






Adapting learning agility tools to enhance organisational agility among female workers in South Sulawesi



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Orientation: This study explores the adaptation of a learning agility measurement tool tailored for female employees in South Sulawesi to enhance organisational agility within government agencies.

Research purpose: The research aims to test the validity and reliability of four learning agility dimensions—people agility, results agility, mental agility, and change agility—among female civil servants, to support organisational agility improvement.

Motivation for the study: In an increasingly dynamic and complex environment, public organisations require employees who can learn rapidly and adapt effectively. Enhancing learning agility is seen as a strategic response to bolster organisational agility and performance, especially among female employees who form a substantial part of the civil service.

Research approach/design and method: A quantitative ex-post facto design was used with a sample of 398 female civil servants from 23 districts in South Sulawesi. Data were collected via online questionnaires and analysed using reliability tests and model fit assessments.

Main findings: All four dimensions of learning agility demonstrated significant intercorrelation. High internal consistency was shown by Cronbach's alpha values—people agility (0.750) and change agility (0.75). The model fit test showed that the estimated model was superior to the null model.

Practical/managerial implications: Developing training programs to strengthen cognitive flexibility and adaptability among female employees can drive better organisational responses to change.

Contribution/value-add: This study offers practical insights into measuring and enhancing learning agility among female civil servants, contributing to improved organisational agility and effectiveness in the public sector.

Keywords: learning agility; organisational agility; civil servants; South Sulawesi; adaptability; change readiness; leadership development; HR development.

Introduction

The limitations of the human mind in perceiving significant environmental changes make today's business environment increasingly complex and dynamic (Subri, 2003). This complexity demands that organisations facilitate employee engagement through the alignment of individual efforts and organisational goals (Porter, 1981). Furthermore, as environmental volatility escalates, the ability to adapt to changes and develop dynamic capabilities becomes vital for survival and success (Raisch et al., 2009).

Learning agility was initially conceived as a multidimensional construct comprising people agility, results agility, change agility and mental agility. As the construct has evolved, the dimension structure of the measure has evolved as well. This study addresses a gap in our current understanding of how to conceptualise and measure learning agility (Smith & Watkins, 2024).

The need for learning agility has emerged as a critical competency in addressing these challenges, particularly for female employees in government agencies. Learning agility, encompassing dimensions such as people agility, results agility, mental agility and change agility, enables

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employees to adapt to uncertainties and innovate in their roles (De Meuse et al., 2010). However, while research has explored organisational agility, the adaptation of learning agility tools specifically for female civil servants in South Sulawesi remains underdeveloped (Mollet & Kaudela-Baum, 2022).

Industrial changes from era to era create turmoil in the world of work, better known as volatility. Facing the world's conditions during this period of volatility, one way for individuals to survive is to have agile skills (Husni et al., 2023). Agility is a person's ability to move quickly and nimbly in the face of changes and new developments that suddenly appear and solve problems with new ideas (Perkin & Abraham, 2017). One of the abilities needed to achieve organisational agility in the business world is learning agility. Robbins et al. (2013) predict that only 15% of the global workforce are highly agile learners, so developing this talent is strategically vital for businesses to differentiate leadership roles. In fact, nearly 25% of the Fortune 100 and 50 of the Fortune 500 use agility as a means to identify leadership potential for internal and external candidates (Mitchinson et al., 2012). Other studies have suggested that learning agility is a better predictor of high performance than IQ and personality traits (Gogineni et al., 2010). The focus of agile organisations must shift to finding and developing individuals who are continually able to discard outdated skills, perspectives, and ideas and learn new ones (Dai & De Meuse, 2021; De Meuse et al., 2010).

While the understanding of learning agility is still new and evolving, the concept of learning agility will help practitioners better assess, select, recruit and develop high-potential employees in organisations. Through a better understanding of learning agility behaviours, individuals can unlock their leadership potential. Leaders' skills are required to learn new knowledge, skills and behaviours that will equip the organisation to respond to future challenges (Joiner, 2019).

Research method

This study aims to test the learning agility measurement tool in female *Aparatur Sipil Negara* [State Civil Apparatus] employees by involving the dimensions of people agility, results agility, mental agility and change agility. This study is a quantitative study with an ex-post facto research type. This study involved employees with a sample of 398 female ASN from 23 cities and districts in South Sulawesi. The sample criterion in this study was employees in a government agency aged 18–50 years. The sample was obtained using convenience sampling (Williams, 2017), which is a type of non-probability sampling that involves samples taken from the most easily found part of the population. Data collection was carried out using an online questionnaire via Google Forms. The number of employees who completed the online questionnaire was 398 employees, dominated by 65 respondents from Makassar, 29 respondents from Gowa and 35 respondents from Maros.

The research used a quantitative approach with an ex-post facto design, allowing the analysis of pre-existing conditions and relationships between variables.

Measurement of worker organisational agility

Worker organisational agility was assessed indirectly through the validated dimensions of learning agility. Specifically, these dimensions – people agility, results agility, mental agility and change agility – were used as proxies to capture aspects of adaptability and responsiveness to organisational changes. Survey items related to each dimension were designed based on established theoretical frameworks (De Meuse et al., 2010; Mitchinson et al., 2012).

Sampling and data collection

The sample consisted of 398 female ASN employees from 23 cities and districts in South Sulawesi, aged between 18 and 50 years. Participants were selected using convenience sampling, a non-probability technique targeting the most accessible respondents (Williams, 2017). Data collection was conducted via an online questionnaire distributed through Google Forms, ensuring accessibility and ease of response.

Demographics

The respondents included 65 participants from Makassar, 29 from Gowa and 35 from Maros, among others. Demographic data showed a diverse representation of education levels and age groups, as detailed in Table 1.

Based on data on the number of female ASN respondents in South Sulawesi, the characteristics of respondents based on their last education show that the majority have a Bachelor's degree, which is 198 people or 49.5%. Respondents with a high school education included 91 people or 22.7%, while those with a D3 education were 60 people or 15%. Meanwhile, 49 people or 12.3% of respondents had a Master's degree. In terms of age, the majority of respondents were in the 31–40 year age range, which was 198 people or 50%. As many as 95 people or 23.7% were between 21 and 30 years old, and the rest, 105 people, or 26.3%, were in the 41–50-year age range.

Data analysis

The data collection process was carried out to test the reliability and validity of the learning agility measurement tool. The reliability testing of the measuring tool was carried out using the internal consistency method by finding the Cronbach's Alpha coefficient using statistical methods on the

TABLE 1: Demographic data.

Characteristics of respondents	<i>n</i>	%
Education level		
Senior high school	91	22.7
D3	60	15.0
S1	198	49.5
S2	49	12.3
Age (years)		
18–30	95	23.7
31–40	198	50.0
41–50	105	26.3

Learning Agility Scale construct and its four dimensions (Sugiyono, 2017). The validity in this study is construct validity, which is validity that aims to test theoretical constructs with field data. This study uses confirmatory factor analysis (CFA) to test construct validity and to see the fit of the learning agility measurement model. Through CFA, it can be confirmed to what extent all the items in the test do measure and/or provide information about what is to be measured, namely, in this case, learning agility. Reliability and validity testing was carried out using the help of SMART-PLS 4.0 (Gendro, 2011).

Ethical considerations

Ethical clearance to conduct this study was obtained from the Institut Bisnis & Keuangan Nitro (037/K-7/ST/IBKN/IX/2024). All taken data of this manuscript were based on ethical procedures and have been validated with the research and community development in Institut Bisnis & Keuangan Nitro. The study adhered to ethical research standards to ensure the protection of respondents' rights and confidentiality. Prior to participation, respondents were informed about the study objectives and their right to withdraw at any time. Consent was obtained electronically via the survey platform (Google Forms). The data collected were anonymised to ensure confidentiality, and all responses were stored securely.

Results

This study aims to test the learning agility measurement tool in ASN by involving the dimensions of people agility, results agility, mental agility and change agility. Based on the criteria for determining the closeness of the correlation, the closer the coefficient number is to 1, the stronger the relationship. The calculation of the Alpha Cronbach reliability coefficient was carried out using four dimensions. The criteria used to determine the level of reliability of the measuring instrument are the Kaplan criteria (Kaplan & Saccuzzo, 2005). If the value is 0.70, it means that the instrument is reliable, and if the value is < 0.70, it means that the instrument is unreliable or less reliable. The results obtained are presented in Table 2.

Table 2 shows the results of the reliability test on the Learning Agility Scale and dimensions using the Cronbach's Alpha coefficient to measure the internal consistency of the instrument. Overall, 12 items measure learning agility. Each dimension, namely people agility, results agility, mental agility and change agility is tested separately, with each consisting of 3 items. The results of the reliability test show that people agility has a Cronbach's

TABLE 2: Reliability test results on the learning agility scale and dimensions.

Variable	<i>n</i>	Cronbach's Alpha
Learning agility	12	0.72
People agility	3	0.75
Results agility	3	0.73
Mental agility	3	0.65
Change agility	3	0.75

Alpha value of 0.750, which indicates good internal consistency. Results agility also shows adequate reliability with a Cronbach's Alpha value of 0.727. Mental agility has a value of 0.652, which, although lower than the previous two dimensions, still shows an acceptable level of reliability. Meanwhile, change agility has a Cronbach's Alpha value of 0.75, which also shows good reliability. Overall, these results indicate that the instrument has a relatively strong internal consistency for each dimension in measuring learning agility.

The overall Learning Agility Scale, comprising 12 items, achieved a Cronbach's Alpha of 0.720, indicating acceptable internal consistency. Among the four dimensions, people agility (0.750), results agility (0.730) and change agility (0.750) all surpassed the generally accepted threshold of 0.70, reflecting strong reliability. However, mental agility, with a Cronbach's Alpha of 0.652, fell slightly below the threshold, suggesting marginal reliability. While this indicates that the scale is generally robust, the lower value for mental agility highlights the need for potential refinement of the items used to measure this dimension. Overall, the results validate the Learning Agility Scale as a reliable tool for assessing adaptability in dynamic environments.

Table 3 presents the results of parameter estimation, standard error, *t* value and *p* value for the relationship between learning agility dimensions, namely, people agility, results agility, mental agility and change agility. Each variable is analysed to see how significant its contribution or correlation is to other dimensions in the structural model being tested. Parameter estimates describe the strength of the relationship between variables, while the standard error value shows how much uncertainty there is in the estimate. The *t* value is used to evaluate the statistical significance of each parameter, where the *p* value confirms whether the observed relationship is significant at a certain level (usually 0.05). All relationships in this Table 3 show a *p* value of 0.000, which means that the relationship between variables is very significant.

The *p* values confirm whether these observed relationships are statistically significant, with a common threshold being 0.05. In this study, all relationships in Table 3 exhibit *p* values of 0.000, which is well below the standard threshold, indicating that the relationships between the dimensions of learning agility are highly significant. This underscores the strong

TABLE 3: Results of parameter estimation and significance of relationships between learning agility dimensions.

Variables	Parameter estimates	SE	<i>t</i>	<i>p</i>
Change agility	0.15	0.02	8.29	0.000
Mental agility	0.09	0.02	5.26	0.000
People agility	0.11	0.01	7.67	0.000
Results agility	0.10	0.01	7.71	0.000
Mental agility <-> Change agility	0.11	0.01	8.01	0.000
People agility <-> Change agility	0.11	0.01	9.27	0.000
People agility <-> Mental agility	0.08	0.01	7.45	0.000
Results agility <-> Change agility	0.11	0.01	9.15	0.000
Results agility <-> Mental agility	0.08	0.01	7.24	0.000
Results agility <-> People agility	0.10	0.01	9.34	0.000

SE, standard errors.

interconnectivity among these dimensions, validating their importance in forming a cohesive construct of learning agility.

Based on Figure 1, the correlation between latent variables measured for learning agility shows a very close relationship between the dimensions of people agility, results agility, mental agility and change agility. The highest correlation is seen between people agility and results agility, with a correlation value of 0.942. This shows that individuals who can interact with others effectively and understand different perspectives also tend to provide the best results, even in challenging situations.

Furthermore, the correlation between results agility and mental agility is 0.798, which shows a strong relationship. This means that a person's ability to achieve desired results in complex situations is also closely related to their ability to think flexibly and overcome ambiguity.

People's agility also has a reasonably strong correlation with mental agility, with a value of 0.791. This shows that the ability to interact with others and understand different perspectives is closely related to cognitive flexibility in dealing with complex problems.

The correlation between mental agility and change agility was recorded at 0.859, indicating that someone who is able to think flexibly and comfortably amid complexity also has an excellent ability to adapt to change. This is supported by the strong correlation between change agility and people agility, which is 0.936, indicating that the ability to interact with others and understand different perspectives is closely related to the willingness and ability to adapt to change. Overall, the correlation between these dimensions shows that all aspects of agility – both in terms of interaction with others, achievement of results, flexibility of thinking and ability to adapt to change – are interrelated in forming strong learning agility.

The results of the model fit test for the estimated model measured against the null model (a model with no

relationship between variables). Several model fit test indicators, such as Chi-square, degrees of freedom (*df*), *p* value, root mean square error of approximation (RMSEA), goodness of fit index (GFI), adjusted goodness of fit index (AGFI), standardised root mean square residual (SRMR) and several others, are used to assess how well the proposed structural model fits the observed data as presented in Table 4.

This directly relates to worker organisational agility by demonstrating that individuals who excel in these dimensions are better equipped to navigate dynamic organisational environments, respond to challenges and enhance overall performance.

Table 4 provides the model fit indices for the estimated and null models, highlighting the comparative fit of the structural model used to evaluate learning agility. The Chi-square value for the estimated model (319.897) is significantly lower than that of the null model (2058.946), indicating that the estimated model fits the data much better. Similarly, the Chi-square/*df* ratio for the estimated model is 6.665, which, although higher than the ideal threshold (≤ 5), is still considerably better than the null model's ratio of 31.196.

The RMSEA for the estimated model is 0.119, which exceeds the commonly acceptable threshold of 0.08, suggesting room for improvement in the model's fit. However, the RMSEA confidence intervals (90% CI) range from 0.107 to 0.132, further validating the precision of this measure despite the slightly elevated value.

Additional indices, such as the GFI at 0.893 and the comparative fit index (CFI) at 0.864, are close to the acceptable threshold of 0.90, indicating a moderately good fit. Other measures, including the AGFI at 0.826 and the SRMR at 0.062, also support the model's adequacy. The Tucker–Lewis Index (TLI) at 0.812 suggests potential for refinement in the model's structure.

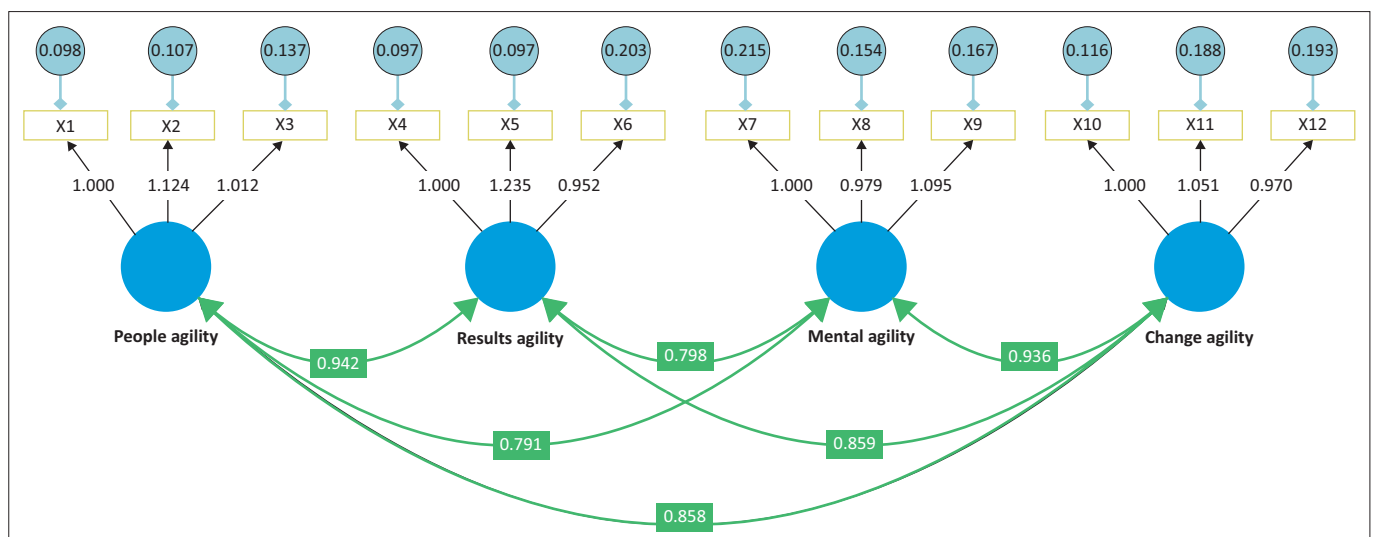


FIGURE 1: Correlation between variables.

Overall, while certain fit indices such as RMSEA indicate room for improvement, the estimated model demonstrates a significantly better fit compared to the null model, supporting the structural relationships hypothesised among the dimensions of learning agility.

From Table 4, the lower Chi-square value in the estimation model (319.897) compared to the null model (2058.946) indicates that the estimated model fits the data significantly better. Additionally, the Chi-square/*df* value of 6.665, although above the ideal threshold of 5, suggests that the model is reasonably efficient in explaining data variation.

The RMSEA (0.119) and SRMR (0.062) provide further insight into the model's fit. The RMSEA measures the discrepancy between the model and the observed data, with values below 0.08 indicating good fit. In this case, the RMSEA is slightly higher than the acceptable limit, reflecting some misfit in the model. However, the SRMR value of 0.062, which is well below the threshold of 0.08, indicates that the standardised residuals are small, supporting the model's adequacy in capturing the data.

TABLE 4: Model fit research.

Parameters	Estimated model	Null model
Chi-square	319.90	2058.95
Number of model parameters	30.00	12.00
Number of observations	398.00	n/a
Degrees of freedom	48.00	66.00
<i>p</i>	0.00	0.00
Chi-square/ <i>df</i>	6.66	31.20
RMSEA	0.12	0.27
RMSEA Low 90% CI	0.11	0.26
RMSEA High 90% CI	0.13	0.29
GFI	0.89	n/a
AGFI	0.83	n/a
PGFI	0.55	n/a
SRMR	0.06	n/a
NFI	0.84	n/a
TLI	0.81	n/a
CFI	0.86	n/a
AIC	379.90	n/a
BIC	499.49	n/a

GFI, goodness of fit index; AGFI, adjusted goodness of fit index; PGFI, parsimonious goodness-of-fit index; SRMR, standardised root mean square residual; NFI, Normed Fit Index; TLI, Tucker–Lewis index; CFI, comparative fit index; AIC, Akaike Information Criterion; BIC, Bayesian Information Criterion; RMSEA, root mean square error of approximation; *df*, degrees of freedom.

TABLE 5: Dimensions and indicators.

Dimensions of learning agility	Indicator	Statement number
People agility refers to an individual's ability to know themselves well, learn from experience, treat others constructively and remain resilient in the face of stress and diversity. People who have high people agility understand the value of different perspectives and are able to form diverse teams (Trost, 2020).	• Ability to interact and adapt to different perspectives.	1
	• Desire to learn from input from others.	2
	• Ability to form and work in diverse teams.	3
Results agility describes an individual's ability to achieve results under difficult conditions, inspire others and build trust. Individuals with high results agility demonstrate resilience and often deliver the best results in new and challenging situations (Mitchinson et al., 2012).	• Ability to complete projects despite obstacles.	4
	• Ability to deliver results in changing situations.	5
	• Resilience in the face of difficult situations.	6
Mental agility refers to an individual's ability to think about problems from new perspectives, be comfortable with complexity and ambiguity, and be able to explain their thinking to others. Individuals with mental agility tend to be thorough in examining problems (Ahammad et al., 2020).	• Ability to explore problems from new perspectives.	7
	• Comfort in dealing with complex situations.	8
	• Ability to explain thoughts clearly to others.	9
Change agility refers to an individual's ability to experiment and adapt to rapid changes effectively. People with change agility enjoy experimenting, engaging in skill-building activities, and can cope with the discomfort of change (DeRue et al., 2012).	• Ability to adapt and be comfortable with change.	10
	• Passion for experimenting with new ideas.	11
	• Involvement in ongoing skills development.	12

Source: Adapted from DeRue et al. (2012), Mitchinson et al. (2012), and Toon (2007)

Furthermore, goodness-of-fit indices such as CFI (0.864) and GFI (0.893) approach the threshold of 0.90, which is generally considered acceptable for a model fit. These indices suggest that the estimated model performs reasonably well in explaining the relationships between variables but leaves room for improvement. Meanwhile, the TLI (0.812) is slightly lower than the ideal value of 0.90, highlighting areas where the model's complexity may need refinement.

The combination of acceptable SRMR, marginal RMSEA and close-to-acceptable CFI and GFI values suggests that the model provides a moderately good fit to the observed data. Additionally, low values for the AIC (379.897) and BIC (499.491) indicate that the model is relatively efficient and parsimonious compared to alternative models.

Based on these findings, while some fit indices (e.g., RMSEA) require further attention, the overall results demonstrate that the model is suitable for explaining the dimensions of Learning Agility among female ASN in South Sulawesi. Future improvements to the model could focus on enhancing the relationships between variables to achieve a better RMSEA and higher fit indices like CFI and TLI.

The Chi-square/*df* value is also lower in the estimation model (6.665), indicating that this model is more efficient in explaining data variation. In addition, the RMSEA (0.119) and SRMR (0.062) values also indicate how well the model can represent the observed data.

Overall, various fit indices such as GFI (0.893), CFI (0.864) and TLI (0.812) are in the range close to or in accordance with the acceptable criteria to indicate good model fit, although there are still some indicators such as RMSEA that need attention because the value is slightly higher than the ideal limit (≤ 0.08).

Based on the analysis results obtained from various parameters and correlations between dimensions of learning agility among female ASN in South Sulawesi Province, we can see a deep understanding of the ability to adapt and dynamic learning in the workplace. The dimensions of people agility, results agility, mental agility and change agility show a strong relationship with each other, indicating

that female ASN in this region are able to face various challenges and changes in a complex work environment.

Table 5 presents the dimensions of learning agility along with their corresponding behavioral indicators and associated statement numbers. The table categorizes learning agility into four key dimensions: people agility, results agility, mental agility, and change agility.

Each dimension is briefly defined and followed by a list of indicators that describe observable behaviors representing that dimension. For instance, people agility emphasizes openness to diverse perspectives and the ability to collaborate in teams, while results agility focuses on resilience and performance under pressure. Mental agility involves handling complex problems and thinking critically, whereas change agility reflects adaptability and willingness to experiment with new approaches.

Discussion

From the parameter estimation table, it can be seen that all dimensions of learning agility show significant values with p -values of all 0.000, which means that the relationship between variables is very significant. This indicates that female ASN in South Sulawesi are not only able to adapt to diverse environments (people agility) but also able to achieve optimal results in difficult situations (results agility) and adapt to change and complexity (Mental et al.). The strong correlation between change agility and people agility (0.110) and between mental agility and change agility (0.112) indicates that female ASNs who are able to experiment with new ideas also tend to have good interaction skills with coworkers and are able to deal with change more flexibly. Based on the model fit test, the Chi-square value of 319897 for the estimated model is much lower than the null model of 2058946, indicating that the model used to describe learning agility is in accordance with the existing data. Although some indicators, such as RMSEA of 0.119, indicate that this model can still be improved, other values, such as GFI (0.893) and CFI (0.864) are close to the ideal fit threshold. This means that, in general, this model can be said to be quite good at explaining learning agility among female ASN in South Sulawesi.

The parameter estimation results demonstrate that all dimensions of learning agility are significantly interrelated, indicating strong relationships between the variables. This suggests that female ASN in South Sulawesi are not only capable of adapting to diverse environments (people agility) but also proficient in achieving optimal results under challenging conditions (results agility) and navigating complex and changing situations (mental and change agility). The strong connection between change agility and people agility highlights the importance of effective interpersonal skills in adapting to change, while the link between mental agility and change agility emphasises the role of cognitive flexibility in managing transitions. These findings suggest that female ASN who are open to experimentation and new ideas are better equipped to work collaboratively and respond effectively to evolving circumstances. The model fit evaluation further

supports the validity of the Learning Agility framework, as the tested model aligns well with the observed data. While some fit indicators suggest opportunities for refinement, the overall results confirm that the model is robust enough to explain the adaptability and dynamic learning capacity of female ASN in South Sulawesi. This underscores the importance of fostering learning agility through targeted development initiatives, which can further enhance their ability to contribute to organisational agility in a complex work environment.

Implications for the development of female ASN

These results have important implications for the development of human resources among female ASN in South Sulawesi. Given the strong correlation between the various dimensions of learning agility, training and development programmes for female ASNs should focus on increasing flexibility in thinking (mental agility) and adaptation to change (change agility). This is important because the ASN work environment is often full of dynamics and complexity that require speed in adapting and the ability to work with various parties. Improvements in these dimensions can help improve individual performance and, in turn, overall organisational productivity.

Overall, the results of this study indicate that learning agility among female ASNs in South Sulawesi has a strong foundation. However, there is still room for improvement, especially in increasing flexibility and adaptability when facing increasingly dynamic changes in the work environment.

Conclusion

Based on the results of the study on learning agility among female ASN in South Sulawesi Province, it can be concluded that all dimensions of learning agility – people agility, results agility, mental agility and change agility – are significantly interrelated. The correlation between dimensions shows that female ASN in South Sulawesi have good abilities in interacting with various parties, achieving optimal results in difficult conditions, thinking flexibly and adapting to changes in a dynamic work environment.

The results of the model fit test also show that this model is quite good at describing learning agility in female ASN, with several fit indicators such as GFI (0.893) and CFI (0.864) approaching the ideal limit. However, several indicators such as RMSEA (0.119) indicate that there is still room for improvement in the development of this model. Overall, the results of this study indicate that female ASN in South Sulawesi have the ability to face challenges and changes in the work environment and can continue to improve their performance and productivity.

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Competing interests

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enclosed publication. The authors have disclosed those interests fully and have implemented an approved plan for managing any potential conflicts arising from their involvement. The terms of these funding arrangements have been reviewed and approved by the affiliated university in accordance with its policy on objectivity in research.

Authors' contributions

M.M., I.T.A.R., N.R., B.B. and A.K. contributed equally to the conceptualisation, writing, and editing of the manuscript and share first authorship. All authors contributed to the article, discussed the results, and approved the final version for submission and publication.

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Data availability

The data that support the findings of this study are available from the corresponding author, M.M., upon reasonable request.

Disclaimer

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