Value-Action Gap in Climate Change Amongst Indonesians

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Abstract: The problem of climate change is defined by continued sea-level rise, melting of the ice caps, and increasing global temperatures. However, despite increasing informational awareness towards these facts by government and grassroots advocacy in many countries, emissions as the leading determinant of climate change continue to rise, with the growing consumption and activities being major emitters. In behavioral studies, this gap between perceived concerns and reflected actions is called the 'value-action gap' (VAG). This research evaluates the existence of a VAG among the Indonesians as increasingly significant emitters. Therefore, this research aims to determines whether relationships exist between climate change knowledge, reported concerns, and exhibited actions taken to mitigate climate change. The research proposes the hypotheses that concerns and awareness of climate change are high among the studied population, but do not influence high climate behavior. The research gathers three class variables through a quantitative sampling, namely climate change knowledge, climate change concerns, and climate change behaviors. The gap is then calculated as a subtraction score between the latter two variables. Moreover, discrepancies between the actions taken and reported concerns are assessed, showcasing policy implications going forward. The findings of this research based on the sample suggest that varying income groups of urbanite households hold significant knowledge of climate change and have reported concerns towards the issue, and that the two as variables are linked to each other.

Keywords: climate behavior; climate concern; value-action gap; structural-equation modeling

Introduction

At a global level, numerous polls have indicated that most of the world's population is aware of climate change (Leiserowitz, 2007; World Bank, 2009; Stokes et al., 2015; Fagan & Huang, 2019). The awareness, which the respective surveys would variously define, all

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sum up as a measure of the respondent acknowledgment of the phenomenon. With the different methodologies of the polls and the questions asked, Indonesia's respondents reflect the nation as climate change awareness in some polls (World Bank, 2009; Fagan & Huang, 2019) and as deniers in another (YouGov, 2019). However, as rising emissions cause further deterioration to the atmospheric balance, i.e., climate change (IPCC, 2018), Indonesia sits as one of the largest emitters of greenhouse gases (Dunne, 2019).

That said, Indonesia as a global contributor to climate change, is burdened with the responsibility to partake in reducing its emissions should atmospheric balances be aimed for—and as of the Paris Agreement, Indonesia has committed to reducing at least 29% of its emissions on its measures and up to 41% through conditional international assistance by 2020 against a business-as-usual scenario (GGGI-Bappenas, 2019). This commitment, otherwise dubbed the Nationally Determined Contribution (henceforth NDC) was a politically high-level established commitment that aimed to limit global temperature rise below 2°C with further efforts up to 1,5°C (IPCC, 2018). Yet, the political elites may convey climate commitments in international negotiation tables, but whether emission reductions materialize comes down to the effective implications in the respective states and affect the emitters at the micro-level. Specifically, with regards to the consumption patterns that lead to emissions.

The underlying logic is that if consumption patterns can be tweaked so that unsustainable consumption behaviors are ameliorated at the individual and household level, then there is a prospect for sustainability transformation that could go in tandem with supply-side projects (e.g. the production of new and renewable energy) which would take more time (Norton et al., 1998; Kollmuss & Agyeman, 2002; Newton & Meyer, 2013). Consequently, just as some supply-side policies have their hurdles (e.g. costs and time periods), the demand-side ideas are easier said than done (Blake, 1999). Thus, when looking back to the beginning paragraph where various polls for Indonesia indicate two different perceptions of climate change, it would be increasingly difficult to introduce demand-side changes should the denier nation attribute ring truer than the other. This is a logical consequence of denialism going against measures that would otherwise interfere individual utility preferences (in this case as fossil fuel consumerist) whom the policies would target (Brown & Cameron, 2000).

Yet, besides the dichotomy of denialism and acceptance, the surveys on concerns about climate change in many countries show that they do not necessarily translate to greenhouse gas mitigation practices. At the same time, global temperature targets would require an accelerated supply-side change for emissions and sustainability transformations at the individual and household demand levels (Newton & Meyer, 2013; Rahman et al., 2019). As for Indonesia specifically, state-wide climate perceptions are conflicting, but a sizeable middle-class is shown to be aware of the phenomenon, as stated in Ipsos (2019). That said, since the Ipsos (2019) document does not establish the details of middle-class climate awareness and how far they are knowledgeable about the issue, the statement need not be taken at face value. Instead, two problems can be derived from the account in Ipsos (2019) and the preceding background.

The above condition implies that consumption patterns are inhibited by "structural, cultural, social and institutional" factors. Such factors would create gaps between formed values expressed as concerns and the stated social, economic, ethical, or environmental issues and actions or decisions upon such concerns. This observed discrepancy between an individual has expressed environmental concern and decisions impacting the environment in practice is termed the 'value-action-gap' (Babutsidze et al., 2018; Barr, 2006; Blake, 1999; Chai et al., 2015; Chaplin & Wyton, 2014; Chung & Leung, 2007; Flynn et al., 2009). Other literature term the phenomenon as 'attitude-behavior gap', 'awareness-behavior gap,' 'attitude-action gap' or environmental values-behavior gap' (Bai & Liu, 2013; Kennedy et

al., 2009; Kollmuss & Agyeman, 2002; Newton & Meyer, 2013). In any case, the underlying interpretation of the term across literatures is succinctly phrased in Blake (1999), which states:

> "[the value action-gap] in general terms [are] the differences between what people say and what people do" (Blake, 1999).

In the words of Flynn et al. (2009), the gap is evident when '[p]eople express strong support for environmentally sustainable policies, but display little commitment to alter their own behavior'. The authors showcased this with results of the British Social Attitudes survey which highlights the disparity between increasing levels of environmental concerns with unsustainable energy consumption as exemplified in increasing air travel and automobile use (Flynn et al., 2009). When considering that shifting energy consumption behavior is important to achieve efficiency, such gaps serve as significant barriers (Rahman et al., 2019), and that attempts to promote general awareness and concerns may be insufficient on their own.

In that study by Blake (1999), explorations are done on the value-action gap concerning sustainability and environmental practices in the United Kingdom. Through 163 detailed face-to-face interviews with individuals in Huntingdonshire, Blake (1999) that 'environmental concern, and basic environmental action (such as recycling), are now becoming widespread throughout the population; but few people take environmental actions that involve changes their lifestyle.' Against the backdrop of the UK Government's Going for Green (GFG) initiative, which is set up as an environmental awareness campaign to enable environmental behavior, Blake (1999) argues that policies subscribing to an information deficit model (i.e., presuming people do not have enough information) will face a barrier, which is the evident 'value-action gap.' Blake (1999) further argues that the barriers that hold back action are categorized into three: individuality, responsibility, and practicality.

Another inquiry into the 'value-action gap' amongst Britons is found in Barr (2006), who studied waste minimization behavior in Exeter, Devon. Formed as a part of a large research project on waste management behavior in 1999, Barr (2006) quantitatively assessed waste management behavior, behavioral intentions and held environmental values against situational variables and psychological variables through a questionnaire delivered across random households (N=673) in Exeter. Barr (2006) assessment showcases that the value-action gap is explained by elements of the social behavior model formulated by Fishbein and Ajzen (1975), where relations between stated intention and behavior differ. People reported their willingness to minimize waste regularly, yet waste minimization in Exeter was relatively low. Barr (2006) adds that with regards to waste minimization, 'governmental awareness campaigns are unlikely to be effective in shaping this behavior since individuals are already aware of the need to recycle'.

Further research that explores the gap in the quantitative direction is found in (Bai & Liu (2013), who assesses the link between low-carbon awareness and behaviors of residents in Tianjin, People's Republic of China (N=354). Low-carbon awareness in their study is based on the concept of environmental awareness, which includes low-carbon knowledge as an important construct. Through a questionnaire, Bai & Liu (2013) assessed the resident's by an instrument that included seven scales with 26-items, namely public and private low-carbon behavior; (adapted from Stern, 2000); low-carbon value (adapted from Thompson & Barton, 1994); low-carbon attitude (based on the New Ecological Paradigm in Dunlap et al., 2000); low-carbon knowledge (based on Schahn & Holzer, 1990); barriers and motivators of low-carbon behaviors (based on Stern, 2000). Their SEM analysis suggests that low-carbon knowledge directly affects public and private low-carbon behavior, whilst being insignificant by indirect effects through attitudes and values. In contrast to the

previous literatures, their findings showcase that a gap exists, however with reported behaviors being higher than awareness levels (Bai & Liu, 2013).

In Chai et al. (2015) a scale is developed to empirically measure the gap itself by calculating the difference between rescaled constructs of concern and behavior that were expressed in percentage terms between 0 and 1. The authors, who write on the role of discretionary time in sustaining climate change value-action gap, used responses from a 120-items online web-based survey that recorded climate change knowledge, experiences, attitudes, concerns and sustainable consumption practices in Australia which were conducted by (Reser et al., 2012). By having the value-action gap score as the dependent variable, the authors find that individuals with relatively more discretionary time available to them shows lesser value-action gap. An interesting finding however is that reported knowledge showcased reduced value-action gap, yet concern about climate change had the opposite effect (Chai et al., 2015).

Finally, Similar to Chai et al. (2015), the literature by Babutsidze et al. (2018) inquires upon the value-action gap by providing an empirical measure of the gap itself using the same formula of calculating the difference between rescaled constructs of concern and behavior that were expressed in percentage terms between 0 and 1. Their study which was on overall public perceptions and responses to climate change across France showcased varying levels of climate change beliefs, acceptance, concerns, perception, knowledge, actions and gaps. Babutsidze et al., (2018) finds that those 'who reported the highest levels of concern only participated in an average of 62% of the possible climate mitigation actions listed'. Against socio-demographic variables, the authors also find that students reported the highest level of value-action gap, where levels of mitigation behavior were low despite high level concerns (Babutsidze et al., 2018).

From the literatures mentioned before, it shows that in various countries the value-action gap exists amongst individuals with varying explanations for their reasons according to select approaches and models. However, none of the literatures mentioned above have addressed the Indonesian populace, namely whether there is a discrepancy between reported actions and stated concern. Hence this study aims to determine the levels of climate knowledge and concerns amongst Indonesians and behaviors reported that mitigate or adapt to climate change, and then assess the gaps between reported concerns and actions exhibited as done in Australian sample of Chai et al., (2015) as well as the French sample of (Babutsidze et al., 2018).

Research Methods

Given the background problem and previous research that have been conducted on the matter, this research first measured the levels of climate knowledge and concerns amongst Indonesians and actions taken that mitigate or adapt to climate change through a survey-based self-reporting. Following such assessments, discrepancies between the reported concerns and behaviors were measured to determine the levels of gaps Indonesians indirectly reported.

Our hypothesis assumes an initial linear path model Bai & Liu (2013); Barr (2006); Kollmuss & Agyeman (2002) in that there is a direct and indirect effects of climate change knowledge upon climate change concerns, and climate change behavior with a measurement of value-action gap. The following research hypotheses in detail are therefore formulated: H1= climate change knowledge affects climate change concern directly; H2 = climate change knowledge affects climate change behavior directly; H3 = climate change concern affects climate change behavior directly; and H4 = Climate change knowledge affects climate change behavior indirectly via climate change concern. Then, following a standardized difference between concern scores and behavior scores as done by Chai et al.,

(2015) and Babutsidze et al., (2018), the inclusion of the measured gap forms these additional hypotheses: H5 = climate change knowledge affects value-action gap directly; H6 = climate change concern affects value-action gap directly; and H7 = climate change knowledge affects value-action gap indirectly via climate change concern.

Furthermore, the assessment of data utilizes a Structural Equation Modelling (SEM) statistical technique to model the relationships between observed variables and latent variables as well as concurrent interdependencies between them (Bai & Liu, 2013). The use of SEM is considered to be appropriate given the latencies of the variables which are explained below. The software LISREL is used to model the structures and equation. Findings from the SEM analysis result uncovers the extent of the relationship to which respondents are knowledgeable and concerned about climate change as well as the gaps in their reported actions. The data gathered to be processed in SEM are acquired with a quantitative survey through structured questionnaire distribution and qualitative online interview. The primary data serves as the main information to be used for the purposes of this research. The self-administered questionnaire is distributed online directly to respondents via the Google Forms platform. The questionnaire was developed in Bahasa Indonesia to reflect the targeted audience's native language and for the purposes of feasibility. The core section of the questionnaire contains the elements that are divided into three subsections representing each latent variable to be assessed.

Variable 1: Climate Knowledge (CK)

Based on various literatures, the variable climate knowledge is defined as the "Knowledge of the causes, consequences and potential solutions to global climate change and with respect to Indonesia" (Reser et al., 2012; Salehi et al., 2016).

Variable 2: Climate Concern (CC)

Concern on climate change "relates to the risk perception and sense making with respect to perceived environmental changes and threats" (Reser et al., 2012).

Variable 3: Climate Behavior (CB)

Climate change behaviors refers to indicated actions that reduce carbon footprint and therefore mitigate climate change (Reser et al., 2012).

Variable Operationalization

As latent variables are not directly observable, measurable indicators are used, and is reflected in the questionnaire items constructed for the respective variables (Kline, 2015). The climate change knowledge and climate change concern subsections include statements with Likert-scale responses, whereas the climate change behavior include checkbox options of different practices that respondents pick. The details of each construct variables and their questionnaire items are available in Table 1.

Table 1. Constructs and Items

Construct Variable	Items	Source	Scale
Climate Knowledge (CK)	CK1: Carbon dioxide in the atmosphere increases the greenhouse effect CK2: Increasing greenhouse effect results in global warming	Adapted from Salehi, Nejad, Mahmoudi, & Burkart (2016)	Likert 1 – 5 (1 = Strongly Disagree until 5 = Strongly Agree)

Table 1 Continued

Construct Variable	Items	Source	Scale
	CK3: Volcanic eruptions have an effect on global climate CK4: Burning of fossil fuels such as coal increases the greenhouse effect CK5: Global warming has an impact on agricultural production and forestry CK6: Without clouds and water vapor, the earth's temperature will be cooler CK7: Without the ozone layer in the atmosphere, life on earth is threatened CK8: Reduction in ozone gases increases ultraviolet radiation upon the earth's surface CK9: Chlorofluorocarbons (CFC) are chemical compounds that threaten the ozone layer CK10: Deforestation of tropical rainforests increases the greenhouse effect CK11: Ultraviolet radiation increases the risks of skin cancer and cataracts CK12: Indonesia is one of the countries most threatened by climate change CK13: Climate change increases the risks of contagious diseases in Indonesia CK14: The change in global temperature for the last 100 years is greater than for the last 1000 years	Adapted from Reser, Bradley, Glendon, Ellul, & Callaghan (2012)	
Climate Concern (CC)	CC1: I am very concerned with the phenomenon of climate change and global warming CC2: If there are no efforts to address climate change, it will be a serious problem for Indonesia CC3: If there are no efforts to address climate change, it will be a serious problem for the whole world CC4: I am concerned about the potential impacts of climate change on me personally CC5: I am concerned about the potential impacts of climate change on society CC6: Climate change a serious problem right now	Adapted from Reser, Bradley, Glendon, Ellul, & Callaghan (2012)	Likert 1 – 5 (1 = Strongly Disagree until 5 = Strongly Agree)
Climate Behavior (CB)	CB: Choose the items that you have taken to reduce your carbon footprint which has an impact upon climate change: • Recycling • Use fluorescent light bulbs • Use less water • Use less electricity • Drive less • Use less petrol	Adapted from Reser, Bradley, Glendon, Ellul, & Callaghan (2012)	Checkbox options of 14-items with additional 'Other' option for self-filling

Table 1 Continued

Construct Variable	Items	Source	Scale
	• Walk/bike • Buy local/organic/grow food • Buy smaller car • Use public transport • Reduce travel • Reduce air travel • Use carpool/ridesharing • Use renewable energy sources Other		

Results and Discussions

A total of 1.038 responses were recorded, of which n = 997 were usable. Following a validity and reliability pretesting and testing, the items CK3 and CK6 was consequently dropped. Descriptive analyses were first conducted for the variable item responses, afterwards measurement model and structural model analysis to determine causal relations within the SEM conventions were done.

Descriptive Analysis of Variable Item Responses

In Table 2, it is shown that that there is a general agreeability with the 13 item climate knowledge statements (total mean of 4,267). The highest mean score being CK7 with 4,766 which points to an agreement direction. However, item CK6 showed more tendency of disagreement with a mean of 2,947 (lower than the neutral midpoint answer. Item CK13 is also relatively lower in mean responses than the other items.

Table 2. Climate Knowledge (CK) Descriptive Statistics

Item	n	Min	Max	Total Score	Mean	Total Mean
CK1	997	1	5	4306	4,319	4,267
CK2	997	1	5	4672	4,686	
CK4	997	1	5	4338	4,351	
CK5	997	1	5	4464	4,477	
CK7	997	1	5	4752	4,766	
CK8	997	1	5	4463	4,476	
CK9	997	1	5	4372	4,385	
CK10	997	1	5	4219	4,232	
CK11	997	1	5	4592	4,606	
CK12	997	1	5	4126	4,138	
CK13	997	1	5	3876	3,888	
CK14	997	1	5	4196	4,209	

For climate concern, Table 3 shows that there is a general agreeability with the 6 item climate concerns statements (total mean of 4,267). The highest mean score being CC3 with 4,793 which points to an agreement direction.

Table 3. Climate Concern (CC) Descriptive Statistics

Item	n	Min	Max	Total Score	Mean	Total Mean
CC1	997	1	5	4648	4,662	4,604
CC2	997	1	5	4652	4,666	
CC3	997	1	5	4779	4,793	
CC4	997	1	5	4366	4,379	
CC5	997	1	5	4556	4,570	
CC6	997	1	5	4541	4,555	

As for the climate behaviors (CB), Figure 1 below shows that a majority of respondents engaged in walking/biking activities, with committing to use less electricity coming in second. Activities that were least popular include the use of carpool/ridesharing and use of renewable energy sources, which could be attributed to the fact that these are rarely available in Indonesia's context (with provision of renewable energy still in its infancy, and that carpooling is not a big industry yet) (Agustinus, 2017; Rezkisari, 2014).
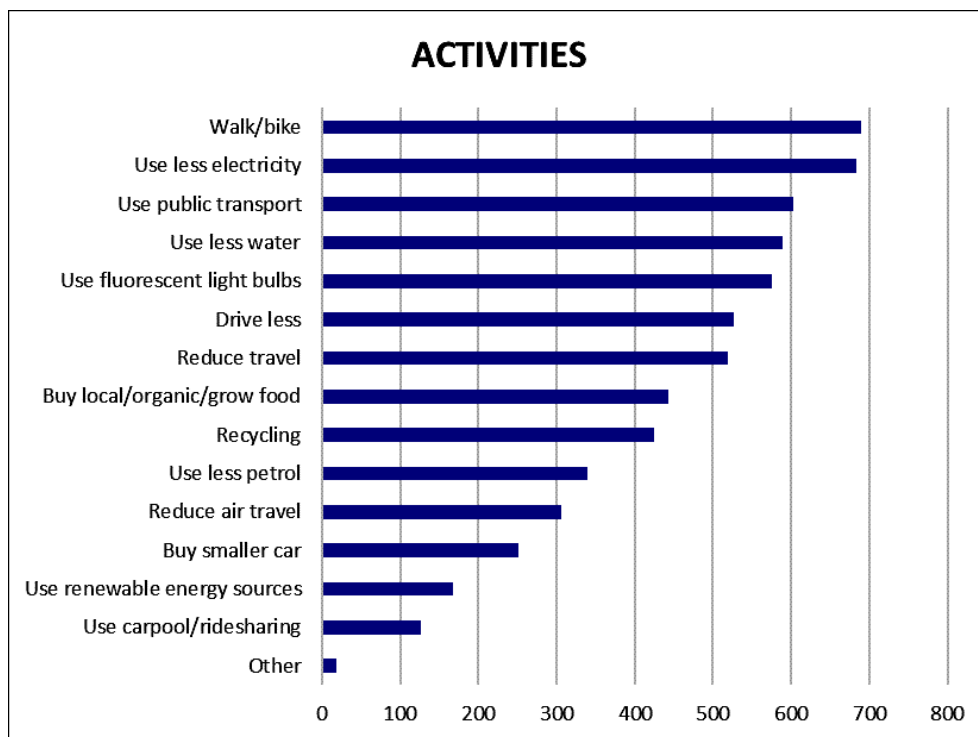
Figure 1. Respondent Activities to Reduce Carbon Footprint

Some respondents also mentioned other activities which include not using air conditioning, minimizing plastic waste, planting trees and, avoiding use of incineration for garbage disposal among others. As a measured item, the self-reported activities has a score range of 0 – 14 (with 'other' being excluded). From such scoring, the average score of carbon footprint reducing activities were reported (mean = 6,262). The mean figure is not far off from the reported activities of Australians measured in Reser et al., (2012) which this questionnaire is based on (mean = 6,43). The difference is when looking at the activities themselves, wherein Reser et al., (2012) recorded recycling as the most popular carbon

footprint reducing behavior. This of course to be attributed to the differing context once again, where knowledge and avenues for recycling is still at its infancy in Indonesia.

Finally, the variable value-action gap (VAG) is calculated by the standardized difference between climate concern and carbon footprint reducing activities as previously done in Chai et al., (2015) and Babutsidze et al., (2018). The variable is expressed between -1 to 1. The formula is given as equation (1).

$$VAG_i = \frac{CC_i}{CC_{total}} - \frac{CB_i}{CB_{total}} \qquad (1)$$

With the equation (1), climate concern's total score is 30 whilst the climate behavior is 14. The report on the maximum, minimum and mean value-action gap scores can be found in Table 4.

Table 4. Value-Action Gap (VAG) Descriptive Statistics

	Score (n = 997)
Maximum	0,928
Minimum	-0,347
Mean	0,473

From the Table 4, it is inferred that a gap between reported concerns and activities undertaken to reduce carbon footprint exists amongst the sample, with mean VAG score of 0,473 and standard deviation of 0,129. There is also a recorded maximum of 0,928, where said respondent reported only one mitigating activity despite showing concern for climate change. This number is higher than the mean score in the Australian survey at mean = 0,28 and standard deviation = 0,24 (Chai et al., 2015). The maximum gap scores however are similar at 0,93. In the French sample, the value-action gap mean is lower (mean = 0,2) (Babutsidze et al., 2018). Moreover, the negative scores point to an interesting direction where respondents do not report much concerns in climate change but engage in carbon footprint reducing activities (Babutsidze et al., 2018; Chai et al., 2015).

Structural Model Analysis

This sub-section details the causal relations between the latent variables as part of the structural model analysis. The hypothesis of this states whether there are relations between the variables, either positive or negative (H1 – H7). Therefore, the causal relation analysis indicates the standardized loading factors from LISREL to determine the relationship, either positive or negative. Each of the relationships will be determined for significance by way of a two-tailed t-test, with confidence level of 99% and a = 0,01. The critical value of a two-tailed t-test for a = 0,01 is ≥ 2,576 and ≤ -2,576 (Wijanto, 2008). If the t-values are below -2,576 or above 2,576 then the relations show considerably significant effect.

For direct relationships such as in H1 – H3 and H5 – H6, LISREL provides the output standardized loading factors and t-values. However, as H4 and H7 hypothesizes indirect relationships through mediating variables, a Sobel test is conducted to determine the t-values. The Sobel test is given by the equation (2).

$$t - value = \frac{ab}{\sqrt{(a^2 SE_a^2) + (b^2 SE_b^2)}} \qquad (2)$$

Where α is the loading factors of an exogenous variable against the mediating variable, and b is the loading factors of the mediating variable against an endogenous variable. SE are standard errors for both the loaded factor relations of α and b. SLF and t-values including the interpretations for each causal relationship are outlined in Table 5.

From the table above, it can be seen that H1 – H6 show significance in variable relationship, whilst H7 is insignificant. The insignificance of H7 means that climate change knowledge (CK) influence upon value-action gap (VAG) via climate change concern (CC) does not show enough evidence of an effect. The direct relationship between climate change knowledge (CK) and climate change concern (CC) is positive and significant. Coefficient of determination value also indicates that 95% of variations in CC are explainable by variations in CK ($R^2 = 0,954$). These results fits the theory that the more knowledgeable on the issue one gets, the more concerned one potentially can be (Babutsidze et al., 2018; Barr, 2006; Chai et al., 2015; Kennedy et al., 2009; Salehi et al., 2016).

Table 5. Standardized Loading Factors & t-values for Model Relationships

Hypothesis	Variable Relationship	Standardized Loading factors	t-value	Interpretation
H1	CK → CC	0,976	22,817	Positive & Significant
H2	CK → CB	3,554	9,494	Positive & Significant
H3	CC → CB	-3,423	-9,238	Negative & Significant
H4	CK → CC → CB	-3,340	-2.635	Negative & Significant
H5	CK → VAG	-5,569	-6,014	Negative & Significant
H6	CC → VAG	5,892	6,309	Positive & Significant
H7	CK → CC → VAG	5,750	1,045	Positive & Insignificant

It is worth noting however, some relations show negative direction, such as H3 – H5. For H3 and H4, the relationship between climate change concern (CC) and climate change behavior (CB) results in negative SLFs, meaning that as one increases the other decreases. This fits with the notion of discrepancy between reported concerns and climate change mitigating conduct, wherein scores of concern actually reduce behavior. On that same end, it therefore also fits that H6, between climate change concern (CC) and the value action gap (VAG) shows positive significance, as heightened concern leads to lower behavior therefore increased discrepancy as indicated by VAG scores.

Yet at the same time, climate knowledge (CK) relationship with climate behavior (CB) directly is a positive one. This then leads to a negative relationship between climate change knowledge (CK) and value-action gap (VAG) which means that increased knowledge actually results in more climate change mitigating conduct (H2) and also leads to lower gap scores (H6). When taking a look at the coefficient of determination value (R^2), as indicated in the reduced form equation values from LISREL, the value of R^2 between value-action gap (VAG) and climate change knowledge (CK) is 0,034, which in other words means that only 0,34% variations in VAG are explainable by variations in CK. Therefore, the rest are

explainable by other variables. Similarly, only 0,44% of variations in climate change behavior (CB) are explainable by variations in CK ($R^2 = 0,044$).

Conclusion

The findings of this research based on the sample does suggest that varying income groups of urbanite households hold significant knowledge of climate change and have reported concerns towards the issue, and that the two as variables are linked to each other. Moreover, the same samples also reported considerable engagement in climate mitigating behaviors just as in the respondents in Australia and France (Babutsidze et al., 2018; Chai et al., 2015). At the same time, discrepancies between reported concerns and actions taken are also displayed, and that value-action gaps exists amongst the sampled group. This is also similarly explored by previous research in other countries (Babutsidze et al., 2018; Barr, 2006; Blake, 1999; Chai et al., 2015), the value-action gap just as evident in Indonesia.

In terms of policy recommendation, the suggestion is of course to address the gap itself, and given the formula there are two ways to go about it. Either through reducing the climate knowledge and concern as the formulaic numerators or increasing the climate behaviors as the denominators. The former is obviously out of the question, given the fact that wiping knowledge is unattainable and that reducing concern is all-the-more unreasonably counter-productive to the climate change agenda. The descriptive analyses (Table 2 and Table 3) for the constructs of climate knowledge and concern in fact suggests that there is a general agreeability with mean scores above 4 (showcasing tendency towards agreement.

That being said, the option comes down to increasing climate behaviors amongst individuals, and although clear-cut, implies a necessary change of the current consumption imperative for the nation's future. Given the consumption implications towards growth, the purpose of such growth and whether it is the only necessitating indicator for welfare improvement needs to be questioned. It is clear that voluntary efforts that begin at the homes are important for a climate safe future, yet regulatory frameworks need to be in place to enable such efforts (Dubois et al., 2019).

Moreover, research recommendations on the matter could benefit from including income variations and its effect on the levels of said discrepancy. The theoretical basis of income effects on variations of emissions have been previously laid, such as in (Büchs & Schnepf, 2013). However, whether specifically those in higher incomes produce less-mitigating actions and whether knowledgeable and concerned attitudes are more present remains to be explored in future research. Additionally, sampling variations on larger scale could definitely strengthen future research to assess overall Indonesian's climate concerns and behaviors taken. On that same end, the inclusion of various other variables could come into play such as the complex value and cultural structures in Steg, Bolderdijk, Keizer, and Perlaviciute (2014). Inclusion of such structures may provide more contextual basis as to the underlying influences towards concern shaping, beyond the knowledge factors.

In doing so, the future research could then also go beyond the fourteen actions which are predefined as mitigating behaviors for use in the Australian, United Kingdom and French context as in Babutsidze et al., (2018); Chai et al., (2015), research can be done along the lines of improving the basket of actions availability in the Indonesian context.

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