

## Instrument validation of perceived organizational support (POS) Indonesian version: A Rasch model analysis

### Validasi instrumen *perceived organizational support* (POS) versi bahasa Indonesia: Studi dengan penerapan model *rasch*

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Received May 05, 2022 | Accepted September 23, 2022 | Published December 30, 2022

**Abstract:** The Perceived Organizational Support scale developed by Eisenberg is still quite widespread in Indonesia. The POS scale precisely measures how employees perceive organizational support. On the other hand, analysis of items on the POS scale continues. However, this scale analysis has yet to be found using the Rasch Model with a sample of Indonesian people. One of the advantages of the Rasch model is objectivity-specific, i.e., item parameters do not depend on individual characteristics, and vice versa. So this study aims to analyze the validity of the items using the Rasch model. The sample in this study consisted of 325 people consisting of 175 men (52.31%) and 150 women (47.69%). The age range of 18 years – to 68 years. From the item validation test, this scale has good unidimensionality, a standardized reliability index so that the scale is reliable enough, and has items that fall into the fit & proper test criteria. The conclusion is that the POS scale has good potential to measure Perceived Organizational Support in Indonesia.

**Keywords:** Perceived Organizational Support; Rating Scale Model (RSM); Rasch Model

**Abstrak:** Sampai saat ini, penggunaan skala *Perceived Organizational Support* hasil pengembangan Eisenberg masih cukup populer di Indonesia. Skala POS secara spesifik mengukur bagaimana persepsi karyawan terhadap dukungan organisasi. Di sisi lain, analisis terkait item-item pada skala POS terus dilakukan. Namun, belum ditemukan analisis skala tersebut dengan menggunakan Rasch Model dengan sampel masyarakat Indonesia. Model Rasch memiliki kelebihan salah satunya adalah spesifik objektif, yakni, parameter item tidak bergantung pada karakteristik individu, dan sebaliknya. Maka penelitian ini bertujuan untuk menganalisis validitas item menggunakan model Rasch. Sampel dalam penelitian ini terdiri dari 325 people consisting of 175 men (52.31%) and 150 women (47.69%) The age range of 18 years – to 68 years. Dari uji validasi item, skala ini memiliki unidimensionalitas yang baik, indeks reliabilitas yang terstandar sehingga skala sudah cukup reliabel, dan memiliki butir yang masuk ke dalam kriteria fit & proper test. Kesimpulannya bahwa skala POS memiliki potensi yang baik dalam mengukur *Perceived Organizational Support* di Indonesia.

**Kata Kunci:** Perceived Organizational Support; Rating Scale Model (RSM); Model Rasch

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## Introduction

Modern organizations have rapid and dynamic system changes, which are difficult to predict, and sudden increases and decreases in profits (Heinze & Heinze, 2020). The turmoil made employers look in more detail at their employees who have loyalty to the company. Loyalty to the company is an important asset to maintain company stability and become a reciprocal relationship. Employers pay more attention to their employees and keep their employees working at the company (Park et al., 2020). Its implementation is created in a long-term working bond. In addition, there is a positive social exchange in the employer-employee relationship in which the needs of both parties have been resolved (Hu et al., 2014).

This condition is referred to as organizational support, namely the existence of awards for improving employee performance and meeting their social and emotional needs. Furthermore, conversely, employees have confidence in how the organization values their contributions and cares about their well-being (Eisenberger & Rhoades, 2002). Meanwhile, Perceived organizational support (POS) is considered a guarantee that assistance will be obtained from the organization to complete the work of its employees effectively and assistance in dealing with pressure (George et al., 1993). This support is essential to maintain and increase one's self-esteem and can meet one's need for appreciation (Eisenberger et al., 1986; George et al., 1993). As we noted, in studies (e.g., Altman, 1986; O'Donnell et al., 1987), nurses have a fear or desire to avoid contact with AIDS patients related to possible exposure. These reactions can lower their self-esteem and perception of coping with stress (George et al., 1993), and this is where organizational support functions.

Perceived organizational support (POS), developed by Eisenberger et al., (1986), is based on the tendency of employees to define the human characteristics of the organization. Levinson (1965) added that this support is more to the pure desire of the organization to meet the needs of its employees rather than a specific motive for unilaterally benefiting the company. Then, employees who feel good organizational support from the company will feel safer at work and more involved in their work (Kose et al., 2006). Furthermore, organizations, groups, and companies with employees or group members already have a robust dependency relationship (Hutchison & Abrams, 2003) states this as commitment.

The explanation concluded that there are three things in organizational support theory that discuss psychological processes and become the basis for Perceived organizational support (POS). First, the norm of reciprocity, namely POS, creates a sense of obligation and concern for the organization's welfare, develops it, and helps it achieve its goals. Second, fulfilling socio-emotional needs based on care, respect and approval characterizes POS and directs workers to use their role status in the organization as social identity. Third, POS will strengthen workers' belief that their improved performance cannot be separated from the rewards they will receive later. This process will

undoubtedly positively impact workers, such as the pleasure of appreciation and concern for the organization (Eisenberger & Rhoades, 2022).

POS has a broad scope in describing the relationship between workers and organizations or companies, especially in specific behaviors that benefit the company that employees should have respect for employees. So several researchers have tried to develop a POS scale to describe these relationships. For example, Gyekye & Salminen, (2009) used POS in Africa to see the effect of African work culture. Researchers believe there are differences in the work environment in western and non-western cultures. Meanwhile Lee & Peccei (2011) examined the relationship between POS and perceptions of organizational politics (POP) with a sample of 137 workers from a company in South Korea, and DeConinck, (2010) made POS one of the causes of the increase in employee confidence in the field of marketing company business.

POS was developed using a factor analysis-based method (Eisenberger et al., 1986). As is well-known, factor analysis provides POS evidence regarding factor structure and construct validity. However, some methodologies can dig deeper into a construct, especially to see the level of item difficulty (location) on the POS scale. Furthermore, the location allows direct comparison of the person's trait level. Methodologies such as latent trait theory can reveal more about the characteristics of scale items. In addition, researchers have not found POS testing, especially in Indonesia, using latent trait theory; in this case, it is focused on Rasch analysis.

Rasch analysis has advantages, namely specific objectivity, additivity, and parameter separation (Fischer, 1987), where these three properties are not shared by other models, such as classical test theory. As a result, although the mathematical equations are simple, the Rasch model presents estimation results that meet high measurement standards (Mair, 2018). It is known that the Rasch model was initially only devoted to dichotomous data. However, with its development, the Rasch model analyzes polytomy data, namely the Rating Scale Model (RSM, Andrich, 1978) and the Partial Credit Model (PCM, (Masters, 1982). Because POS is a Likert scale with polytomy data, this study uses RSM to analyze it.

The purpose of the analysis using Rasch on the POS scale is to test the Indonesian version of the POS scale (Eisenberger et al., 1986) and evaluate psychometric characteristics. POS, known for two decades of its emergence to be one of the essential instruments in understanding organizational behavior (Worley et al., 2009) in other words, POS has been widely used in understanding the commitment process in organizations, especially in the framework of exchange theory (Eisenberger et al., 1986) While the Rasch model allows generalization across samples and items, taking into account that the options between responses are not equidistant, then also allows unidimensionality testing, identifying items that work poorly and unexpected responses.

## Method

The research design is a validation of the POS measuring instrument with a sample of workers in Indonesia. The population to be studied is employees who work in the Greater Jakarta area due to facilitating the reach of the distribution of this research questionnaire and Jakarta is a city that has workers who have very heterogeneous characteristics. The sampling method in this study uses non-

probability sampling with a purposive sampling technique; namely, one person is considered as a sample as long as he meets the criteria, namely employees who work in the Greater Jakarta area.

This study uses Google Form as a media that facilitates obtaining research data. The distribution of the questionnaire was carried out online due to the COVID-19 Pandemic and to maintain Health protocols. Based on the description above, this study obtained a sample of 325 people consisting of 175 men (52.31%) and 150 women (47.69%). The age range of 18 years – to 68 years, whereas the range of 26 years – to 35 years is 41% of the total sample.

## Instrument

Perceived organizational support (POS) or Survey of Perceived Organizational Support (SPOS) was developed by Eisenberger et al., (1986), and have 1 dimension with 6 items to describe a worker's trust in his organization or company. This attitude of trust is formed through organizational support given to employees, and workers will give their best performance for the company. POS uses a 4-point Likert scale ranging from strongly disagree to agree on each item to explain the indicators firmly. Moreover, according to Putra, (2015), the adaptation process goes through the stages of translating the instrument with two people. The first has the ability in English literature, and the second has the ability in psychology and statistics. The first stage of the instrument was translated by a linguist from the Center for Language Development UIN Jakarta. Furthermore, the translation results are concluded by considering culture and others. The translation was also carried out back to the original language to see if there was a possible difference in meaning. The last one was checking with experts in industrial and organizational psychology and statistics with the profession as a lecturer and have a doctoral degree in UIN Jakarta.

**Table 1**

*Item and Indicator of POS Scale*

No	Indikator	Jumlah Item	Contoh Item
1	Adanya apresiasi yang diberikan atas hasil kerja oleh organisasi	1	Perusahaan menghargai hasil kerja saya
2	Adanya perhatian yang diberikan organisasi terhadap kesejahteraan	2	Perusahaan sangat peduli dengan kesejahteraan saya. Kesejahteraan yang saya harapkan, diperhatikan oleh perusahaan tempat saya bekerja
3	Adanya perhatian yang diberikan organisasi terhadap pandangan anggotanya	2	Perusahaan memperhatikan nilai-nilai serta tujuan yang saya yakini Perusahaan peduli dengan apa yang menjadi kepentingan saya ketika membuat keputusan dalam pekerjaan
4	Adanya pertolongan yang diberikan organisasi ketika sedang dibutuhkan	1	Perusahaan selalu ada apabila saya membutuhkan pertolongan
Jumlah		6 Item	

### Rasch Rating Scale Model (RSM)

Rasch models, such as the Rating Scale Model or the Rasch Dichotomy model, differ from other latent trait theories in the fundamental statistical characteristics, which is called the separation of the person and item parameters, giving it an edge in statistical data. This feature allows for specific objectivity in comparing persons and items to obtain comprehensive statistical results (Wright & Masters, 1982).

RSM is a development of the dichotomy model in Rasch, which can calculate polytomy data (Andrich, 1978), where the dichotomy equation in Rasch follows this equation (de Ayala, 2009):

$$P(x_j = 1|\theta, \delta_j) = \frac{e^{(\theta - \delta_j)}}{1 + e^{(\theta - \delta_j)}}$$

$P(x_j = 1|\theta, \delta_j)$  is the probability of correctly answering item  $j$  (value 1),  $\theta$  is the respondent's ability,  $\delta_j$  is the level of difficulty of item  $j$ . The difficulty of the items and the respondent's ability are expressed on a logit scale (Hayat, 2022). The ordinal data in this study were obtained from the person's response to the items that were expected to be transformed into an interval scale. RSM generally follows the equation:

$$\log(P_{nik}/P_{ni(k-1)}) = B_n + D_i + F_k$$

$P_{nik}$  is the probability of the  $n$ th person completing the observed item  $i$  in  $k$  category. Meanwhile,  $P_{ni(k-1)}$  is the  $n$ -th person's chance to choose a  $(k-1)$  category.  $B_n$  the ability level of the  $n$ -th person,  $D_i$  the difficulty level of the  $i$ -th item (the respondent's difficulty in agreeing with the statement of an item), and  $F_k$  the probability of  $k$  category being selected depends on  $k-1$  category.  $D_i$  level of item difficulty and  $B_n$  level of ability of people (in this case the level of POS) are expressed in the log odd ratio or logit scale (Linacre, 2012).

The response category threshold ( $\tau$ ) is included in the item estimation when applying the Rasch polytomy model. A threshold is a person's transition point from one category to another adjacent category on a Likert scale. The number of thresholds is  $k - 1$  (Putra & Retnawati, 2020). For example, there are four starting categories, meaning the threshold is between category 1 (strongly disagree) and category 2 (disagree).

### Data Analysis

This study analyzed data using the Rating Scale Rasch Measurement Model (RSM) with Winteps software version 3.65 to evaluate the Perceived organizational support (POS) scale. Then, the estimator for the parameters uses the Joint maximum likelihood estimation (JMLE). Furthermore, this study determined the reported psychometric properties, namely, 1) unidimensionality which refers to the principal component analysis of a standardized residual (PCAR) to ensure that the scale meets the requirements as a model (Linacre, 1998). The criteria for testing unidimensionality are by looking at the raw variance explained by measures  $> 40\%$  (Fisher, 2007) and the unexplained variance value explained by first contrast  $> 3.0$  units (Linacre, 2012). 2) *local independence* is defined as the difference in a person's response to items that are statistically independent of each other (Wright, 1996). By using the  $Q_3$  test (Yen, 1984), the assumption of local independence is fulfilled when there are no correlated residuals between items  $> 0.30$  (Saggino et al., 2020). 3) item fit regarding MNSQ,

namely the mean of the squared residuals for items, namely infit (without weighting) and outfit (with weighting) (Bond et al., 2020). In addition, MNSQ does not depend on the sample or sample dependence where the ideal score is 1.0 or the value is 0.5 – 1.5 (Andrich & Marais, 2019; Bond et al., 2020). 4) test reliability for people and items. 5) Wright map to compare the mean points of items and people. 6) Reliability. 7) Rating Scale diagnostics to see the functioning of the categories for each item.

## Result & Discussion

### Unidimensionality

A principal component analysis of Rasch residuals (PCAR shows that the POS instrument that measures the organizational support construct has a 49.9% > (40%) or 5.9 variances that POS can explain in units of eigenvalues. Furthermore, in the first contrast, the unexplained variance is at 2.5 < (3.0) units in eigenvalue units. Therefore, it can be concluded that the assumption of POS unidimensionality is met.

### Local Independence

The second assumption tested is Local Independence, where the respondent's answer from the results of his ability on an item does not depend on other items (Mair, 2018), using a statistical index  $Q_3$  not more than <0.30. From the test results, item 1, which reads "The company appreciates my work," and item 2, "The company cares about my welfare," correlates the residuals of 0.42. It can be interpreted that the reward for employees' work is closely related to the reward, namely the welfare provided by the company. As well as item 5, which reads "The company cares about what is in my interest when making decisions at work" and item 6 which reads "The company is always there when I need help" of 0.38, which means that when there is a decision making at work, the company or the organization does not leave its employees who provide solutions or help if there are obstacles in making these decisions. As a result, decision-making is closely related to helping the company.

### Item Fit

The results of statistical fit items are shown through the MNSQ, namely, seeing the fit and outfit of the items in the range of 0.5 -1.5. Of the six items indicated to measure organizational support through the POS instrument, all items are not outside the desired range as a good item.

**Table 2**

*Item Measures and Fit Statistics of POS Scale*

Item	Measure	Infit	Outfit	PT-Measure
5	-.71	1.31	1.18	.66
6	-.27	1.3	1.32	.67
1	-.05	.99	.97	.78

Item	Measure	Infit	Outfit	PT-Measure
4	.28	.81	.76	.79
3	.31	.72	.68	.83
2	.44	.8	.77	.82

In table 2, item 5, with a measure of -0.71, which reads, "The company cares about what is in my interest when making decisions at work," is the most accessible item to approve. Item 2, with a measure of 0.44, which reads "The company cares about my welfare," is an item that is difficult to approve. This exciting finding indicates that respondents find it difficult to agree when talking about the welfare provided by the company. On the other hand, respondents agree that decisions are taken by respondents in work always have the company's support, which is possible for the company's progress. In addition, the range of point size correlation (PT-Measure) for the POS instrument ranges from 0.66 to 0.84, indicating that all items have moved in one direction and are aligned with the overall measure (Bond et al., 2020). This result is consistent with the finding of unidimensional POS in this study, seeing all items have a positive PT-Measure.

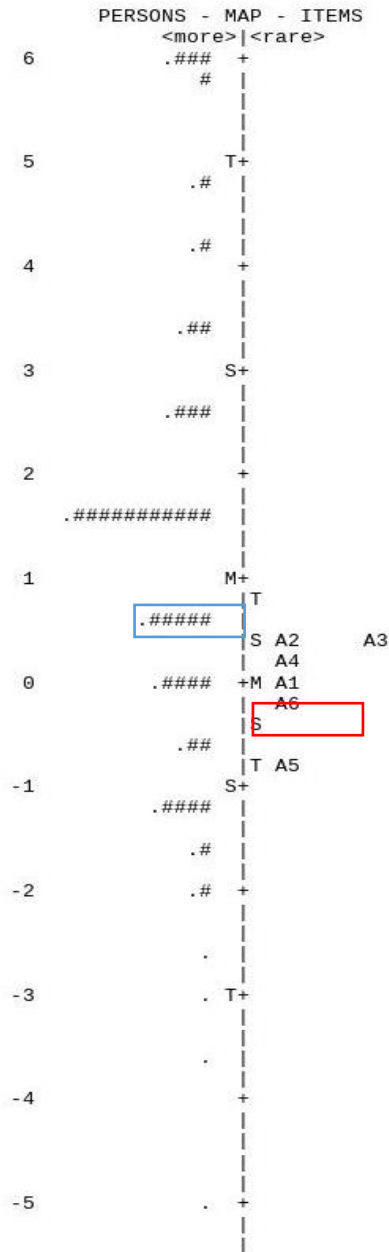
### Wright Map

In addition to calibration and item estimation, the Rasch model also provides an overview of comparing items and persons on a scale called the Wright Map. The picture shows the relationship between one's ability and the item's difficulty (Hayat, 2022).

Figure 1 shows that the average difficulty of the items always has a mean of 0 and has an arbitrary origin function on the logit scale. As shown in Figure 1, the average person's ability (in this case, the level of approval) is generally slightly above the average difficulty level of the POS item, namely, 1.02. This value implies that the item is accessible for the person to get a high score, in the sense that the person is easy give a statement agreeing on the POS items. In addition, the closeness of the mean between items and person is also recommended to determine that the item is not too difficult and not too easy (Boone, 2016). In addition to calibration and item estimation, the Rasch model also provides an overview of comparing items and persons on a scale called the Wright Map. Finally, the picture shows the relationship between one's ability and the item's difficulty (Hayat, 2022).

**Figure 1**

*Wright Map of POS Scale*



**Reliability**

The Rasch model displays different reliability from the Classical Test Theory (Cronbach's Alpha). The concept of reliability in the Rasch model estimated between people and items is called Person separation reliability (PSR), which shows how well an instrument can distinguish between people in the measured variable (Wright & Masters, 1982). On the other hand, in parallel, item separation



reliability shows a good indication of items separated by people taking the test. For example, the reliability value limit is  $> 0.80$  (Bond et al., 2020), and for POS, the PSR is 0.80, and the item separation reliability is 0.91. Not only that, but this study also reports a reliability index with Cronbach's alpha as an additional assessment, which is 0.86. The score exceeded expectations, namely  $> 0.70$  (Jum C. Nunnally, 1978), which indicates the Indonesian version of POS has excellent internal consistency.

### Rating Scale Diagnostic

One of the most critical aspects of the Rasch model is seeing the step structure's suitability with the RSM model (Smith, 2003). The suitability diagnosis of this step aims to evaluate how well a set of POS responses serves to create a measure and can be interpreted (Kim & Kyllonen, 2006) because the ordinal scale that can be modeled with a rating scale does not have the same distance between the desired responses as the assumed distance. The same between points in the item response series (Rahayu et al., 2020). This conformity can be seen in the steps from the most significant negative to the positive. For example, there is an irregularity in the step structure called a step disorder (Smith, 2003).

**Table 3**

*POS Rating Scale Diagnostics*

CATEGORY	OBSERVED	OBSVD	SAMPLE	INFINIT	OUTFIT	STRUCTURE	CATEGORY		
LABEL	SCORE	COUNT	%	AVRGE	EXPECT	MNSQ	MNSQ	CALIBRATN	MEASURE
1	1	61	3	-2.19	-2.15	.97	1.06	NONE	( -4.47)
2	2	395	22	-.80	-.73	.95	.90	-3.31	-2.07
3	3	1127	63	1.33	1.28	.87	.93	-.83	1.66
4	4	217	12	3.61	3.75	1.17	.97	4.14	( 5.24)

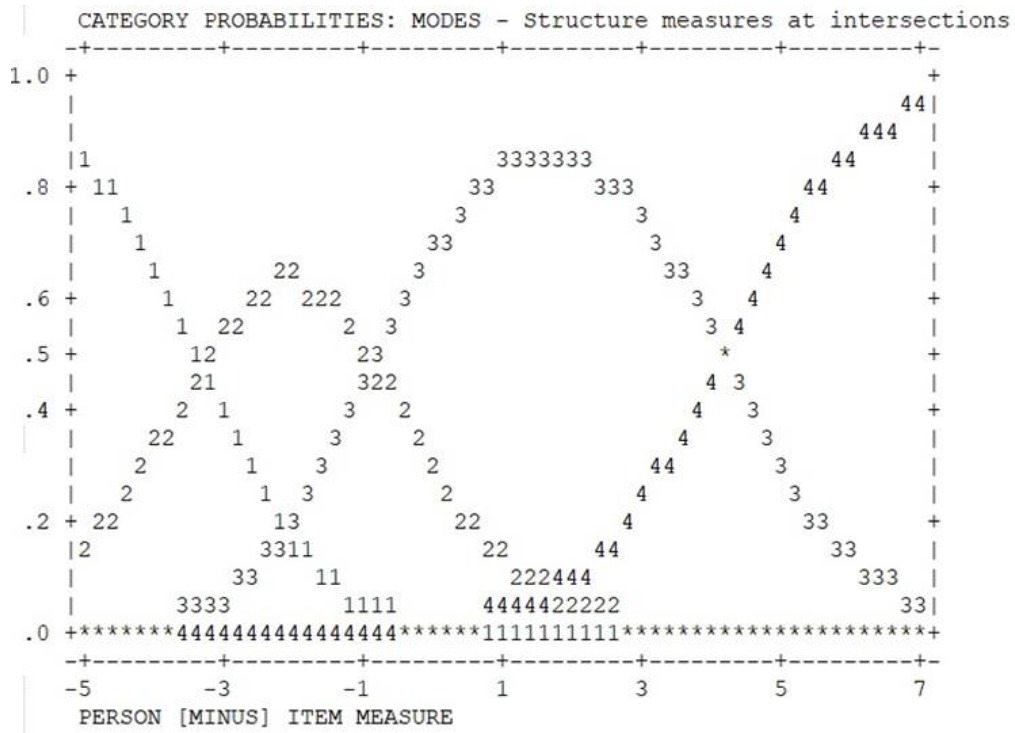
CATEGORY	STRUCTURE	SCORE-TO-MEASURE	50% CUM.	COHERENCE	ESTIM				
LABEL	MEASURE	S.E.	AT CAT.	----ZONE----	PROBABLT	M->C	C->M	DISCR	
1	NONE		( -4.47)	-INF	-3.50		88%	13%	1
2	-3.31	.15	-2.07	-3.50	-.66	-3.38	61%	59%	1.02
3	-.83	.07	1.66	-.66	4.16	-.76	78%	87%	1.08
4	4.14	.09	( 5.24)	4.16	+INF	4.14	68%	47%	.93

In table 3, it can be seen that the percentage of observed counts moves from 3% to strongly disagree, 22% agree, 63% agree, and 12% strongly agree out of 6 POS items. These results are following the steps in the structure measure ranging from strongly disagree to disagree at -3.31, continued to agree -0.83 to strongly agree at 4.14. The distributed steps are generated according to the step regularity criteria or there is no threshold disordering. Then, MNSQ infit and outfit size is no more than 2 (Linacre, 2007). These results can be concluded that the response on the POS instrument is functioning well.

Figure 2 represents table 3 with its probability curve. Disagree (2) has no higher peak than agree (3) and continues to strongly agree (4), although strongly disagree has a less broad edge than the other curves. The curve depiction shows that all of the responses are indicated to function correctly or that all respondents do not choose only one or two responses.

**Figure 2**

*Category Probabilities: Modes of POS Scale*



**Discussion**

This study contributes to being the first to evaluate the psychometric properties of perceived organizational support (POS) items using the Rasch Model Analysis. This study also provides an update for the method and scale analysis when we compare it with other procedures. The POS scale has been shown to have good psychometric characteristics. The assumptions of unidimensionality and local independence of the Rasch model have been met, following the original structural factors of the POS scale (Eisenberger et al., 1986). Then for local dependence, two pairs of items (item 1 and item 2, item 5 and item 6) have the same meaning. The item is maintained because it follows the assumption that it is per the translation according to Indonesia's prevailing culture and context. For construct validity, this POS scale uses an excellent statistical fit. For the reliability of the POS scale already has a good reliability with several 0.86. then for the response category, this scale has responded to the numbers on the scale. The study to see the validity and reliability of the POS scale using the Rasch Model is a new study that has the first feasibility of psychometric testing in Indonesia. Then for further research, First, the researcher suggests doing a test using other response theory items to see an increase in the

accuracy and reliability of the POS scale. Second, the researcher suggests researching with other samples, such as members of non-profit organizations such as NGOs or organizations outside the industry such as student organizations or profession associations.

## Conclusions

The use of the Rasch Model on the Perceived Organizational Support instrument already looks quite good in its measurement. The theory proposed by Eisenberg (1986) has empirical support by using factor analysis in instrument validation. The use of Rasch analysis can be one of the breakthroughs for viewing the instrument in the context of per item analysis. The findings state that the rating scale category on the POS scale has run quite well and shows the correct item fit in the Rasch analysis. However, with the information obtained, it can be concluded that the POS scale is quite feasible to measure Perceived Organizational Support and provides novelty in measuring POS in other measurements.

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