengthen the organization's ability to innovate and adapt. Workplace spirituality is an intangible resource that can strengthen the positive impact of innovation culture on adaptive performance.

The relationship between the three variables also strengthens the view of the formation of dynamic capabilities at the micro level. Organizations with strong dynamic capabilities can be more effective in implementing innovations resulting from a spiritual work environment and transforming them into real actions that improve adaptive performance. This finding also supports Staines (1980) in the context of spillover that when values and behaviours developed in a spiritual workplace can have consequences for the personal life of each individual at work, for example increasing the individual's ability to adapt in various situations.

Conclusion

Adaptive performance is the key to school success in facing future challenges. By focusing on developing adaptive skills, schools can create a relevant, dynamic learning environment that is able to improve the quality of learning services according to stakeholder demands. The findings regarding the significant influence of flexible leadership on innovation culture in schools provide a better understanding of how school administrators create a work environment that encourages innovation. The application of flexible leadership principles allows schools to increase their competitiveness and relevance in the long term. Workplace spirituality has great potential as a moderation in the relationship between innovation culture and adaptive performance, so it needs to be studied to deeply understand the working mechanisms and their implications for the organization.

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Practical Implications

The finding that flexible leadership has a significant influence on innovation culture brings a number of important implications, both for organizations (including schools) Here are some points to note: 1) The importance of adaptation. Flexible leadership shows that leaders who are adaptive and able to adjust their leadership style according to dynamic situations will encourage the creation of an innovation culture. Organizations that want to continue to grow and innovate need to have leaders who are not rigid and open to change; 2) Focus on the work team or subordinates. Flexible leadership often involves empowering the work team or subordinates, delegating tasks, and creating a work environment that supports creativity. This shows that to encourage innovation, organizations must focus on the potential and needs of the organization's human resource development; 3) Innovation Values. These findings emphasize that innovation is not just a goal, but also a core value in the organization, and flexible leadership plays a role in instilling innovation values in all organizational human resources; 4) Risk taking. A strong innovation culture is often associated with the courage to take risks, and flexible leadership creates a safe environment for all members of the organization to propose new ideas and try things that have never been done before; 5) Competency development. Organizations need to support innovation culture by investing in HR competency development, especially in critical thinking, problem solving, and creativity.

The finding that innovation culture has a significant influence on adaptive performance has several important implications for organizations (including schools), namely: 1) Better adaptability. Organizations with a strong innovation culture tend to be better able to adapt to rapid and unexpected environmental changes. This is because innovation culture encourages members of the organization to continue learning, innovating, and seeking new solutions to emerging challenges; 2) Improved performance. High adaptive performance contributes to improved overall organizational performance (including schools). Adaptive human resources can be more effective in completing new tasks, working in diverse teams, and making valuable contributions to the organization; 3) Competitive advantage. Adaptive organizations (including schools) have better competitive advantages, can respond more quickly to new market opportunities, develop innovative products and services, and outperform competitors; 4) Retention of Talent. A strong innovation culture can attract and retain the best talent. Innovation-oriented human resources tend to be more attracted to organizations that provide opportunities for learning and development; 5) Organizational Resilience. Organizations (including schools) with an innovation culture are more resilient to shocks and crises, because they have the ability to bounce back more quickly and find new opportunities in difficult situations.

The practical implications of the findings that workplace spirituality can moderate the relationship between innovation culture and adaptive performance are: 1) Increasing commitment. Individuals in an organization who feel connected to organizational values will be more committed to organizational goals, including the goal of innovation; 2) Increasing creativity. A spiritual work environment can encourage individuals in an organization to think more creatively and seek innovative solutions; 3) Increasing resilience. Individuals in an organization who have strong spirituality tend to be more resilient to stress and change, so that individuals in the organization are better able to face challenges in a dynamic environment.

Limitations and Future Research Directions

There are limitations in this study, namely: 1) The data collection process, from 185 schools contacted to become sample targets, as many as 52 schools (29 high schools and 23 vocational schools), or 28.11 percent, responded to the request for permission to collect data by participating as respondents; 2) Although anticipation has been carried out to control or minimize common method bias, namely preventive improvements and statistical improvements, there are limitations in the variable measurement method, such as: a) The measurement of flexible leadership practices is assessed by the school leaders themselves; b) The measurement of adaptive performance in this study uses individual leader level measurements; 3) Limited literature on measuring flexible leadership and innovation culture.

Here are suggestions for further research development: 1) Increasing the generalization of research results can be done by increasing the scope of the sample by expanding the population in the district area, East

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Java Province with the use of the population of the state and private high schools and vocational schools that have B and C accreditation can be considered for further research development, to provide opportunities to obtain a larger and more diverse number of samples so that comparative analysis can be carried out to obtain more comprehensive research results; 2) Future research is also worth doing, namely research for flexible leadership and innovation culture measured from the perspective of subordinate assessment. If possible, future research can measure adaptive performance at the group level (Baard et al., 2014; Burke et al., 2006) and organizational level (Park & Park, 2019), and consider objective measurements to measure school performance, for example using a balanced scorecard with the National Education Standards approach (Bustomi et al., 2021); 3) Increasing literature reviews by using systematic reviews and meta-analyses to enrich conceptual and empirical studies on measuring flexible leadership and innovation culture.

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