DETERMINING THE CONSTRUCT VALIDITY AND RELIABILITY OF PHILANTHROPIC BEHAVIOUR SCALE USING RASCH MODEL

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ABSTRACT

This paper empirically analyzes the validity and reliability of philanthropic behaviour measurement items using Rasch Model. The survey is grounded on the Theory of Planned Behavior (TPB) but extends to include other relevant factors, thus the items' validity and reliability need to be confirmed. The instrument consists of 40 items vested under seven dimensions; attitude, subjective norms, perceived behavioral control, altruism, financial stability, religiosity and trust. Based on the analysis, item polarity indicates that the point measure correlation for the 40 items measuring determinants of philanthropic behavior is between 0.26 to 0.60. Overall item reliability and item separation is 0.97 and 6.05 respectively, while for person reliability and person separation is 0.85 and 2.34 respectively, considered good and productive for the intended measurement. In terms of items fit, results show that only five items are found misfit and need further scrutinization prior to removal of the items.

Contribution/ Originality: This study proposes a valid and reliable set of items to determine philanthropic behavior based on the extended version of Theory of Planned Behavior (TPB), encompassing seven dimensions.

1. INTRODUCTION

Many research have delved into factors influencing or motivating philanthropic behavior. Indeed, philanthropy has play its role in poverty alleviation, realizing the needs of those in need, relieving those in debt and helpless travelers to complete their journey (Abdullahi, 2019; Jamal, Yaccob, Bartikowski, & Slater, 2019). Though mainly motivated by religiosity and the feeling of being humane (Chetioui & Lebdaoui, 2021; Doces, Goldberg, & Wolaver, 2022) research on the determinants of philanthropic behavior during pandemic is scarce. However, during COVID-19 pandemic, various funds have been established collecting plentiful donations within a short period is indeed, applauding.

Amidst the Covid-19 pandemic, the reported hit of USD10.4 billion (in the United States Dollar currency denomination) worldwide of collected charitable giving within two months of the pandemic (March to May 2020), signals on the increased philanthropic behavior of all nation (Hale, 2020). Various donations have been initiated by numerous agencies, targeting to relief those affected of Covid-19 pandemic. In Malaysia, there are approximately 14

agencies actively pooling different donations from the nation during the past eight months of the Movement Control Order (MCO), which commenced in March 2020. Interestingly, these Covid-19 donations are new initiatives and only came into existence during this pandemic outbreak. With a total collection of MYR222 million (in the Malaysian Ringgit currency denomination), there is a prevalent trend of generosity among the nation. The generosity and willingness to help those affected during pandemic is a positive attitude that should be managed systematically so that the donors can be strategically approached during contingency.

Acknowledging the determination to give or not to give for philanthropic purposes may be influenced by various factors, it is necessary to further investigate the determinants of philanthropic behavior. Hence, grounded on the Theory of Planned Behavior (TPB) of Ajzen (1991) this research examines philanthropic behavior during pandemic among employed and earning Malaysians, using three core components of the theory; attitude, subjective norm and perceived behavioral control. Nevertheless, as TPB has been criticized to left out other significant factors (Chetioui. et al., 2022) this study extends the model to include other relevant factors such as altruism, financial stability, religiosity and trust. Therefore, a survey instrument is developed for that purpose and consequently need to be verified on its validity and reliability. Since these factors are latent variables, this study seek confirmation on the validity and reliability via Rasch Model.

Findings of this study will contribute a valid and reliable tool to measure philanthropic behavior not limited to the three components of TPB but extends to other relevant factors as well. Future studies may use the tool in investigating philanthropic behavior from a larger lens of view to further predict such behavior for a systematic fundraising management which is beneficial during contingency such as what had happened during COVID-19 pandemic.

2. LITERATURE REVIEW

2.1. Rasch Model for Confirmation on Validity and Reliability

How latent variables are measured using a scale is determined by measurement theory. The Item Response Theory , which describes how a scale assesses latent variables, is where the Rasch Measurement Model originates. (DeVellis, 2003; Singh, 2004). It links observed elements with latent constructs and analyze them for meaningful interpretations. There are two common measurement theories; the CTT (Classical Test Theory) and IRT (Item Response Theory), which are differentiated by their mathematical formula (Singh, 2004). In general, CTT focuses on the scores informing on the measures of central tendency; the mode, median and mean based on frequency of occurrence. On the other hand, IRT focuses on measurement items and responses thus able to inform on person ability and item difficulty by ranking them according to their logit measures in a linear scale (Azrilah, Mohd, & Azami, 2013).

IRT is a family of measurement models used to measure latent variables (DeVellis, 2003; Singh, 2004). One of the models is Rasch Measurement Model. It has been increasingly used especially in scale development studies (Ishak, 2016). The IRT has been widely applied in testing and validating instruments in various branches of social sciences, such as Bechtel (1985); Albano (2009) as well as Salzberger and Koller (2013). Bechtel (1985) used Rasch for a consumer rating scale, Albano (2009) used Rasch for individual happiness scale and while Salzberger and Koller (2013) for a marketing scale.

According to Bond and Fox (2015) Rasch is a probabilistic model which uses logit as measurement units, obtained by transforming ordinal data into interval data where the data can be mapped into a linear scale (Azrilah et al., 2013; Linacre, 2002). Scholars including Azrilah et al. (2013); Bond and Fox (2015) as well as Singh (2004) have agreed that Rasch Model provides sufficient parameters for a good measurement indicators. There are five significant ability of the model. First, Rasch Model provides a linear scale by transforming scores into probabilistic model using logit as measurement units. Second, the model transforms ordinal data into interval data thus enabling further statistical analyses to be performed. Third, the model fills in suggestions for missing data by its probabilistic

model. Rasch estimates a person's probable response to an item, by considering person ability and items difficulty. Fourth, the model assesses item quality via three measures; the point measure correlation, the infit and outfit mean square (MNSQ) and the z standard. Finally, the model interestingly provides distinct measures for item difficulty and person ability, which may be arranged or ranked accordingly for further interpretations by the researchers.

In this study, Rasch Model will be employed to test and validate items of the philanthropic behavior scale, using the fit statistics, including the Point Measure Correlation, Infit and Outfit Mean Squares (MNSQ) and z standard. Therefore, this study seeks confirmation on the validity and reliability of latent variables, in this case, philanthropic behavior, using Rasch Model.

2.2. The Determinants of Philanthropic Behaviour

According to the TPB (Ajzen, 1991) a certain behavior depends on an individual's intention level in order to predict the likelihood of that behavior occurrence. Based on the theory, there are three core constructs in predicting the behavior; attitude, subjective norm and perceived behavioral control. In addition based on the study by Salwa, Borhan, Mohamad, and Muhammad (2015) the framework of the theory is extended to encompass other influential variables including altruism, trust, religiosity and financial wellness. These variables are found to be hypothesized to influence philanthropic behavior, as elaborated therein.

A donor's preference in charitable giving may be influenced by his attitude. Attitude is the inner drive or way of thinking that influences the behavior. According to Khairul and Mehedi (2020) there are several aspects which influence the attitude in making donations. They highlighted the importance of devising a good marketing plan and making frequent communication to reach the donors as the continuous effort will leave a significant impact on them in understanding the cause of a non-profit organization. Once the connection is established, the donor would have a positive attitude in giving because they can see that their donation would make a difference. There are two ways on how this can be relayed to the donor. Firstly, through cause marketing whereby the purposes of profitability of the company and how it serves towards the betterment of the society is relayed. Secondly, through content marketing whereby online materials are used to capture the attention of the donor on issues such as social, health and environment of which the issues that appeal to the interest of the donor would encourage him to donate. Another study supports this notion as findings indicated that the attitude towards helping others by itself does not cause behavioral intention but the attitude towards charitable organizations and the attitude towards the advertisement are influential in motivating the donor's intention to donate (Ranganathan & Henley, 2008).

Another factor which encourages the inclination of a donor to contribute is the role of surrounding friends, family or environment. When an activity or a cause is supported by the person that the donor trusts, he would have a higher tendency to support the same cause (Khairul & Mehedi, 2020). Similarly, a study by Degasperi and Mainardes (2017) found that individuals can be influenced to give to charity by leaders, known people, government, religious institutions and even by the brand of the charitable organization.

Donors are also inclined to donate if they feel that the contribution would bring personal benefit to themselves such as recognition or setting up a good image of themselves. Winterich, Mittal, and Aquino (2013) discussed how among the motives for charitable behavior, aside from internal gratification, is the seeking of social prestige. The donor expects some material or social return for the charitable behavior when others come to know of his donation. Other external factors may include personal benefits such as tax returns or for their future interests. According to Degasperi and Mainardes (2017) some may donate to ensure they remain in certain clubs and association while some may be motivated due to the concern in needing the services offered by the charity such as cancer-fighting or elderly care.

Voluntary giving or donating behavior is frequently viewed as a charity or voluntary activity focused at providing as much of our own goods as possible to others in need (Barman, 2017; Chen, Dai, Yao, & Li, 2019; Khalil, 2004). Giving behavior is included in the concept of altruism (Teah, Lwin, & Cheah, 2014) and involves the

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philanthropic giving to others intended to improve their welfare (Otto & Bolle, 2011). Another definition of donation is the acceptance of individuals or organizations to support non-profit organizations' activities (Sanusi, Johari, Said, & Iskandar, 2015). Even poor people can participate in charitable activities to assist other poor and needy people (Avdeyeva, Burgetova, & Welch, 2006). In this regard, philanthropic or donating acts are thought to be beneficial in providing assistance to individuals in need when the government is unable to do so (Kashif, Sarifuddin, & Hassan, 2015).

Giving is strongly advocated in all religions and other religious beliefs (Ranganathan & Henley, 2008). Such teachings are consistent with the diverse varieties of religious thought that give usefulness for social life (Lim & Putnam, 2010) whether this is physical, financial, or in terms of volunteering. Islam encourages its adherents to always donate to others via various kinds of Islamic almsgiving such as infaq (charity giving) and waqf (Islamic endowment). Voluntary giving is a highly recommended because it helps those in need while also contributing to development and public welfare (Kasri, 2013).

In this regard, it is also crucial to highlight that most study in charitable giving in Malaysia is focused on specific types of religious giving such as zakat and waqf (Muda, Marzuki, & Shaharuddin, 2006; Rizal & Amin, 2017). According to Muda et al. (2006) altruism was rated the top, followed by faith (iman), self-satisfaction and utilitarian reasons. According to their findings, participation in zakat is impacted not only by religious reasons, but also by self-satisfaction. Most studies on altruism, imply that altruism influences donating behavior, which is usually discussed within the context of crowding out effects (Lilley & Slonim, 2014). A study suggests that altruism has a positive significant link with the intention to donate, i.e the stronger the altruism, the greater the inclination to donate (Morgan & Miller, 2002). Another study by Salwa, Joni, Mohamad, and Fidlizan (2017) on charitable acts toward beggars in Malaysia and discovered that altruism strongly and significantly predicts beggar giving. This suggests that individuals with such natural features are more likely to participate in such donating, which is consistent with earlier series of research in a similar situation (Kasri, 2013; Kasri & Indriani, 2021; Kasri & Ramli, 2019; Rizal & Amin, 2017).

The concept of financial stability and financial wellbeing have a similar context; the difference is that financial stability is often utilised from an industrial viewpoint, whilst financial wellness is commonly used on a micro (individual) level (Bingham & Walters, 2013; Schinasi, 2004). Financial wellbeing levels (ranging on a scale from low financial wellness with overwhelming stress to high financial wellness with little to no stress) might be connected to various elements of an individual's life and financial status, both perceived and objective. Financial wellness encompasses the idea and definition of overall well-being, economic or financial well-being, and financial health. While comparable in scope, financial wellness is a broader term that includes a component of well-being (Henager & Wilmarth, 2018). Similarly, according to previous studies, the more an individual's or organization's financial wellness or stability, the greater the likelihood of a gift or charity (Arsyianti & Kassim, 2021; Bingham & Walters, 2013; Henager & Wilmarth, 2018; Yao, 2015).

Arsyianti and Kassim (2021) investigated the relationship between charity and debt behavior among low-income households in Indonesia and discovered that donation does not always depend on the donor's wealth. On another note, in the Islamic banking sector, the Islamic banks of the Gulf Cooperation Council (GCC) were reported to engage in corporate social responsibility (CSR) even more when their financial performance (also connected to financial stability) improved (Platonova, Asutay, Dixon, & Mohammad, 2018). Similarly, enterprises, organisations, and communities in Malaysia (Cheuk et al., 2021) and the United Kingdom (UK) (Bingham & Walters, 2013; Brammer & Millington, 2008) also tend to engage in CSR or charitable behavior when their financial health is stable or performing.

Besides financial wellness, the formation of attitudes and behaviours is largely driven by religion either at the individual or collective level (Chetioui & Lebdaoui, 2021). Indeed, religiosity reflect an individual's belief in God and his keenness to act in accordance to the religion (Abou, Richard, & Noor, 2013). Faith-based giving is associated

with sacrifice and selflessness, and the afterlife rewards continues to reinforce the notion of motivations for religious charitable behaviour, which is important in shaping a Muslim's behaviour (Rizal & Amin, 2017; Skarmeas & Shabbir, 2011). In addition, religious-based giving behaviour also represents intrinsic and altruistic motives (Salwa et al., 2017). Altruism is the pure intention in philanthropic activities for the sake of Allah (Ismail, Ab Malik, & Shafiai, 2015) and the contributor will feel gratified even without any kind of compensation (Shofiyyah, Abdul-Rahman, & Mohd Nor, 2019). In other words, philanthropy is often associated with a generous or helpful attitude (Mohd, Harun, Moidin, & Mamat, 2022).

On another note, philanthropic behavior strengthens through religiosity. Indeed, religion has a positive impact on the collection of zakat, infaq, alms and digital waqf in Indonesia (Fadillah, Ririn, & Shafinar, 2020). According to Wang and Li (2022) religiosity increases the amount of giving among Muslim donors as well as donors of other religions. However, the donation amount from the Muslims is much higher as compared to other religion.

Morgan and Hunt (1994) defined trust as the confidence of one party exchanged with the other party's reliability and integrity. It has been widely used in research as one of the factors of giving (Mo & Zhu, 2022), especially related with the spirit of philanthropic. Trust becomes a vital tool for philanthropic foundations to build a responsible and effective image in order to acquire donors' trust, thereby attracting more donations (Nie, Liu, & Cheng, 2016; Pedro & Andraz, 2021). For example, previous studies investigating trust in the US higher education institutes confirmed that trust significantly shapes the attitude toward donations.

Last but not least, the rapid advancement of financial technology has facilitated online donation through multiple platforms such as online crowdfunding, social network sites, fintech and its equivalent. Trust is the key connection between social presence and behavior in the philanthropic context especially through online donation. In essence, without trust towards the fundraisers, effect of social presence on philanthropic behaviour is weak (Aji & Muslichah, 2022) and meaningless.

3. METHODOLOGY

This study used a survey technique with a set of questionnaire grounded in TPB. The questionnaire contains 40 items represented by seven-point Likert scale; very low (1), low (2), minimally low (3), moderate (4), minimally high (5), high (6) and very high (7). The items were arranged in google form and several social media and applications are used as platform of data collection for public response since this survey can be participated by anyone as long as the person is employed and have earnings, as they have the capacity to give for charity.

Employing a convenient sampling method, this study seeks responses via social media and relevant applications including telegram and whatsapp. The survey was keyed-in via google form and the link was published in a month (December 2021), which eventually succeeded in gathering 104 responses. Based on a study by Chen et al. (2014) small samples (≤50) in Rasch analysis identified a greater number of items with incorrectly ordered parameters than larger samples (≥100). Thus, this study with accumulated 104 samples are sufficient to confirm on the item's validity and reliability. In addition, as large samples are expensive and time-consuming.

Rasch advocates on the well-targeted respondents for a stable result. As confirmed by Azizan, Mahmud, and Rambli (2020) 30 items administered to 30 persons (with reasonable targeting and fit) should produce statistically stable measures. Since the distribution of survey is well-targeted, and respondents are not rare group of people or difficult to retrieve, 104 samples can be considered as sufficient. Furthermore, based on the analysis on the following section, the results are stable and productive, reflecting on the sufficiency of samples.

4. FINDINGS AND DISCUSSION

This section elaborates on three indicators of scale's validity and reliability; the item and person reliability index, item polarity analysis and item fitness index.

4.1. Item and Person Reliability

Rasch analyses provides several indices for reliability analysis, i.e the item separation, person separation, item separation and item reliability. The separation indices give an estimate of the spread of items or individuals along the continuum of ability and reflect the number of distinct strata in which the sample or items can be divided (Bond & Fox, 2015). The reliability reports how reproducible the person and item measure orders (i.e., their locations on the continuum) are (Linacre, 2012).

Table 1. Reliability analysis and separation of determinants to philanthropic behaviour.

Construct	Total items	Item ID	Item Measurement		Person Measurement	
			Separation	Reliability	Separation	Reliability
Attitude	5	A1-A5	6.36	0.98	1.17	0.58
Subjective norms	5	P6-P10	3.79	0.94	2.17	0.82
Perceived behavioral control	3	B11-B13	4.68	0.94	1.74	0.71
Altruism	8	A14-A21	5.26	0.97	1.18	0.58
Financial Stability	8	F22-F29	2.40	0.85	1.47	0.68
Religiosity	6	R30-R37	2.54	0.87	1.32	0.63
Trust	5	T38-T42	6.36	0.98	1.85	0.77
Overall scale	40		6.05	0.97	2.34	0.85

Based on Table 1, in overall, the scale of 40 items to measure philanthropic behaviour, responded by 104 samples, generate good item and person separation with the value of 6.05 and 2.34, respectively. According to Linacre (2005) separation of >2.0 is considered good, while separation between 1.5 to 2.0 is not productive for developing measurement but not demeaning, and values less than 0.5 is less productive for the intended measurement. Therefore, items separation of 6.05 shows that the items are able to differentiate the hierarchy of persons ability, or in this case the persons attitude towards philanthropic. The high item separation also shows that the sample is large enough or sufficient to confirm on the item difficulty hierarchy. Meanwhile person separation of 2.34 is also considered as good as accord to Linacre (2005). This implies that the instrument is sensitive enough to distinguish high and low ability of persons, or in this case the more generous and less generous individuals.

In tandem with the overall scale results, item separation for each construct is also found above 2.0 indicating the items quality in distinguishing person's ability. Nevertheless, person separation is found less than 2.0 for several constructs which may reflects more samples are required. However, as the overall person separation satisfies the rule of thumb for 2.34 person separation, the results are acceptable.

Based on Table 1, in general, the item and person reliabilities of 0.97 and 0.85 respectively implies on good measurement. According to Bond and Fox (2015) reliability of >0.8 is considered highly reliable. The item reliability for all constructs depicted stable and consistent good reliability between 0.85 to 0.98. Nevertheless, person reliability by construct shows lower value, which might be caused by smaller number of items as some of the constructs have as fewer as only five items. However, as the overall person reliability across all constructs of 0.85is good, thus the results are acceptable.

4.2. Item Polarity Analysis

In Rasch, information on response validity is provided by the analysis of item polarity, which can be detected from the Point Measure Correlation of the items. Table 2 presents the value of Point Measure Correlation for 40 items. The positive values of point measure correlation show that all the responses were valid. Any negative value is undesirable as it signals that the link for the item response or respondent conflicts with the variable or construct (Linacre, 2002). Thus, it is a sign of distortion, which requires further scrutiny; either to remove the item or rephrase to retain it. Based on Table 2, all responses were valid with a maximum value of Point Measure Correlation 0.60 (item A14) and a minimum value is 0.36 (Item R31). Therefore, it can be concluded that the items

contribute to the measurement of philanthropic behavior determinants, and able to differentiate between different types of determinants which influence the respondents.

Table 2. Point measure correlation of items measuring determinants to philanthropic behavior.

Construct	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Total
Attitude	0.54	0.37	0.48	0.59	0.44	-	-	-	5
Subjective norms	0.43	0.42	0.41	0.48	0.43	-	-	-	5
Perceived behavioral control	0.53	0.47	0.51	-	-	-	-	-	3
Altruism	0.60	0.57	0.43	0.32	0.37	0.36	0.42	0.41	8
Financial Stability	0.54	0.56	0.36	0.40	0.46	0.43	0.31	0.37	8
Religiosity	0.44	0.26	0.35	0.30	0.28	0.28	-	-	6
Trust	0.54	0.57	0.52	0.47	0.37	-	-	-	5
									40

4.3. Item Fit and Item Misfit

Rasch Model has the ability to estimate the suitability of the items measuring a certain latent trait, i.e the items are measuring what they intended to measure, via analyzing the results of Mean Square (MNSQ) Infit and Outfit which informs on the fitness of the measurement, based on certain determined threshold. According to Linacre (2002) the infit and outfit mean squares of each item must be located within 0.6 to 1.5, while Bond and Fox (2015) asserted the range of 0.6 to 1.4. If an individual item does not meet this requirement, it is a sign of item misfit and can be considered for elimination, or further scrutinization to review and improve the item.

Table 3. Analysis of infit and outfit mean squares of items.

Constructs	Item misfit	Measures for items' removal		
		PTMEA*	MNSQ Infit*	MNSQ Outfit*
Financial Stability	F28	0.31	2.54	2.68
	F29	0.37	1.92	1.71
Altruism	A15	0.57	0.59	0.58
	A14	0.60	0.47	0.54
Attitude	S1	0.54	0.50	0.53

Note: *PTMEA (Point Measure Correlation).
*MNSQ Infit (Mean Square Infit).
*MNSQ Outfit (Mean Square Outfit).

Based on Table 3, only five items are found misfit as the infit and outfit mean squares are outside the targeted ranges as proposed by Bond and Fox (2015). Hence, there are only five items to be considered for removal; F25, 26, A12, A11 and S1, i.e two items from the construct of financial stability, another two the construct of altruism and one from the construct of attitude. No misfit items are found in another four constructs; subjective norms, perceived behavioral control, religiosity and trust.

5. CONCLUSION

Rasch offers several indices in analyzing a scale's reliability. This articles discusses item separation, item reliability, person separation, person reliability, item polarity, item misfit of 40 items intended to measure philanthropic behaviors. The 40 items were vested under seven constructs namely attitude towards donation, subjective norms, perceived behavioral control, altruism, financial stability, religiosity and trust. Eventually, all the items fulfil the rule of thumb of a good measurement in Rasch Model thus acceptable and recommended to measure latent traits of philanthropic behaviour. Only five items are considered problematic as indicated MNSQ infit and outfit which are between the recommended ranges. Nevertheless, such results are the signs of problem which

require the researcher to scrutinize the item further for improvement before excluding them, as the items might be redundant or confusing.

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