

Confirmatory Factor Analysis of the Personal Growth Initiative Scale-II in Indonesian Women Leaders

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Abstract

This study aimed to examine the 16 items of the Personal Growth Initiative Scale-II (PGIS-II) psychometric traits among women holding corporate leadership positions in Indonesia. It used quantitative methods and was conducted on 181 women in various management positions. Confirmatory factor analysis (CFA) was used to analyze the PGIS-II instrument factorial validity comprising four dimensions and to determine the factor structure suitability. Furthermore, internal reliability and convergent validity were analyzed from the total and subscale scores. The results showed that the maximum likelihood estimation (MLE) matched scores with different ranges. PGIS-II's internal reliability indicated the intentional planning dimensions and behavior that require modifying the items' measurement and analysis. In terms of validity, the Intentional Behavior (IB2) indicator does not meet the standard loading factor (SLF). However, these findings suggest that the PGIS-II scale could be used to study female figures in Indonesia.

Keywords: confirmatory factor analysis, personal growth initiative, women leaders, Indonesia

Abstrak

Penelitian ini bertujuan mengkaji 16 item sifat psikometri *Personal Growth Initiative Scale-II* (PGIS-II) pada sampel wanita yang memegang posisi kepemimpinan perusahaan di Indonesia. Penelitian ini menggunakan metode kuantitatif. Subjek terdiri dari 181 perempuan pada berbagai tingkatan posisi manajemen. Confirmatory factor analysis (CFA) digunakan untuk menganalisis validitas faktorial instrumen PGIS-II yang terdiri empat dimensi serta melihat kesesuaian struktur faktor. Reliabilitas internal dan validitas konvergen dianalisis dari skor total dan skor subskala. Hasil menunjukkan skor kecocokan *maximum likelihood estimation* (MLE) dengan rentang yang berbeda. Reliabilitas internal PGIS-II menunjukkan dimensi perencanaan dan perilaku yang disengaja memerlukan modifikasi pengukuran dan analisis item. Sedangkan dari sisi validitas, indikator IB2 (Intentional Behavior) tidak memenuhi *standard loading factor* (SLF). Meski demikian, temuan ini menunjukkan bahwa skala PGIS-II dapat digunakan untuk mempelajari tokoh perempuan di Indonesia.

Kata Kunci: analisis faktor konfirmatori, personal growth initiative, pemimpin wanita, Indonesia

Introduction

Leaders' strategic role in organizational performance is why this topic is continuously studied theoretically and practically. Leadership and management are two different matters but are imperative for organizational success. A lack of managerial skills makes it difficult for leaders to manage tasks and achieve their vision. Conversely, managers without leadership ability experience concern in influencing employees to achieve organizational goals (Odom et al., 2013).

Various studies have shown that men and women have the same potential to

become effective leaders. This implies no gender difference in leadership effectiveness. Subsequently, several surveys within and outside Indonesia suggest an increase in the number of women leaders in organizations. The Grant Thornton International Business Report (IBR) stated that the percentage of women in senior manager positions increased from 24% in 2016 to 25% in 2017 (Grant Thornton, 2017).

Data from the Central Bureau of Statistics (*Badan Pusat Statistik*) shows that trust in women to serve in managerial positions in 2018 was 28.97% and increased to 30.63% in 2019 (Badan Pusat Statistik,

2019). Studies in various countries and Indonesia show increased women leaders in organizations, though male managers continue to dominate (Hejase et al., 2013; Levenson, 2010; Ng & Johnson, 2015; Webster & Flood, 2015).

The main concern in various leadership development programs is personal development. Leadership is a continuous process of personal growth. One significant component of leadership development is personal growth (Odom et al., 2012). It shows that personal growth is the central pillar of psychological well-being. This concept is one of the six psychological well-being factors suggested by Ryff (1989). The concept is the process in which individuals actively and intentionally engage in a personal change in a life domain involving cognition, behavior, attitudes, and motivation (Robitschek & Cook, 1999; Robitschek & Kashubeck, 1999).

Personal growth is a lifelong process of developing awareness of oneself, identity, and talent as human capital in achieving optimum life quality and work performance (Le Cunff, 2019). It focuses on a positive affective, cognitive, and behavioral change that leads an individual to become complete and fully functioning (Prochaska & DiClemente, 1983). Furthermore, personal growth is a context-driven phenomenon where individuals are determined to achieve selected goals. This may encompass completing studies to a certain degree, accomplishing something important, or changing certain behaviors (Jain et al., 2015).

Personal growth is an essential aspect of leadership for women leaders with different experiences from their male counterparts. Women leaders hold the task of being a manager in a company and play the role of a mother. Therefore, personal growth could become an answer to the challenges of one's work and social environment (Ahouari, 2014; Githens, 1996; Odom et al., 2012).

The personal growth framework is based on a model by which individual weaknesses

are deemed the greatest growth opportunity. Management could use this framework to encourage personal growth. In today's working conditions, where individuals are confronted with challenges and demands for change, one must be willing to continuously self-improve in terms of knowledge and skills. The organization has periodically and fragmentally mediated this condition. These interventions should be transformed into a more voluntary and sustainable approach by involving individuals to achieve their effectiveness. Various studies found that personal growth allows individuals to use their abilities to adapt and manage a situation, be open to change, and adapt to the good things in life and different situations. They are also enabled to cope with stressful situations and find solutions to problems (Hennessy & Sawchuk, 2003; Loo et al., 2014; Meyers et al., 2015; Weigold et al., 2018). Additionally, personal growth allows one not to give up easily in their learning process, increasing engagement with the company.

Studies on the personal growth initiative developed by Robitschek are divided into two versions. The first version is the unidimensional Personal growth initiative scale (PGIS-II), comprising nine items developed by Robitschek (1998). The second version is the multidimensional Personal growth initiative scale (PGIS-II) (Robitschek, 2012), consisting of four dimensions with 16 items. This study used PGIS-II (Robitschek, 2012) as a measuring tool for several reasons. First, this measuring instrument is the most widely used in personal growth initiative studies using a diverse sample, such as employees and managers from different organizations, countries, and races. Second, the multidimensional version assesses the cognitive and behavioral dimensions. Third, several studies have shown that this measuring instrument is reliable and valid.

A Chinese adaptation of the PGIS-II with a sample of Chinese students from higher education institutions found an

adequate conformity index for the four-factor version ($\chi^2 (98, n = 927) = 816.90, p < .001$; CFI = .95; SRMR = .06; RMSEA = .07 (90% CI = .07 - .08)). The retest stability index was also adequate, ranging from .70 (readiness for change) to .90 (using resources). Furthermore, the Turkish version of PGIS-II, which examined students from higher education institutions, identified four PGI factors despite differences in social values between Turkish and American cultures. The structure of the Turkish version of PGIS-II is similar to that observed in the original scale, and GFI ($\chi^2 (98, n = 279) = 220.49, p < .001$; CFI = .98; SRMR = .14; RMSEA = .06) (Yalcin & Malkoc, 2013). Several other studies have also used the PGI instrument. However, this study is the first to apply the PGI instrument model to women leaders in Indonesia. It aimed to analyze the psychometric properties of PGIS-II to determine whether this instrument could be used by Indonesian women leaders.

Methods

Design and Participant

This study used a quantitative method and measured variables using an online approach. The population comprised women leaders working in a for-profit or corporate companies holding managerial positions ranging from first-line to top managers. Based on Simmering (2011), the management levels were divided into three levels. First, the top level comprises people in the first position in the organization, such as the Chief Executive Officer (CEO), Chairperson of the Board, President, Vice President, Director, and senior manager. Second, the middle level is responsible for setting the main goals of their division. They comprise the divisional head, manager, assistant manager, and division chief. Third, the bottom level is responsible for the daily performance management of employees that produce products, such as supervisors. The samples in this study were determined using a formula consistent with the theory formulated by Hair et al. (2012).

Table 1
Characteristics of Subjects

Characteristic	Number	Percentage
Education level		
Master degree	4	2%
Bachelor degree	59	33%
High school	118	65%
Position Level		
Top manager	16	9%
Middle manager	47	26%
First-line manager	118	65%
Years of being in the position		
1-2 years	97	54%
3-5 years	62	34%
6-10 years	22	12%

According to the theory, the minimum number of samples is five times the number of indicators. This study used 16 indicators. The minimum number of respondents is 16 times 5, which is 80 respondents. According to Hair et al. (2012), a good sample size ranged from 100-200 respondents. The number of samples in this study was 181 respondents, which is sufficient to represent the population, as characterized and categorized in Table 1.

Instruments

The Personal Growth Initiative Scale developed by Robitscheck was divided into two versions. The first version is the 9-item unidimensional version published in 1998. The second is the PGIS-II 16-item version elaborates on four dimensions. This study conducted a confirmatory factor analysis using the four-factor model of a personal growth initiative. It includes readiness for change, planfulness, using resources, and intentional behavior (table 2).

The CFA involved 1,795 students and was divided into three stages. The first study involved 406 women and 157 men. The second study consisted of 353 women and 198 men. The third study consisted of 473 women and 208 men (Robitschek et al., 2012).

Table 2
Blue Print PGIS-II

Dimension	Item	Total
<i>Readiness for change</i>	2, 8, 11, 16	4
<i>Planfulness</i>	1, 3, 5, 10, 13	5
<i>Using resources</i>	6, 12, 14	3
<i>Intentional behavior</i>	4, 7, 9, 15	4
Total		16

A scale adaptation process was performed, where each item in the Personal Growth Initiative Scale from Robitschek et al. (2012) was translated into Indonesian, adjusted to the subjects' characteristics as women leaders, and adapted to the Indonesian culture. The translation process for the PGIS-II scales was conducted per the International Test Commission (ITC) Guidelines for Test. Figure 1 shows the adaptation process scheme.

Study Procedure

All participants consented to use their data at the group level. Data were collected for one month between April 18 and May 20, 2020, using online using Google Forms and direct meetings with subjects through several company Human Resource Development.

Data Analysis

The measurement model described how the indicators could measure latent variables. The primary concepts are measurement, validity, and reliability (Hair et al., 2012). The dimensions of the Personal Growth Initiative were Readiness for Change (RC), Planfulness (P), Using Resources (UR), and Intentional Behavior (IB). The total score was obtained by adding up the item ratings to obtain an overall measure of the respondent's growth rate.

Results and Discussion

CFA was used to confirm indicators that could be used to verify factors. Evaluation using CFA employed a convergence model. An acceptable range of parameter estimates was conducted by assessing the Maximum Likelihood Estimation (MLE). The MLE involved an iterative process by which the observed covariance matrix was compared with the theoretical matrix to reduce the residue. This step aimed to determine the convergence of the CFA model. Fit indices were also conducted to determine the data's goodness of fit. The indices consisted of absolute, incremental, and parsimony indices (Hooper et al., 2008).

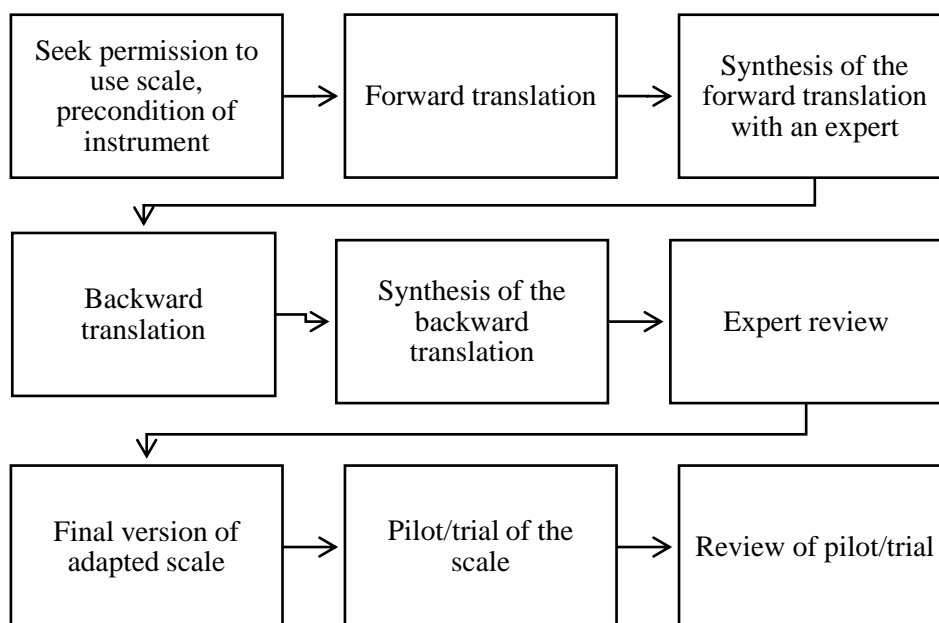


Figure 1. Scheme of the scale adaptation process

Table 3
Match Test of the CFA Model

GOF	Acceptable Match Level	Model Index	Explanation
Absolute fit			
χ^2	$\geq .05$ being the cut-off of a good fit	2.48	Good fit
RMSEA	.08 - .10 Mediocre fit, $\leq .08$ Good fit	.09	Mediocre fit
GFI	$\geq .95$ Good fit, $.8 \leq GFI \leq .95$ Marginal fit	.85	Marginal fit
AGFI	$\geq .90$ Good fit, $.8 \leq AGFI \leq .9$ Marginal fit	.80	Marginal fit
RMR	$\leq .05$ Good fit	.05	Good fit
SRMR	$\leq .05$ Good fit, $.05 < SRMR \leq .08$ Acceptable fit, $> .1$ Poor fit	.05	Good fit
Incremental fit			
NFI	$\geq .95$ Good fit	.97	Good fit
NNFI	$\geq .95$ Good fit	.97	Good fit
CFI	$\geq .95$ Good fit; $\geq .90$ Advanced fit	.98	Advanced fit
RFI	$\geq .90$ Good fit	.95	Good fit
IFI	$\geq .90$ Good fit	.98	Good fit
Parsimony fit			
PGFI	$.05 \leq PGFI \leq .90$.63	Good fit
PNFI	$.05 \leq PGFI \leq .90$.80	Good fit

Table 4
Validity Testing

Dimension	Item	Λ	Explanation
RC	1	.85	Valid
	2	.8	Valid
	3	.75	Valid
	4	.74	Valid
P	1	.71	Valid
	2	.60	Valid
	3	.69	Valid
	4	.79	Valid
	5	.69	Valid
UR	1	.75	Valid
	2	.74	Valid
	3	.68	Valid
IB	1	.81	Valid
	2	.3	Invalid
	3	.72	Valid
	4	.84	Valid

All 13 criteria for model fit in Table 3 indicate that the results could be used for study implementation. A validity test was conducted to ensure the indicator variables significantly reflected the construct or latent variables. In this case, a high loading factor indicates good validity.

Table 5
CR and AVE Values of the Latent Variables

Construct	λ	θ	λ^2	CR	Interpretation	AVE	Interpretation
RC							
RC1	.85	.27	.72	.87	Good reliability	.62	Adequate reliability
RC2	.80	.35	.64				
RC3	.75	.43	.56				
RC4	.74	.45	.55				
Total	3.14	1.5	2.47				
P							
P				.83	Good reliability	good reliability	.49 not convergent
P1	.71	.49	.50				
P2	.60	.64	.36				
P3	.69	.53	.48				
P4	.79	.38	.62				
P5	.69	.52	.48				
Total	3.48	2.56	2.44				
UC							
UC1	.75	.44	.56	.77	Good reliability	not	.53
UC2	.74	.45	.55				
UC3	.68	.53	.46				
Total	2.17	1.42	1.57				
IB							
IB1	.81	.35	.66	.78	Good reliability	.49	
IB2	.30	.91	.09				
IB3	.72	.48	.52				
IB4	.84	.30	.71				
Total	2.67	2.04	1.97				

The higher the loading factor or lambda value, the better the indicator. Hair et al. (2010) stated that the value of Standardized Loading Factor or SLF $\geq .5$ had been attained. This output shows that the RC

latent variable acquired a good convergent validity, as well as P, UC, and IB. The IB2 indicator is the least adequate and is deemed invalid (.30), while RC1 is the adequate indicator, as shown in Table 4.

Construct Reliability (CR) value of .70 or more indicates good reliability, while the reliability of .60-.70 is still acceptable, provided the validity of the indicators in the model is good (Ghozali, 2017).

The value of Construct Reliability (CR) is calculated by the following formula:

$$CR = \frac{(\sum SLF)^2}{(\sum SLF)^2 + (\sum e)}$$

Information:

CR: Consistency of a measurement

$\sum SLF$: Total standard loading factor of each item

$\sum e$: Number of errors for each item

Average Variance Extracted (AVE) Measure assesses the variants portrayed by items on the scale against measurement error.

Table 5 shows that each construct's CR values are good, implying adequate reliability. In the AVE measurement, latent variables P and IB should be modified, requiring item analysis to obtain the expected reliability.

The test of the personal growth initiative construct with second-order confirmatory factor analysis (CFA) shows an indication of a good fit, meaning the model is declared fit. The latent variable "readiness for change" obtained good convergent validity values, as well as planfulness and using resources, and intentional behavior. The Intentional Behavior 2 (IB2) indicator is the worst or less valid indicator (.30) ("I actively work to improve myself").

This qualitative observation of Intentional Behavior 2 shows that collectivist cultures value their community, family unity, and interdependence among members. These values encourage dependence on self-development, making individuals in collective cultures less focused on their growth (Beilmann & Realo, 2012).

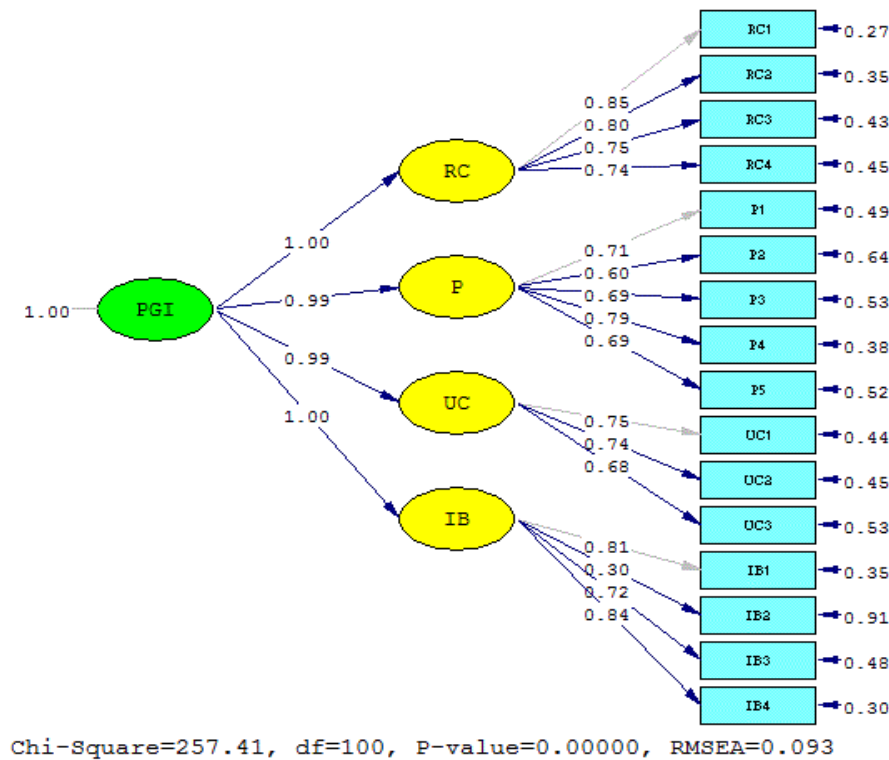


Figure 2. Second-order confirmatory factor analysis model

Readiness for change is the best indicator (“I can tell when I am ready to make specific changes in myself”). These results are almost in line with a study in Brazil. In this case, Brazilians are generally more emotionally expressive and action-oriented than other groups, such as North American and Asian populations (Fernández et al., 2002). The Brazilian population’s high expressiveness and action-oriented behavior may lead to different patterns compared to other groups focusing on resource use, such as Asians. This attracts attention because resource use is inferior to readiness for change in Asian countries, including Indonesia. The women leaders in this study are more focused on facing challenges to encourage a critical mindset and determine career progress (James & Arroba, 2005; Tomlinson, 2004; Trehan, 2007).

This PGI dimension shows a high correlation, as observed in other studies (Robitschek et al., 2012; Yakunina et al., 2013; Yang & Chang, 2014). The relationship between readiness for change, planfulness, using resources, and intentional behavior is significant. These patterns attest to the cognitive and behavioral pillars of the PGI, reinforcing the multifactorial structure of the PGI (Robitschek et al., 2012; Yakunina et al., 2013).

This is the first study to validate the Indonesian version of PGIS-II among women leaders. However, it had limitations in the limited sample size and data collection location. Future studies should aim to increase the sample size and emphasize sociodemographic differences.

Conclusion

The CFA analysis indicated that the existing constructs are valid and reliable in identifying PGI in Indonesian women leaders. However, it was necessary to analyze items and modify measurements. PGIS-II was developed to investigate an individual's self-development needs to achieve a good quality of life and performance. The PGIS-II factors include

readiness for change, planfulness, using resources, and intentional behavior. The SLF score suggested adequate validity for all items except Intentional Behavior (IB2). The CR score on each factor showed good reliability, though the latent variables P (Planfulness) and IB in the AVE score require modification and further analysis of items.

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