



Validity and Reliability of the Agile Leadership Questionnaire Adaption: Indonesian Version

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Abstract: In the competitive advantage of individuals, some abilities need to be owned and have an essential role, such as the ability to lead. One way to develop this ability is through the application of Agile Leadership. Provide evidence of the reliability of the Agile Leadership Questionnaire adaptation with internal consistency between items using Cronbach-Alpha. The validity evidence of the Agile Leadership Questionnaire adaptation consists of content-based validity evidence using the Content Validity Index (CVI), and construct-based validity evidence using Confirmatory Factor Analysis (CFA). CFA evidence indicated a model that did not fit, as did after modification. Exploratory Factor Analysis (EFA) was conducted, and then reliability and validity evidence were re-conducted using the results of EFA. EFA is used to identify the latent structure underlying a set of variables. Reliability evidence uses SPSS 25 software, Confirmatory Factor Analysis (CFA) validity evidence uses JASP 0.15 software. The adaptation research for the Indonesian version of the Agile Leadership Questionnaire with 4 dimensions containing 15 items provides good reliability and construct validity results.

Keywords: Agile Leadership; Agile Leadership Questionnaire; Confirmatory Factor Analysis; Exploratory Factor Analysis

1. Introduction

Adapting new habits shows that the world is in the era of VUCA (volatility, uncertainty, complexity, and ambiguity). VUCA describes uncertainty in the business, economic, and organizational sectors. For the purposes to successfully traverse the unique challenges that get posed by the VUCA environment, leaders must embrace flexible and adaptable strategies. According to research, to succeed in these situations, leaders need to exhibit emotional intelligence, resilience, and systems thinking (Abukalusa & Oosthuizen, 2023; Kostalova et al., 2024). For example, Kostalova stresses that leaders must motivate and lead groups through ambiguity, emphasizing the value of flexibility and well-informed choices (Kostalova et al., 2024). Organizational performance is significantly impacted by leaders, making them a vital resource for the company (Porkodi, 2022). In short, enterprises and executives must become far more 'agile' to compete in a world like this. Agile is based on the principles of teamwork, autonomy, and alignment. Software developers developed the Agile Manifesto in 2001 as the basis for this methodology. The Manifesto lays out four guiding principles: focusing on people and interactions, developing functional software, collaborating with customers, and adapting to change (Gren & Ralph, 2022).

When leaders continue to use old methods to deal with the times, they will be severely left behind. In this VUCA world, they must be able to survive and innovate. Agile leadership focuses on project management and developing an organizational

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culture responsive and adaptive to change (Abbasi & Ruf, 2020; Nurhaeni et al., 2022). The ability of organisations to boost team effectiveness, employee performance, and innovation efficiency is improved when they use agile leadership strategies (Ahmed & Elali, 2021; Akkaya & Bagińska, 2022; Chen et al., 2022). According to Attar et al. (2020), agile leadership entails responding to both internal and external dynamics through the implementation of tactics that are both flexible and adaptable. Thanks to agile leadership, organisations are able to keep up with the rapid pace of technical development and swiftly adjust to the needs of complicated circumstances with a high degree of uncertainty. The driving factors for the birth of Agile leadership are the demands of the situation, relationships with workers, changes, and advances in technology, new opportunities, and external challenges (Permata & Nurhayati, 2024).

According to etymology, the word "leadership" is derived from the root word "leader," which in Indonesian denotes a well-known person who makes an effort to influence others. This leadership exemplifies a process where a leader guides, directs, and molds others to accomplish certain objectives (Pratama & Almansur, 2024). In 2007, Joiner and Joseph came up with the idea of agile leadership. This idea integrates certain features of the "Agile" software development approach with some contemporary management concepts, such as an emphasis on teamwork, innovation, and individual accountability (Rusdiana, 2023). Agile leadership promotes the development of teams comprised of individuals with diverse talents and specialisations, which in turn encourages teams to collaborate in order to achieve goals. In addition to delegating authority and responsibility to team members, leaders that adopt this style of leadership are often open to feedback and ideas from their employees (Theobald et al., 2020). One way to look at leadership is as an agile methodology, which emphasises being able to quickly and efficiently adjust to complicated changes in the corporate world. According to Wulf and Gersch (2020), it highlights how crucial it is for organisations to be adaptable, work together, and constantly learn. According to Joiner and Josephs (2006), an agile leader is one who can successfully navigate an environment that is constantly changing and unexpected while still making good judgements. According to Bucur, I., & Bucur, N. (2020), a leader's capacity to enable and sustain agile change inside the organisation is known as agile leadership. In order to handle complicated and fast-paced change, it stresses the significance of being adaptable, flexible, and empowering one's team. The capacity to adapt quickly to both internal and external changes is a key component of agile leadership, which also necessitates the capacity to assess situations and make necessary improvements to procedures and working circumstances as they occur, and utilize changes as opportunities for organizational effectiveness. The changes are interpreted as an effort to find solutions to various managerial problems that arise as well as a form of response to the demands of a complex and dynamic external environment all the time (Junita & Agilitas, 2021).

According to Akkaya (2020), a company's dynamic capabilities can be improved, either directly or indirectly, by managers who exhibit agile leadership by creating a conducive organizational environment that inspires employees to think creatively, act as role models, and embrace innovation. Based on data collected from 600 managers by

Joiner and Josephs (2006), it is concluded that a leader's mastery of agile leadership can be categorized into five levels, namely: (1) expert, a leader who is tactically oriented and able to solve problems analytically and can add development to current strategies. Because of their status and level of experience within the company, leaders are revered and followed by their subordinates. Direct, one-on-one communication is preferred by leaders who micromanage their subordinates' tasks; (2) achiever, a leader who has strategic thinking and is results-oriented and motivates others to work toward organizational goals by giving them difficult yet creative tasks to complete. The leader is still the central figure who dominates and moves the work team as a whole; (3) catalyst, a leader oriented towards facilitation and vision. Able to create an inclusive culture that encourages and empowers people to carry out the company's mission. By working together on problems, leaders can increase the efficacy of decisions and promote candid dialogue. In uncertain business situations, sustainable success can be achieved at the first level of agile leadership; (4) co-creator leaders develop collaborations that aim to achieve work team or organizational goals and realize the individual goals of all members involved. Be emotionally stable, able to hold frank conversations, and able to come up with original solutions to unforeseen issues and have the commitment to provide services for the benefit of the wider community; (5) synergist, the leader is holistically oriented, not only focusing on leading others to achieve team goals but also transferring leadership experience to the team. Able to create synergistic collaboration, a collaboration that creates a multiplier effect. Leader-centered awareness to be successful in difficult circumstances.

Agile leaders possess four key competencies, which were discovered through a study done by Joiner and Josephs (2006) on hundreds of managers, namely: (1) context-setting agility, having the ability to know in advance the direction of changes that are and will occur both immediately and later on and being able to formulate and decide quickly on what actions should be taken in line with the changes that occur; (2) stake-holder agility, dexterous in planning, recovering, developing and improving the quality of collaboration or alliances with related parties to produce quality strategies and increase the effectiveness of initiatives to act; (3) creativity agility, having many new ideas that are effective for handling risks and dexterous in elaborating and involving new thoughts, being able to identify and create new opportunities and turn complex problems into desired results, the problem at hand must be viewed in the context of the larger picture and precisely defined by considering the underlying assumptions, new alternatives and other people's points of view; (4) self-leadership agility, having high enthusiasm and earnestness in recognizing the strengths and potentials of oneself as well as the strengths and potentials of all members of the managed team is capable of quickening their growth on both a personal and professional level, actively looking for inspiration and choosing the kind of leader they should become. Utilizing their initiative, these leaders fulfill their goals for leadership, adapt as needed, and gain knowledge from their mistakes.

The capacity to think on one's feet and implement novel ideas is essential for an organization's success in the long run, and here is where agile leadership comes in (Akkaya, Panait, et al., 2022). Leadership agility involves the capacity to respond to

immediate challenges and the foresight to anticipate future trends and prepare the organization accordingly (B. Joiner, 2019). In three crucial leadership contexts leading teams, leading organizational change, and communicating agile leadership applies self-leadership, creative, stakeholder, and context-setting skills. According to Joiner (2019), agile leadership necessitates cultivating cognitive and affective abilities that progress through a predictable sequence of phases. The Agile Leadership Questionnaire (ALQ) is yet to be available in Indonesia, so it is necessary to adapt the measuring instrument. This research aims to make adaptations to the Indonesian language. Adapting the Agile Leadership Questionnaire (ALQ) aims to measure ten leader competencies to improve interaction with the organization in the agile adoption of the company. This measuring tool can be the basis for assessing a leader's competence to implement agility at work. Adapting the Indonesian version of the Agile Leadership Questionnaire (ALQ) does not stop at the item translation process but also at the reliability and validity process of the measuring instrument.

2. Materials and Methods

The participants in this study were 225 employees. The selection of participants used purposive sampling, a sample determination based on the researcher's consideration of which samples are suitable, functional, and representative of a population (representative). Researchers disseminated information through social media and asked participants to fill in the Google Form link created by the researcher. The participants in this study consisted of: (a) 148 participants were male (66%) and 77 participants were female (34%); (b) 90 participants were aged 20 to 35 years (40%) and 135 participants were aged 36 to 74 years (60%); (c) 66 participants were supervisors (29%), 80 participants were department heads or section heads (36%), 32 participants were division heads or unit heads (14%), 34 participants were directors or CEOs or COOs (15%), 4 participants were commissioners (2%), and participants were owners (4%); (d) A total of 139 participants (62%), 47 participants (21%), 32 participants (14%), and 7 participants (3%), had worked for one to ten years, eleven to twenty years, and thirty to forty years, respectively.

The Agile Leadership Questionnaire (ALQ) developed by Agile Coaches, Akkaya, et al. (2022), was adopted by researchers in several steps according to the ITC Guidelines' suggested adaptation procedure (Gregoire, 2018). Preparation, translation, expert review, cognitive interview, data collection, and demonstrating construct validity and reliability are the stages that were completed in this study. The first stage is the preparation stage. At this stage, the researcher conducted a construct review. Followed by the second stage translation is done through two stages, namely, forward and backward translation. Two linguists translated the measuring instrument from English into Indonesian in the forward translation stage. Findings from the forward translation were then combined by the researcher. Then, proceed to the backward translation stage, which two linguists carry out to ensure the meaning of the item is still the same. After the translation stage is complete, the third stage is the review process by the Subject Matter Expert (SME).

Following the fifth stage, researchers collected data on participants with predetermined criteria. After data collection, the last stage is to obtain evidence of reliability with internal consistency between items using Cronbach-Alpha, content-based validity using the Content Validity Index (CVI), and proof of construct-based validity using Confirmatory Factor Analysis (CFA). Reliability evidence uses SPSS 25 software, while CFA validity evidence uses JASP 0.15 software. If the result of CFA validity evidence is a model that does not fit, then the author re-modifies it using Exploratory Factor Analysis (EFA). To find the latent structure beneath a set of variables, employ EFA. After obtaining the EFA results, proceed to obtain evidence of reliability using Cronbach-Alpha and validity using CFA. The author uses answer categories commonly used to measure behavior or intentions based on Azwar (2019): seldom, very rarely, sometimes, very often, and almost always.

3. Results and Discussion

The Content Validity Index was proven by counting the value of SMEs who gave a score of 4 (very relevant), 3 (moderately relevant), 2 (less relevant), and 1 (not relevant). Considering the outcomes of the SME review, the average congruency percentage (ACP) value is 100% and has met the requirements for the acceptability of the measurement instrument. In addition, the I-CVI value of 0.95 was obtained. Based on Polit & Beck (2006), a question item is considered sufficient or highly relevant if it has an I-CVI \geq 0.80. Therefore, it can be concluded that the Agile Leadership Questionnaire (ALQ) items have sufficient coefficients to support the scale's content validity. According to the reviewer's input, the Agile Leadership Questionnaire (ALQ) can be used with some adjustments to the sentence structure of the question items.

When a test is proven to measure a single construct—the construct in question—through the use of modified items and confirmatory factor analysis (CFA) evidence, the test is considered to be unidimensional (Umar & Nisa, 2020). R.B. Kline (2023) states that These are the requirements for the CFA proof fit: the standardised RMR (SRMR) must be less than or equal to 0.08, the CFI and NNFI must be more than or equal to 0.90, and the RMSEA value must be between 0.06 and 0.08. In addition, fit criteria are evident from the chi-square model's q -value, which shows a number \geq 0.05. Chi-square has several drawbacks. First, this index assumes multivariate normality and violation of this assumption leads to model rejection, even though it may be a suitable model. Secondly, as chi-square is a proof of statistical significance, it is greatly affected by sample size. If the sample is too small, it tends to be insignificant, while if it is too large, it tends to be significant. Thus, the chi-square almost certainly rejects the model if a large sample is used. Based on Table 3, the CFA proof for the unidimensional model shows an RMSEA value of 0.069 and SRMR of 0.065, which means the model is fit. However, the CFI and NNFI values are \leq 0.90, namely 0.822 and 0.809, which indicates a misfit in the model. CFA proof for the multidimensional model shows an error value. Because the model does not fit, modifications are made according to the indications on the modification indices, namely by freeing the correlation of measurement errors between items (error covariance). After making modifications according to the indications in the modification indices, the results still showed a model that did not fit,

especially at the CFI and NNFI values ≤ 0.90 , namely 0.869 and 0.855, so the researcher conducted Exploratory Factor Analysis (EFA).

Table 1. Results of Exploratory Factor Analysis (EFA)

| Asumsi | Overall MSA | q-value |
|-------------------------------|-------------|---------|
| Kaiser-Meyer-Olkin (KMO) Test | 0.911 | - |
| Bartlett's Test | - | < 0.001 |

In order to build a model to account for the variability in the data, EFA was used to investigate the connections between the variables. The study conducted by Joiner and Josephs (2006) provided the basis for the number of components that were utilised. These elements comprise four abilities essential for agile leadership: context-setting agility, stakeholder agility, creative agility, and self-leadership. According to Thompson (2004), when the Kaiser-Meyer-Olkin (KMO) value is more than 0.5 and Bartlett's Test value is less than or equal to 0.05, we may say that the data set is acceptable for factor analysis. Table 1 displays the findings of the exploratory factor analysis (EFA). The data is deemed appropriate for factor analysis, with a Bartlett's Test value below 0.001 and a Kaiser-Meyer-Olkin (KMO) value of 0.911. Producing factor loadings is a crucial part of EFA. Factor loading is the correlation coefficient between variables and factors. Factor loading with a value ≥ 0.4 indicates a strong relationship with the factor (Thompson, 2004). The EFA results show 16 items with factor loading values between 0.457 - 1.01, meaning each item strongly relates to the factor (dimension).

Table 2. Evidence of Reliability (Cronbach-Alpha) and Distinguishing Power (Corrected Item-Total Correlation) After Conducting Exploratory Factor Analysis (EFA)

| Cronbach-Alpha | Item | Corrected Item-Total Correlation |
|----------------|-------|----------------------------------|
| 0.864 | F1-1 | 0.652 |
| 0.864 | F1-2 | 0.652 |
| 0.864 | F1-3 | 0.642 |
| 0.864 | F1-4 | 0.550 |
| 0.864 | F1-5 | 0.604 |
| 0.864 | F2-6 | 0.530 |
| 0.864 | F2-7 | 0.563 |
| 0.864 | F2-8 | 0.489 |
| 0.864 | F3-9 | 0.499 |
| 0.864 | F3-10 | 0.485 |
| 0.864 | F3-11 | 0.435 |
| 0.864 | F3-12 | 0.497 |
| 0.864 | F4-13 | 0.387 |
| 0.864 | F4-14 | 0.206 |
| 0.864 | F4-15 | 0.514 |
| 0.864 | F4-16 | 0.721 |

The Cronbach-Alpha internal consistency method was utilized in this study to demonstrate construct reliability by applying the Classical Test Theory (CTT) model approach. The book "Measurement Models for Psychological Attributes" by Sijtsma, K., and van der Ark, L. A. (2020), describes using Cronbach's Alpha value as one of the reliability indicators in the context of classical test theory. Cronbach's Alpha is often used to assess the internal consistency of a measuring instrument, the extent to which the items in an instrument consistently measure the same construct. Cronbach-Alpha value of ≥ 0.70 indicates the reliability of the measuring device according to these standards. In addition, Analysis was done on the corrected item-total correlation to determine the correlation of the items with the overall score of the measuring instrument and show how capable the items are of distinguishing groups of subjects based on their performance. Azwar (2012), the criteria employed were those for assessing discriminating power. Items exhibiting a corrected item total of less than 0.30 signify adequate differentiating power (Azwar, 2012). The measurement results show the reliability value for the model before EFA, which is the 30-item Agile Leadership Questionnaire (ALQ), is 0.905, so this measuring instrument is reliable or can be trusted as a tool for collecting data. The 30-item corrected item-total correlation is computed to be between 0.201 and 0.710. This indicates that participants can be distinguished using the modified items according to Agile Leadership. Three items get a corrected item-total value ≤ 0.30 ; this indicates unsatisfactory differentiating power, so it needs to be altered or eliminated. In addition, Table 2 shows the reliability value for the model after EFA, which is 16 items of the Agile Leadership Questionnaire (ALQ), is 0.864, so this measuring instrument is reliable or trustworthy as a tool for collecting data. The range of 0.206 to 0.721 is the computed corrected item-total correlation for 16 items. This demonstrates how participants can be distinguished using the modified items according to Agile Leadership. There is 1 item get a corrected item-total value ≤ 0.30 , namely item F4-14 worth 0.206. This indicates unsatisfactory differentiating power, so it needs to be modified or eliminated.

Table 3. Results of Confirmatory Factor Analysis (CFA) Model Goodness Fit

| Model | q-value | CFI | NNFI | RMSEA | SRMR |
|---------------------------------|---------|-------|-------|-------|-------|
| Non EFA unidimensional | < 0.001 | 0.822 | 0.809 | 0.069 | 0.065 |
| Non EFA modified unidimensional | < 0.001 | 0.869 | 0.855 | 0.060 | 0.060 |
| EFA unidimensional | < 0.001 | 0.871 | 0.851 | 0.082 | 0.061 |
| EFA modified unidimensional | < 0.001 | 0.922 | 0.906 | 0.066 | 0.052 |
| Non EFA multidimensional | | | ERROR | | |
| EFA modified unidimensional | < 0.001 | 0.920 | 0.902 | 0.067 | 0.054 |

CFA proof after conducting EFA, based on Table 3, for the unidimensional model displays an SRMR value of 0.061, indicating that the model is fit. However, the CFI and

NNFI values are ≤ 0.90 , namely 0.871 and 0.851, and the RMSEA value is 0.082, which indicates a misfit in the model. Because the model does not fit, modifications are made according to the indications on the modification indices. The results of modification indices show a fit model, the CFI and NNFI values ≥ 0.90 , namely 0.922 and 0.906. The RMSEA and SRMR values also show a fit model with values of 0.066 and 0.052. The multidimensional model does not require modification as indicated in the modification indices because it has shown a fit model with a CFI value of 0.920, NNFI of 0.902, RMSEA of 0.067, and SRMR of 0.054.

Table 4. Comparison of Loading Factor of Modified EFA Model

| <i>Item</i> | EFA Unidimensional | <i>Corrected Item-Total Correlation</i> |
|-------------|--------------------|---|
| F1-1 | 0.720 | 0.727 |
| F1-2 | 0.785 | 0.792 |
| F1-3 | 0.743 | 0.764 |
| F1-4 | 0.668 | 0.679 |
| F1-5 | 0.663 | 0.663 |
| F2-6 | 0.508 | 0.641 |
| F2-7 | 0.558 | 0.768 |
| F2-8 | 0.424 | 0.500 |
| F3-9 | 0.489 | 0.541 |
| F3-10 | 0.555 | 0.640 |
| F3-11 | 0.515 | 0.544 |
| F3-12 | 0.581 | 0.623 |
| F4-13 | 0.349 | 0.431 |
| F4-14 | 0.131 | 0.251 |
| F4-15 | 0.495 | 0.569 |
| F4-16 | 0.756 | 0.878 |

Based on CFA modeling with 16 items of the Agile Leadership Questionnaire (ALQ), the results of proving significance and indicators are presented in Table 4. Generally, the greater the loading factor value, the better, with 0.30 as the lower limit (Hair et al., 2019). Based on Table 4, the lowest factor loading value is on item F4-14, which is 0.131 in the unidimensional model and 0.251 in the multidimensional model. This means that item F4-14 is included in the wrong category because the loading factor value < 0.30 . Furthermore, the remaining fifteen items are good categories with a value range of 0.349 – 0.785 in the unidimensional model and a value range of 0.431 – 0.878 in the multidimensional.

4. Conclusions

This section is not mandatory but can be added to the manuscript if the discussion is unusually long or complex.

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