

Application of Rasch Model in Determining the Quality of the Malaysian Military Spirituality Assessment Instrument

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Abstract

This analysis aims to determine the quality of the instrument used in assessing the spirituality of Malaysian military personnel known as INPERO. INPERO consists of 205 items and is administered to 400 Malaysian Armed Forces (MAF) Muslims in the Central Division, namely Selangor and Kuala Lumpur, Malaysia. This instrument was developed to measure four dimensions: i) appreciation of faith; ii) appreciation of worship; iii) moral appreciation; iv) the appreciation of Islam in the MAF Ikrar Kesatria. In this analysis, the Rasch model was used to test the quality of INPERO from validity and reliability. The Rasch model was used to assess both respondent and item reliability. Therefore, it is more comprehensive than relying solely on Cronbach's Alpha (α) value. Item functionality was assessed using the Winsteps Version 5.0.2.0 software regarding reliability and item-respondent separation, as well as fit and consistency of items measuring constructs and residual correlation values. The final INPERO has 190 items that were intended to measure the four spiritual assessment constructs. Since this is a real analysis, the distribution of real respondents can be conducted to evaluate all four dimensions of spiritual assessment for MAF Muslim military personnel.

Keywords: Rasch model, validity, reliability, spiritual assessment, Malaysian Armed Forces

INTRODUCTION

As the national defence leader, the Malaysian Armed Forces have gone through various eras of development and transformation in response to technological advances and strategic environmental conditions. Consistent efforts are required to form a credible, balanced, competent force capable of defending this country's territorial sovereignty. For example, Abdul Aziz et al (2023) and Daud (2017) contends that developing military strength encompasses more than just equipment and physicality and the spiritual questions that shape the soul characters of Muslim soldiers.

Spirituality is an intangible that must be prioritized for the Malaysian Armed Forces (MAF) to be regarded as a respected force (MAF, 2020). As per Hashim (1999), the internal aspects of a soldier are similarly intangible and abstract and must be interpreted and empirically validated by systematic and objective examination to produce a benchmark. Each strength and weakness must be examined and utilized as a benchmark toward attaining the intended objectives and mission to establish if military personnel have strong intangible traits.

The military's internal aspects (intangible) role is interconnected and impacts the excellence of defence resources and organizations (Abdul Aziz et al., 2023; Mohd Kenali, 2007; Ab Aziz, 2005; Musa, 1987). It is also argued by Kwong (2015) and Mohammad Daud (2014), claiming that internal aspects of human defence, such as morale, fighting spirit, and spirituality, are intangible factors influencing the performance of defence human resources and the MAF organization itself, either positively or negatively.

According to Teoh (2006), one of the indicators of internal defenceman problems is adverse external defenceman disorders such as misconduct, disciplinary cases, and negative case symptoms. This fact is also supported by studies conducted in other countries, such as the Netherlands by Gelooven (2007), Belgium by Francois (2006), and Australia by Goyne (2004). However, because of the imbalance in assessing and measuring

internal and external aspects of MAF, internal aspects of defence resources cannot be assessed and viewed systematically. This aspect can be seen in the assessment of external aspects (tangible) in the form of MAF materials that assess and measure combat power, mobility, communication and firepower. Integrating these internal and external aspects as a systematic measurement is critical for MAF to become an excellent organization (MAF, 2021; Kwong, 2015).

It will also serve as a systematic indicator of the intangible aspects of spirituality concerning MAF's core values (MK ATM, 2020). According to Bujai and Hashim (2015), an instrument in assessing and measuring the internal (intangible) aspects of human defence, including the spiritual, is a determining factor. This instrument is a forced driving factor to a member that makes him brave and enthusiastic to fight without fear, weakness, or desperation (Jab Arah KAGAT, 2020).

As a result, there is a need for a systematic instrument for effectively and sustainably assessing aspects of Malaysia's military spirituality. Based on this, the researcher conducted interviews with top informants in the management and operation of the MAF during phase 1 of the need analysis study. It is followed by phase 2, design and development, in which a panel of field experts agrees on developing a Malaysian military spiritual assessment instrument. Following an analysis of the data using the Fuzzy Delphi method, the researcher created a questionnaire instrument to create a Malaysian military spiritual assessment tool. Consequently, a pilot study confirmed the questionnaire instrument's validity and reliability. The scholar then utilized the Rasch model to establish the questionnaire instrument's level of validity and reliability. Instead of only focusing on Cronbach's Alpha value, this technique enables further in-depth analysis of each item. This Rasch model method enables more detailed analysis, for instance, assessing each item's functioning.

Literature Review

Rasch Measurement Model

The Rasch model calculates the probability of a participant (human) and an item interacting. Each individual is divided into groups based on their abilities, while items are divided into groups based on their complexity. The Rasch model can accommodate the individual addressing the instrument's abilities and capabilities and the difficulties of every question or item. Through the transition of ordinal data to interval data, individual abilities and item challenges are displayed in logit form. This model can anticipate how individuals from various abilities will react to items of varying degrees of complexity (Rasch, 1980). The probability of accomplishment is determined by the disparity between the individual's abilities and the item's difficulty.

Moreover, Bond & Fox (2017) argue that the capabilities of the Rasch model are (i) the more intelligent person has a greater probability of agreeing with all items, and (ii) the simpler item has a high probability of being agreed by all persons. The Rasch model can also provide accuracy of validity and reliability values because it pays attention to persons and items. Even these models can indicate which items or constructs are fit (matched), misfit (do not match), need to be reviewed or dropped (A. Aziz et al., 2021; Azrilah et al., 2017; Lateh et al., 2016) based on a set range scale.

Malaysian Armed Forces

The Malaysian Armed Forces (MAF) consists of three services: the Malaysian Army (RMA), Royal Malaysian Navy (RMN), and Royal Malaysian Air Force (RMAF) (ATM, 2021). The MAF was formed by the British Army and was initially named the Federal Armed Forces, as per R. Emerson (1937). The Federal Armed Forces were renamed the Malaysian Armed Forces after Malaysia was created on September 16, 1963. The British turned over the management and administration of the ATM to the Malaysian government in 1967. The locals regulated the ATM from that moment onward (Zahari et al., 2019; Salleh, 2022).

Instrument

Instruments are legally valid documents that follow certain rules that state the rights of the parties involved in a contract, instruments and relevant official documents in the field of finance (Dictionary of Dewan Fourth Edition, 2015). The term "instrument" used in the context of this study is related to the results of the needs analysis carried out on the spiritual assessment of military personnel in Malaysia based on the questionnaire developed.

Spirituality

In the context of the Malaysian military, this spirituality means the internal element (intangible), which is the driving force factor for a military member in the MAF to function well and effectively. This spirituality is born from the true belief and practice of action consistently in life so that it becomes a culture and appreciation in the life of a member of the MAF (Abdul Aziz, 2021; MAF, 2021).

Data Analysis Based on Rasch Measurement Model

Numerous diagnoses are frequently used in the Rasch measurement model, which aims to test and verify an instrument's validity and reliability. Among them are the following: (i) determine the item and responder

separation's reliability and index; (ii) evaluate the item's polarity and the participant's ability to measure the construct; (iii) Principal component analysis; (iv) find the instrument's appropriateness (item fit) in the assessment instrument; and (v) depending on standardized residual correlation values, establish dependent items. To discover the discrepancies between two variables, level measurement and correlation, Rasch's technique may be utilized to assess research outcomes data. However, this work employs the Rasch model technique to evaluate the validity and reliability of a questionnaire instrument generated via qualitative data collected in a pilot study. Typically, the validity and reliability of an item are determined solely by the instrument's overall Alpha value.

Objectives

This study aimed to determine the instruments' quality, reliability, and validity. The scholar investigated item functioning in terms of item-respondent separation and reliability, item-respondent suitability and polarity, principal component analysis, item fit, and standardized residual correlation values.

METHODOLOGY

The researcher set a total of 400 respondents in this actual study. Therefore, it has exceeded the requirement to achieve appropriate item calibration in definitive/high-stakes confidence of 99%, which is 250 (Linacre, 2012). Based on the Rasch Measurement Model, a small number of samples will cause the results of the analysis to become unstable, while if the number is too large, the results of the analysis will be almost the same (Linacre, 2004; Owi, 2021; Salbiah, 2018). The sample used also exceeds the sample size suggested by Krecjie and Morgan (1970), where the total population of MAF Muslim military personnel in the Main Central Zone - 4 Division projected for 2020 is 29,674. Hence, the sample size of Krecjie and Morgan (1970) respondents is 379, considering the population of 30,000, and according to Salbiah (2018), the number can be generalized to a large population.

The study's findings were analyzed using the Winsteps Version 5.0.2.0 software in conjunction with the Rasch measurement model approach. This Malaysian military spiritual assessment instrument (INPERO) consists of 190 items divided into four main dimensions: appreciation of faith, worship, morals, and appreciation of the Malaysian Armed Forces' Pledge of Allegiance.

Research Findings

The researcher applied the Rasch model technique to investigate item INPERO functionality from the five perspectives of (i) reliability as well as the item and participant separation; (ii) polarity item; (iii) polarity person; (iv) item fit; and (v) principal component analysis. The functionality check for each item is discussed in the next section.

Reliability

The findings of Table 1 show the item reliability value of the INPERO is 0.97, where the reliability value is very good because the value is 0.94 (Bond et al., 2007; Sumintono & Widhiarso, 2015) exceeding the suggested value by the Rasch Model, which is 0.95 (Bond & Fox, 2015; Linacre, 2012) This value is an indication that the total number of Instrument items is sufficient to assess the spirituality of ATM members. The item separation index value obtained also shows a high result of 5.48 without any extreme items, which explains that there are five different item agreement levels in this study, and a good separation value is more than 2.0 (Bond & Fox, 2015; Linacre, 2012).

Table 1

Reliability and Item Separation Index

TABLE 3.1 190I_400R.x1sx
 INPUT: 400 Person 190 Item REPORTED: 400 Person 190 Item 3 CATS WINSTEPS 5.0.2.0

SUMMARY OF 190 MEASURED (NON-EXTREME) Item

	TOTAL SCORE	COUNT	MEASURE	MODEL S.E.	MNSQ	INFIT ZSTD	MNSQ	OUTFIT ZSTD
MEAN	1466.7	400.0	.00	.14	1.00	-.20	.90	-.53
SEM	2.9	.0	.06	.00	.02	.23	.03	.14
P. SD	40.4	.0	.84	.01	.25	3.22	.43	1.89
S. SD	40.5	.0	.84	.01	.25	3.23	.43	1.90
MAX.	1573.0	400.0	2.20	.22	2.27	9.90	3.37	9.86
MIN.	1356.0	400.0	-2.70	.14	.54	-7.85	.32	-4.19

REAL RMSE	.15	TRUE SD	.82	SEPARATION	5.48	Item	RELIABILITY	.97
MODEL RMSE	.14	TRUE SD	.82	SEPARATION	5.74	Item	RELIABILITY	.97
S.E. OF Item MEAN	=.06							

While referring to Table 2 is a summary of the respondent's statistics that were measured, also showing the respondent's reliability (person reliability) with a value of 0.97, where the reliability value is very good (Bond et al., 2007; Sumintono & Widhiarso, 2015). This value increases in line with the increasing reliability value of the item. Table 2 also shows that 48 item respondents got the maximum extreme score, 3% of the total respondents.

Nevertheless, the 48 respondents are still accepted in this study because of their high response to all items that show adherence to all elements of spirituality in the INPERO. This finding is supported by the study of Najahudin (2016) and Salbiah (2018) as well as the views of Fisher (2007), who received the maximum extreme score, which is at least 5% of the total number of respondents. Even with extreme scores, the reliability value of the respondents is still at a very good level which is 0.97 exceeding the value suggested by the Rasch Measurement Model, which is 0.95 (Bond & Fox, 2015; Linacre, 2012). The value in this actual study also improved compared to 0.96 in the pilot study. This data shows an increase of 400 respondents in the actual study compared to the pilot study of 50 people. While the separation index value obtained also shows a high result of 6.00, which explains that there are six different levels of respondent agreement in this study and is a good value (Bond & Fox, 2015; Linacre, 2012). The item and respondent reliability of the Instrument is acceptable and reliable, and it is also supported by a very good Cronbach-alpha (α) value, which is 0.99. Based on this value means that the instrument developed is in very good condition and effective with a high level of consistency (Bond & Fox, 2007), and it allows the research instrument to be used in research (George & Mallery, 2003; Mc Millan & Schumacker, 1984).

Table 2 Reliability and Respondent Separation Index

TABLE 3.1 190I_400R.xlsx
 INPUT: 400 Person 190 Item REPORTED: 400 Person 190 Item 3 CATS WINSTEPS 5.0.2.0

SUMMARY OF 352 MEASURED (NON-EXTREME) Person

	TOTAL SCORE		MEASURE	MODEL S.E.	INFIT		OUTFIT	
	SCORE	COUNT			MNSQ	ZSTD	MNSQ	ZSTD
MEAN	688.1	190.0	4.80	.26	1.00	.04	.90	-.20
SEM	2.8	.0	.11	.01	.01	.10	.02	.10
P. SD	53.2	.0	2.00	.20	.13	1.92	.28	1.92
S. SD	53.3	.0	2.00	.20	.13	1.92	.28	1.92
MAX.	759.0	190.0	9.36	1.00	1.30	4.51	1.41	4.72
MIN.	587.0	190.0	1.31	.16	.72	-5.05	.15	-4.36

REAL RMSE	.33	TRUE SD	1.97	SEPARATION	6.00	Person RELIABILITY	.97
MODEL RMSE	.33	TRUE SD	1.97	SEPARATION	6.06	Person RELIABILITY	.97
S.E. OF Person MEAN = .11							

MAXIMUM EXTREME SCORE: 48 Person 12.0%

SUMMARY OF 400 MEASURED (EXTREME AND NON-EXTREME) Person

	TOTAL SCORE		MEASURE	MODEL S.E.	INFIT		OUTFIT	
	SCORE	COUNT			MNSQ	ZSTD	MNSQ	ZSTD
MEAN	696.7	190.0	5.49	.45				
SEM	2.8	.0	.13	.03				
P. SD	55.1	.0	2.65	.54				
S. SD	55.2	.0	2.66	.54				
MAX.	760.0	190.0	10.57	1.83				
MIN.	587.0	190.0	1.31	.16				

REAL RMSE	.70	TRUE SD	2.56	SEPARATION	3.64	Person RELIABILITY	.93
MODEL RMSE	.70	TRUE SD	2.56	SEPARATION	3.64	Person RELIABILITY	.93
S.E. OF Person MEAN = .13							

Person RAW SCORE-TO-MEASURE CORRELATION = .91
CRONBACH ALPHA (KR-20) Person RAW SCORE "TEST" RELIABILITY = .99

Item Polarity

Instrument Item Polarity was evaluated through Outfit Means Square (MNSQ), Outfit Z-standard (ZSTD) and Point Measure Correlation (PTMEA Corr) criteria. It is argued by Bond and Fox (2015), Sumintono and Widhiarso (2015) and Boone et al. (2014) that these three criteria are very important in determining the argument of high quality and reliability in an instrument formation. The value of one of these three criteria should be within the specified range (Boone et al., 2014), as shown in Table 3.

Table 3 Acceptance Criteria and Value

Criteria	Value Acceptable
Outfit Means Square (MNSQ)	0.5 < MNSQ < 1.5
Outfit Z-Standard (ZSTD)	-2.0 < ZSTD < +2.0
Point Measure Correlation (PTMEA CORR)	0.4 < PTMEA CORR < 0.85

According to Bond and Fox (2007), in order to ensure whether the item measures the construct that is to be measured, the value shown in the Point Measure Correlation (PTMEA CORR) section must be in a positive value (+). If the value obtained is negative (-) and below 0.20 indicates an inverse measurement (Azrilah et al., 2017; Najahudin, 2016), it means that the item developed does not measure the construct that is intended to be measured

(Linacre, 2002) and it should be dropped because it is difficult or does not lead to the question (not focused). Table 4 shows the PTMEA CORR values for all items of the Malaysian Military Morale Assessment Instrument (INPERO), showing positive (+) values. This is because all items are accepted by determining the polarity of items set.

Table 4 Item Polarity

Table 4 shows that the value of PTMEA CORR INPERO has been within the set criteria range (0.4 - 0.85), and all the Items also show a positive value (+) that is accepted following the set determination concept. By examining the ZSTD, it was also found that the highest range value is 9.86, and the lowest range value is -4.19. The highest and lowest values are above the allowed range (-2.0 - +2.0). Nevertheless, both items are accepted because they are within the allowed range of PT MEAN CORR (0.42; 0.74), as in Table 4.138. In contrast, the MNSQ aspect was found to have the highest range value of 3.37 and the lowest range value of 0.32. Although the highest and lowest range values are not within the accepted range, this item is accepted because the range value from the PTMEA CORR aspect is still within the accepted range value (0.42;0.53), as in Table 5.

Table 5 Items Consensus One Criterion

No	Criteri		PT Mean Corr	Item
	MNSQ	ZSTD		
1.	3.37	9.86	0.42	CG A109 Akhlak Menerima
2.	2.95	7.77	0.41	CG A117 Akhlak Menerima
3.	2.76	7.49	0.43	CG A113 Akhlak Menerima
4.	2.14	3.14	0.42	CG A101 Akhlak Atah
5.	2.04	3.47	0.51	A2 P12 Makhluk
6.	2.04	3.47	0.51	B2 AHS Solut
7.	2.04	3.47	0.51	D1 A119 Persepsi
8.	1.79	3.34	0.39	CG A102 Akhlak Atah
9.	1.79	3.24	0.33	CG A112 Akhlak Menerima
10.	1.67	3.17	0.45	CG A105 Akhlak Atah
11.	0.45	-2.19	0.52	CG A106 Akhlak Atah
12.	0.39	-2.19	0.49	CG A104 Akhlak Atah
13.	0.43	-2.19	0.49	CG P112 Akhlak Aliran
14.	0.44	-2.42	0.42	A3 P19 Rantai
15.	0.44	-2.42	0.42	B3 APT Pansa
16.	0.44	-2.42	0.42	D3 A140 Ratuha
17.	0.39	-2.52	0.59	A4 P15 10/Queen
18.	0.39	-2.42	0.59	B1 A12 Syahadah
19.	0.39	-2.42	0.59	D1 P171 Persepsi
20.	0.43	-2.55	0.39	CG B9 Akhlak Atah
21.	0.53	-3.11	0.71	D3 A157 Keselamatan
22.	0.43	-2.42	0.41	CG P119 Akhlak Aliran
23.	0.44	-2.28	0.79	A4 A19 10/Queen
24.	0.44	-2.28	0.79	B1 P81 Hajj
25.	0.44	-2.28	0.79	D3 A152 Keselamatan
26.	0.39	-2.80	0.59	A2 P11 Makhluk
27.	0.39	-2.80	0.59	B2 AHS Solut
28.	0.42	-2.72	0.49	CG P113 Akhlak Aliran
29.	0.39	-2.80	0.59	D1 A118 Persepsi
30.	0.32	-3.19	0.57	CG A121 Akhlak Aliran
31.	0.39	-4.19	0.74	A3 P18 Rantai
32.	0.39	-4.19	0.74	B1 P84 Pansa
33.	0.39	-4.19	0.74	D3 P143 Ratuha

Person Polarity

The Person polarity aims to test the extent of individual quality in responding to items and ensure that individuals provide accurate responses to item construct measurements. It is to identify individual patterns that are different from the ideal pattern. Acceptance measures of person polarity are the same as item polarity (MNSQ, ZSTD and PTMEA CORR). According to Azrilah et al. (2017), a person with negative PTMEA CORR shows unusual decision-making. This issue requires further observation of the demographic characteristics that may contribute to this behaviour. The reason is that the Rasch Measurement Model can find invariance in measurement; that is, variance inequality must exist. In the context of the analysis of this actual study, the researcher found that all 400 persons were within the value range of one of the three acceptance criteria. It is further explained in the person polarity Table 6.

Table 6 Person Polarity

The person polarity examination results show that nine individuals at least meet one of the acceptance criteria, which is the value range of MNSQ 1.41, ZSTD 4.72 and PTMEA CORR 0.00. However, these nine respondents are still within the accepted range because the MNSQ range value is still within the accepted range of < 1.5, and the PTMEA CORR value is positive (+).

Item Fit

In the Rasch Measurement Model, the appropriateness of items or items fit is examined to determine the appropriateness of items or fit in showing the consistency of items that measure a construct. According to Bond and Fox (2007), the accepted index or range is 0.7 - 1.3, while Linacre (2005) states the accepted index or range is between 0.5 - 1.5. It is also argued by Azrilah et al. (2017), Najahudin (2016) and Owi (2021). Linacre (2005) has outlined four groups based on the appropriateness value for an item measurement in a construct, namely, (i) a value of 2.0 means that the interfering variable is greater than the required information; (ii) a value of 1.5 means a significant confounding variable; (iii) a value of 0.5 to 1.5 means a productive and good measurement; and (iv) a value < 0.5 means too predictable or misleading. In this actual study, through Table 4.138 there are 33 items whose MNSQ and ZSTD range values are not within the allowed range values, namely MNSQ (0.5 – 1.5) and ZSTD (-2.0 – +2.0). However, in the context of this study, these 33 items are still accepted to assess Malaysian military spirituality because the PTMEA CORR range is still within the set value range (0.4 - 0.85).

Principal Component

In the Rasch Measurement Model analysis, unidimensionality determines the measuring instrument in one direction and one face. Therefore, ambiguous instruments in measuring what should be measured can give misleading results (Owi, 2021; Azrilah et al., 2017; Najahudin, 2016). Therefore, rasch analysis requires the achievement of a minimum of 20 percent (20%) Raw Variance Explained By Measures as a sign of a good unidimensionality instrument, in addition to a value of 40 percent (40%) as a sign of a better measure and a maximum of 60 percent (60%) as a sign of a satisfactory measure. At the same time, the best Unexplned Variance in The 1st Contrast should not exceed the value control limit of 15 percent (15%) (Sumintono & Widhiarso, 2015). In this analysis, Table 6 shows the 190 items used are in the desired value, which is the value of Raw Variance Explained By Measures 40.1% and the value of Unexplned Variance in The 1st Contrast 7.9%.

Table 6 Raw Variance Explained by Measures dan Unexplned Variance in The 1st Contrast.

TABLE 23.0 190I_400R.x15x
 INPUT: 400 Person 190 Item REPORTED: 400 Person 190 Item 3 CATS WINSTEPS 5.0.2.0

	Eigenvalue	Observed	Expected
Total raw variance in observations =	317.1652	100.0%	100.0%
Raw variance explained by measures =	127.1651	40.1%	40.4%
Raw variance explained by persons =	74.0197	23.3%	23.5%
Raw variance explained by items =	53.1455	16.8%	16.9%
Raw unexplained variance (total) =	190.0000	59.9%	59.6%
Unexplned variance in 1st contrast =	24.9867	7.9%	13.2%
Unexplned variance in 2nd contrast =	20.4929	6.5%	10.8%
Unexplned variance in 3rd contrast =	15.2058	4.8%	8.0%
Unexplned variance in 4th contrast =	13.3364	4.2%	7.0%
Unexplned variance in 5th contrast =	11.8660	3.7%	6.2%

Therefore, this shows that INPERO is proven to have unidimensional characteristics that lead to only one dimension. This result argues for the validity of items that measure without ambiguity and confounding. This finding is also supported by the data in Table 4.141, which shows that there are no pairs of items with a relationship or similar characteristics because all the Standard Residual Correlation values are within 0.7 (Azrilah et al., 2017; Najahudin, 2016). According to Linacre (2005), if the correlation value of both items exceeds 0.70, it shows a high correlation value, and only one of the items should be retained while the other item should be dropped. In this actual study, there are all items with a correlation value of 0.70 and below, which shows that the items in the INPERO are not stacked. Table 7 also proves that respondents are not confused because they can distinguish between items and do not consider pairs of related items as the same thing (Azrilah et al., 2017; Najahudin, 2016;

Owi, 2021). This fact also argues that the items in the Malaysian Military Spirituality Assessment Instrument (INPERO) meet the characteristics of instruments with high validity.

Table 7 Item Correlation

TABLE 23.99 190_400a.xlsx
 INPUT: 400 Person 190 Item REPORTED: 400 Person 190 Item 3 CATS WNSTEPS 5,0,2,0
 LARGEST STANDARDIZED RESIDUAL CORRELATIONS
 USED TO IDENTIFY DEPENDENT ITEMS

CORREL	ENTRY	ENTRY
	INDEX	INDEX
0.67	1 AL.P1 Tauhid	40 DL.P40 Syhadah
0.67	1 AL.P1 Tauhid	128 DL.P128 Patriotik
0.67	2 AL.P2 Tauhid	50 DL.P50 Syhadah
0.67	2 AL.P2 Tauhid	128 DL.P128 Patriotik
0.67	3 AL.P3 Tauhid	51 DL.A51 Syhadah
0.67	3 AL.P3 Tauhid	130 DL.P130 Patriotik
0.67	4 AL.P4 Tauhid	52 DL.A52 Syhadah
0.67	4 AL.P4 Tauhid	132 DL.P132 Patriotik
0.67	5 AL.P5 Tauhid	53 DL.A53 Solat
0.67	5 AL.P5 Tauhid	132 DL.P132 Patriotik
0.67	6 AL.A6 Tauhid	54 DL.P54 Solat
0.67	6 AL.A6 Tauhid	133 DL.P133 Patriotik
0.67	7 AL.A7 Tauhid	55 DL.P55 Solat
0.67	7 AL.A7 Tauhid	134 DL.P134 Patriotik
0.67	8 AL.A8 Tauhid	56 DL.P56 Solat
0.67	8 AL.A8 Tauhid	135 DL.P135 Patriotik
0.67	9 AL.A9 Tauhid	57 DL.P57 Solat
0.67	9 AL.A9 Tauhid	136 DL.P136 Patriotik
0.67	10 AL.A10 Tauhid	58 DL.A58 Solat
0.67	10 AL.A10 Tauhid	137 DL.P137 Patriotik

DISCUSSION

Analysis through the Rasch Measurement Model proves that the Malaysian Military Spirituality Assessment Instrument is acceptable and has high reliability (item=0.97; person=0.97) and Cronbach-alpha (α) value of 0.99. Separation is also at a good and acceptable value (item=5.48; person=6.00). From the aspect of item polarity and respondent polarity, both (items and respondents) contribute to the measurement because all PTMEA CORR values are positive between +0.5logit and +1.5logit. The item fit test showed that the MNSQ outfit ranged from +0.5logit to +1.5logit.

The final results in the Principal Component Analysis (Principal Component Analysis) show that the 190 INPERO items used are within the desired value, which is the value of Raw Variance Explained By Measures 40.1% and the value of Unexplnd Variance in The 1st Contrast 7.9% which shows that the item has no ambiguity in measuring what should be measured and not give misleading results. In contrast, the results of the Measurement of Standardized Residual Correlations (Standardized Residual Correlations) show that all items are not stacked. The actual study summary is shown in Table 8.

Table 8 Summary of the Actual Study of the INPERO

Analysis	Data	Summary
Item reliability	Item r=0.97	Item has a high item reliability
Person reliability	Person r=0.97	Item has a high respondent reliability
Item separation	5.48	Item has a good item separation value
Person separation	6.00	Item has a good respondent separation value
Cronbach-alpha (α)	0.99	Items are in very good condition and effective, with a high level of consistency
Item Polarity	All PTMEA CORR values are positive	Items measure the construct to be measured
Item fit	All items are in the range of MNSQ (0.5 – 1.5) and ZSTD (- 2.0 - +2.0)	Items are consistent in measuring the construct,
Person fit	Value in the range of 0.5 – 1.5	The person is consistent in responding to items
Principal Component	Raw Variance Explained By Measures 40.1% and Unexplnd Variance in The 1 st Contrast 7.9%	Items have no ambiguity in measuring what should be measured and not gives misleading results
Standardized Residual Correlation Value Measurement	All items are below 0.70	Items do not overlap.

The context of quality in validity and reliability are key concerns when establishing an instrument for research. As a result, it is considered that this instrument is of adequate quality for usage by the Muslim army in Malaysia, relying on its validity and reliability. The implications of this analysis aid researchers in developing spiritual assessment instruments for Malaysian Muslims (INPERO) based on the four assessment dimensions.

This effort is the first step toward ensuring that spiritual assessment can be used consistently and assisting the MAF and Malaysian Ministry of Defense in providing superior national defence human resources in terms of material and spiritual resources.

Contributions To The Study

This research is an actual study. It is carried out to ensure that the instrument is consistent, fix any issues in the quality of INPERO, and offer a consistent, systematic, reliable, and validated instrument for the actual study (Aziz, 2021). The Rasch model is a novel input in the construction and validation of present instruments, a mix of Classical Measure Theory (CMT) and Item Response Theory (IRT). The two measurement theories are a complementary relationship to meet the psychometric characteristics of a stable instrument for use in real studies in constructing the spiritual profile of MAF (Owi, 2021). This instrument contributes to the measurement of intangible aspects of MAFs. In addition, it adds value to existing measuring tools in MAF's in assessing the material aspects of MAF strength, known as Situational Force Scoring (SFS) (ATM, 2020).

Recommendations For Future Research

The researcher proposed the focus of future studies to broaden further the backing of the consistent and systematic item development concept using the Rasch Measurement Model. Meanwhile, the respondents were non-muslim military personnel who were more into the internal aspects that touched on the fighting spirit and morale. This recommendation is because of the strength of the MAF, which also comprises non-muslims by 13% (Azlisham et al., 2021). This strength also contributes to the country's defence and security sustainability.

CONCLUSION

INPERO containing four dimensions, 20 constructs and 190 items, was conducted on the respondents of Muslim MAF selected by the researcher in purposive sampling. The findings of this study are based on the analysis of data collected through an actual study involving MAF member respondents selected by the researcher using a purposive sampling method involving 400 members of the Malaysian Armed Forces (MAF) in the zone that dominates the population of MAF strength which is the zone the main centre of peninsular Malaysia which includes the strength of 3 services in MAF namely; 268 Army, 36 Navy and 96 Airforce respondents. Analysis of the Rasch model proves that INEPRO is acceptable and has high reliability (person = 0.97; item = 0.97) and a *Cronbach-alpha* (α) value of 0.99. Separation is also at a good value and accepted (person = 6.00; item = 5.48). Both (item and person) contributed to the measurement in terms of item and person polarity since all PTMEA CORR values were positive between +0.5 and +1.5 logit. The item suitability test showed that the value of the MNSQ infit/ outfit range was between +0.5 logit to +1.5 logit. The outcomes of the Principal Component Analysis (PCA) revealed that 190 of the items utilized were within the targeted value; notably, the value of Raw Variance Explained By Measures 40.1% and the value of Unexplained Variance in The 1st Contrast 7.9%, indicating that the items did not have any uncertainty in measuring what should be assessed and did not produce inaccurate results. On the other hand, the results of Standardized Residual Correlations showed that all items are below 0.70 were, and items do not overlap and all acceptable.

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