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Content Analysis on Facebook Posts to Test Hofstede's Scores Consistency

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Abstract

Hofstede's cultural dimensions theory has gained significant popularity since its launch around 40 years ago. Many cross-cultural literatures rested on this theory. However, along with the development of social research, this theory has been a target for criticisms about its methodology, nature, size, inconsistency, and outdated data. Therefore, this study aims to test the consistency of the cultural dimension's theory, especially Hofstede's national culture score. Quantitative content analysis was employed in 600 contents posted on Facebook accounts of several universities in Australia and Indonesia to see the polarization of the cultural dimensions, which were compared with Hofstede's score. The Mann-Whitney U-test was also carried out to see the significance of polarization in each dimension. The results of this study confirmed the inconsistency of Hofstede's cultural dimension score in one of six main findings. The implications of the findings are also discussed in relation to several criticisms of this theory.

Keywords*: Hofstede; Cultural Dimensions; Mann-Whitney U Test; National Culture*

Abstrak

Sejak awal kehadiran teori dimensi-dimensi budaya Hofstede sekitar empat puluh tahun yang lalu, teori ini mendulang kepopuleran hingga saat ini. Banyak penelitian antarbudaya yang bersandar pada teori ini. Namun, seiring perkembangan dunia penelitian sosial, popularitas teori ini juga menuai sejumlah kritik, baik dalam metodologi, sifat, ukuran, ketidakkonsistenan skor, dan keterbaruan data. Oleh karena itu, penelitian ini bertujuan untuk menguji konsistensi teori dimensi budaya ini, terutama terkait tipologi skor budaya nasional Hofstede. Penelitian ini menggunakan metode analisis isi kuantitatif pada 600 konten posting akun Facebook resmi sejumlah perguruan tinggi di Australia dan Indonesia untuk melihat polarisasi dimensi budaya pada masing-masing negara, yang kemudian dibandingkan dengan skor Hofstede. Mann-Whitney U Test juga digunakan untuk melihat signifikansi polarisasi di setiap dimensi budaya. Hasil penelitian ini menunjukkan ketidakkonsistenan skor dimensi budaya Hofstede pada satu dari enam temuan utama. Implikasi hasil penelitian ini juga dibahas dalam kaitannya dengan beberapa kritik terhadap teori ini.

Kata Kunci*: Hofstede; Dimensi-Dimensi Budaya; Mann-Whitney U Test; Budaya Nasional*

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Introduction

Intercultural practice certainly involves communication which tends to be tricky or complicated because it relates to building relationships among individuals within different cultural backgrounds. This is in accordance with what Ting-Toomey conveyed that intercultural communication is actually about comparing two or more cultures (Ting-Toomey, 1991 in Dainton & Zelley, 2019). For example, an expatriate who lives and works in a foreign country must undergo a process of cultural adaptation in order to interact well with co-workers. Some of the important factors in this process are the mastery of the local language and adjustment to the local culture (Mandari & Boer, 2021; Mulyana & Eko, 2017). Thus, these cultural differences are important for intercultural practitioners to understand, whether in business, trans- and multi-national organizations, or cooperation between countries.

To make it easier to see the differences among cultures and how a culture shapes and is formed by its communication, clear measures are needed. Some measures that can be used are Hofstede's cultural dimensions, which are able to assess intercultural differences in social contexts (Dainton & Zelley, 2019). Hofstede's cultural dimensions can be used at the level of community groups, organizations, and communities among regions and countries. In fact, these dimensions can be applied to see the differences in sub-cultural communication within the same region and country (Griffin, Ledbetter, & Sparks, 2018). Some studies have also used this theory at the individual level either to directly observe cultural differences between individuals or to group observed individuals based on Hofstede's national cultural index (de Mooij & Hofstede, 2010; Yoo, Donthu, & Lenartowicz, 2011). However, there have been many criticisms of its application at the individual cultural level.

The theory of cultural dimensions stemmed from the results of Hofstede's research on about 100,000 IBM employees spreading across 40 countries from 1967 to 1973. According to him, this research was an attempt to continue the desire of earlier anthropological scientists such as Ruth Benedict and Margaret Mead to find out intercultural difference problems of all nations, both modern and traditional ones. In this case, the big issue to be captured was the relationship among power, self-conception, and how to deal with conflict (Hofstede, Hofstede, & Minkov, 2010). However, the interesting thing is that two different cultures may face same problem, as well as two same cultures may face different problems (Minkov, 2013). Therefore, it is important to define the dimensions of culture to better understand the problems that arise due to cultural differences so that appropriate solutions can be provided, and cultural change can be measured.

The first four dimensions proposed by Hofstede were power distance, individualism-collectivism, masculinity-femininity, and uncertainty avoidance. Then, Hofstede added two more dimensions, that were long-term orientation, adapted from Michael Bond's research; and the dimension of indulgence from Minkov's research (Hofstede et al., 2010; Minkov, 2011). The measure of these cultural dimensions is expressed in a continuum score from 0 to 100. The closer the score to 0 or 100, the more the culture is polarized to a dominant trait. For example, a score of 90 (Australia) on the individualism dimension indicates individualist culture, while a score of 14 (Indonesia) indicates that the country is collectivist.

The focus of the discussion in this study is limited to three dimensions: individualism-collectivism, masculinity-femininity, and long-short-term orientation. The first dimension this research focuss on is Individualism - Collectivism. This

dimension discusses how individuals define their relationships with others (Dainton & Zelley, 2019). According to Triandis, individualist culture promotes self-autonomy where each individual is not tied to the collectivity of his group. Meanwhile, collectivism prioritizes common interests by excluding personal interests (Triandis, 1995). Another characteristic is that the individualist culture highly values individual achievement, likes to compete, and respects the uniqueness of each individual. Meanwhile, collectivists focus on relationships and cooperation within the group (Browaeys & Price, 2015; Hofstede, 2001; Hofstede et al., 2010; Minkov, 2011).

The second dimension is Masculinity – Femininity, which discussed about polarization formed in a culture based on gender differences in aspects of social roles. Masculine focuses on achievement to create assertiveness and competitiveness, while feminine focuses on nurturing or preservation efforts, to create concern about good relationships between people and the environment (Hofstede, 2001; Hofstede et al., 2010). Thus, it is not about which one is weaker (feminine) and which one is stronger (masculine), but about how these traits are polarized and crystallized in each culture so that they become views or guidelines for living.

The third dimension of the focus of this research is Long-Term Orientation, which talks about the tendency of people in a culture to maintain things related to the past in dealing with challenges in the present, and the future (Hofstede, 2001). In other words, the virtues that are formed today are considered related to the past that will remain in the present or are related to the future (Browaeys & Price, 2015). Therefore, long-term-oriented culture will prioritize sustainability in the future, while short-term-oriented culture prioritizes maintaining traditions, images, or reputations from the past.

Hofstede's theory has been popular to date because it can cover and develop themajor conceptualization of culture built in the previous decades (Yoo et al., 2011). Many similarities in the typologies of different cultures can be captured very well by Hofstede with its dimensions (Clark, 1990). Another fact is that this theory was developed empirically while, at that time, other cultural constructs were still in the conceptualization stage. Then, many other researchers replicated Hofstede's typology and concluded that Hofstede's work is the most influential theory in looking at cultural variability (Chandy & Williams, 1994). Thus, if this was a sprint competition, of course, Hofstede in that era was a 'sprinter' on the first podium who managed to run the fastest and get a standing ovation from the 'audience' (another theorist).

This theory is very useful in the practice of international communication. According to Wardrobe (Makambe & Pellissier, 2014), Hofstede's cultural dimensions affected all forms of communication, either verbal, non-verbal, ethical, or written communication. So, every individual in intercultural practice needs to understand these dimensions. Other applications of this theory took place in the practice of international business management, negotiation or drafting of international agreements (Makambe & Pellissier, 2014), and international marketing (de Mooij & Hofstede, 2010).

However, despite its popularity and easy application since its formulation up till now, the Hofstede's theory of cultural dimensions is not without flaws. Along with the advancement of social research, many criticisms to this theory have sprung up in various aspects, such as about its data updates, size, nature, and methodology. Another criticism is that the simplicity and generalization in this theory contain weaknesses, especially in explaining and digging deeper into the dynamics and disorder in a global society (Jackson, 2020). From the methodological aspect, the Hofstede survey was initially intended to assess job satisfaction, not to measure culture (Orr & Hauser, 2008).

Of course, this was a methodological haphazard. Orr and Hauser also revealed that the initial measurements and data of Hofstede's research which became the assumption of national culture have been outdated. Some researchers found problems when applying this theory at the individual level, especially in the methodological aspect of the Hofstede score, which often gives psychometrically unsatisfactory results on individual observations (Yoo et al., 2011). This indicates low reliability at the level of individual observations.

The harshest criticism centered on the erroneous framework in which Hofstede treated culture as a generalized component with cultural causality determined by the population collectively forming a national culture (McSweeney, 2002). Culture at the core of anthropology is unique, not general, so quantitative approaches are scarce in this study. Thus, Hofstede's cultural dimensions score is not valid and reliable in measuring cultural dimensions at the individual and even organizational level (McSweeney, 2013; Venaik & Brewer, 2013). Baskerville argued that Hofstede's cultural dimensions have a weak and unclear theoretical basis with merely impression of equating between state and culture. This is evidenced by the low citation of Hofstede's methodology in the realm of sociological and anthropological research (Baskerville, 2003), but highly cited in other fields such as management, business, and marketing. Moreover, new criticisms of this theory continue to emerge, which not only seriously doubt the framework of this theory but also question the results of studies using this theory and recommend to no longer use this theory(Venkateswaran & Ojha, 2019).

With the background of the pros and cons above, this study aims to test the consistency of this cultural dimensions theory, especially the typology of Hofstede's score in two countries, Indonesia and Australia, using content analysis method on Facebook posts of several universities from both countries. This is different from previous studies, which tended to compare cultures between countries (Chun, Zhang, Cohen, Florea, & Genc, 2021; Halkos & Petrou, 2019; Huang & Crotts, 2019; Litvin, 2019; Sithole & Abeysekera, 2019). Specifically, this study aims to see the consistency of Hofstede's score from the polarization of each dimension in a national culture. This polarization can be seen from the difference in the distribution of the dependent variable for two independent groups in the same population using the Mann-Whitney U Test (Karadimitriou, Marshall, & Knox, 2018). The application of the Mann-Whitney U test in this study is to see the differences between the two groups of determinant behavior of dominant culture in each cultural dimension for each country. Thus, this study does not compare Indonesian and Australian culture but instead explores the differences in the polarization of determinants behavior in each of three cultural dimensions from the empirical data (contents of Facebook posts) analyzed by content analysis method.

The researcher argues that the polarization substantively needs to be tested because it determines the dominant behavior in a cultural dimension. Thus, the consistency of Hofstede's score is not appropriate when tested in the context of differentiating between countries because in this approach the internal polarization in each dimension determines the cultural dimension score, not formed from differences between countries' cultures. Therefore, this is an aspect of novelty in this research.

Method

This research uses a quantitative approach with a content analysis method. The unit of analysis in this study is the theme of post contents from the official Facebook accounts of six universities in Indonesia and Australia. The reason for choosing the two countries

was based on the excellent relation between the two countries and the adjacent geographical location of the two countries (Gusrini, 2021). However, this does not mean that the two countries have a similar culture. Referring to the Hofstede score (Hofstede et al., 2010), for the three dimensions that are the focus of this study (Table 1), Australia has a dominant culture that is individualist (90), masculine (61), and short-term oriented (21). Meanwhile, Indonesia is a more dominant cultural representation as collectivist (14), feminine (46), and long-term oriented (62). The cultural differences between these two countries are not to be compared in this study. However, this study looks at the dominant cultural polarization from the themes in the contents of Facebook posts for each dimension in each country. This is then compared with the Hofstede score that has existed for 40 years.

The university Facebook pages were selected based on the ranking of the three best universities in each of the two countries according to the QS World University Rankings 2022 (2021), namely Gadjah Mada University (UGM), University of Indonesia (UI), and Bandung Institute of Technology (ITB) for Indonesia; then three from Australia which were the Australian National University (ANU), the University of Sydney (USYD), and the University of Melbourne (Unimelb). The UGM, UI, and ITB have a long history in Indonesian higher education and strongly influence education and national culture (Kasih, 2021; Syaharuddin & Susanto, 2019). Meanwhile, ANU, USYD, and Unimelb have significantly contributed to modern university development in Australia (Forsyth, 2014). Thus, these six objects become eligible to represent their respective country within the representation of national culture.

Another reason for choosing these Facebook pages was the activeness of these six accounts in uploading post contents on their Facebook channel, with an average number of more than 200 contents per year. The large amount of the contents become important to see the cultural representation implied in them since the profiles and post contents on Facebook can reflect the culture and indicate the impact of culture on the social media space (Lo, Waters, & Christensen, 2017; Waters & Lo, 2012). This means that the contents presented make the culture visible in the Facebook. The results of the content analysis of the Facebook post themes in this study were compared with Hofstede's score on the three dimensions on which the study focussed to test the consistency of the score.

Table 1. Hofstede, Australia & Indonesia National Cultural Dimensions Score

	Individualism	**Masculinity**	**Long Term Orientation**
Australia	90	61	21
Indonesia	14	46	62

Source: Hofstede et al., 2010

The sampling technique in this study was purposive non-probability sampling, where the researcher carefully considered the characteristics of the samples (Supardi, 1993, p. 108). The data was collected from the last hundred posts on December 14, 2021, on each of these Facebook pages. The data obtained amounted to 600 posts which were then observed in measuring the polarization of Indonesian (300 samples) and Australian culture (300 samples).

The collected data were analyzed by content analysis. Content analysis is carried out on texts, images, photos, and videos based on the themes contained (van Leeuwen & Jewitt, 2001) in each of the sample posts on the Facebook pages of the six universities. Operationally, each content in the sample was identified based on its meaning or theme

according to indicators from the three dimensions that served as the framework for analyzing cultural polarization in each country. These indicators were adopted from the basic assumptions of Hofstede's national cultural dimensions, namely determinant behaviors of polarization in the dimensions. For example, the 'we' mentality shows a collectivist culture, while the 'I' mentality represents an individualist culture (Hofstede et al., 2010, p. 91). This study adopts a number of extreme behaviors as the indicators to determine the meaning or theme of the contents, and to see cultural polarization clearly in each cultural dimension (Browaeys & Price, 2015, pp. 32–37), as in the Table 2.

Table 2. Determinant Indicators of Cultural Dimension Polarization

Extreme Behaviors in the Cultural Dimensions	
Individualist	**Collectivist**
Focus on achievements and individual initiatives	Organizational Focus
'I' mentality & universalism	'We' mentality & particularism
Task/goal priority	Relationship priority
Masculine	**Feminine**
Focus on competition and performance	Focus on cooperation and environmental awareness
Sympathy to the achiever of success	Sympathy for misfortune
Focus on the material	Focus on quality of life
Male: assertive & Female: nurturing	Male & Female: parenting
Long Term Orientation	**Short Term Orientation**
Long term profit	Short term profit
Focus on sustainability in the future	Maintenance of traditions, images, or reputations from the past
There should be no big social and economic differences	People should be rewarded according to their abilities

Source: Browaeys & Price, 2015

Each content is coded according to the determinant indicators. Code '1' is applied if the content is indicated, and code '0' is applied if the content is not defined on each indicator. Each content can have more than one meaning or theme only in different dimensions. For example, content containing text and visuals about appreciation for the achievements of a student or lecturer in competition will mean 'Focus on Achievements and Individual Initiatives' as a behavior that determines individualist culture, then also means 'Individual Achievement and Initiative' Focus on Competition and Performance' as behavioral determinants of masculine cultural polarization. The coding technique is that all 600 contents (rows) are cross-tabulated on a coding sheet according to 20 determinants of behavior indicators (columns). Each meaning or theme will be encoded in the crossed cells.

Validity checking is conducted by employing two coders approach, where the coding results from both are compared to find out the level of agreement or the amount of coding that is the same between the two. The two coders are postgraduate students of communication science at the University of Indonesia in 2021. The first coder is the author himself. From the results of the coding comparison, 557 coding similarities were obtained from a total of 600. The agreement value between these coders will be the reliability coefficient in the reliability test of the coding results. Of the 43 coding differences found, the majority of determining indicators were in the same cultural

dimension, so it did not impact changes in cultural polarization in the dimensions. For example, coding differences between the four indicators in the determinants of feminine culture will still show a polarization toward feminine culture; it did not alter into masculine polarization.

Meanwhile, the reliability test was carried out using the Holsti formula. It is a type of reliability test in the content analysis method expressed in the percentage of similarity between coders (Eriyanto, 2015, p. 290). The result is obtained from the number of coders multiplied by the reliability coefficient (the same number of coding) and divided by the number of coding produced by all coders. The tolerance value of reliability in the Holsti formula is 70 percent (0.7). The closer it is to 100 percent (1), the better the reliability. The reliability value of the coding results of this study is 0.928 or about 93 percent, so the measurement (determination of meaning/content themes) in this study is considered good and reliable.

Then, the analysis is continued by inferring the tendency of the emergence of meaning or behavior identified in the contents of Facebook posts of the two university groups according to the themes of cultural dimensions that are the variables of this analysis (van Leeuwen & Jewitt, 2001). The emergence of the dominant frequency of the determinant behaviors simply shows the polarization in the dimensions of the national culture of Indonesia and Australia. However, the frequency itself is insufficient in determining whether there is a statistically significant difference. Therefore, this study tested the differences in the mean and sum of rank by considering the sample probability distributions on the two determinants of polarization in one cultural dimension for each country.

The results of the coding in the previous stage produced a dataset with a categorical scale. Therefore, the test was carried out with a non-parametric test, the Mann-Whitney U test analysis. The Mann-Whitney U Test examines the difference between two groups on an ordinal variable with a non-specific or abnormal distribution (Karadimitriou et al., 2018; Mann & Whitney, 1947; Wilcoxon, 1945 in McKnight & Najab, 2010). In other words, this test is a non-parametric test to analyze matched-pair data on one sample in the population. It can be used to test the hypothesis of whether the probability distribution of the first sample is the same as the probability distribution of the second sample (H_0) or to decide whether there is a difference in intrapair in a population (H_1) (Woolson, 2007). Therefore, this type of test is very suitable to see the polarization in the cultural dimension of the content analysis data on cultural representations implied in the contents of Facebook posts.

The test is conducted by combining all observations (sample size) from the two groups into one dataset arranged from the first to the N^{th} order, where N is the total sample consisting of group a and b ($na+nb=N$). For example, to measure whether there is a significant difference in the Individualism-Collectivism dimension in Indonesian culture, the two samples that have been coded according to the individualist and collectivist determinants of behavior will be combined to form 600 observations sorted from 1 to 300 as the individualist behavior group and 301 to 600 as the collectivist observation group. Then, the process is continued by calculating the sum of rank that will be used to calculate the statistic value of U, with the formula:

$$U_1 = n_1 n_2 + \frac{n_1(n_1+1)}{2} - R_1 \quad , \quad U_2 = n_1 n_2 + \frac{n_2(n_2+1)}{2} - R_2,$$

Where:
U_1 and U_2 are the smallest value of $\underline{U}$ in group 1 and 2; the selected value of U is the smaller value between U_1 and U_2
n_1 and n_2 are the sample size in group 1 and 2.
R_1 dan R_2 is the sum of rank for group 1 and 2.

Decision rule in hypothesis testing is made by comparing the obtained value of U with the critical value of U ($n \leq 20$). When the obtained value of $\underline{U}$ is smaller than the critical value of U ($U < U_{crit}$), the H_0 is rejected. In other words, there is a significant difference between the two groups. In conducting the Mann-Withney U Test, this study used SPSS software version 25 to test a number of hypotheses regarding whether or not there is a significant difference in the polarization of the cultural dimension in each of the two countries with $\alpha = 0.05$ (*p-value test*). Because the number of observations is more than 20, decision-making does not require the comparing between the obtained value and the critical value. Instead, it uses the *p-value* for the obtained value of *U*, which is obtained from the estimated normal distribution or the *Z* value (Laverty, 2008).

The results of this hypotheses test provide conclusions about the reliability of cultural polarization determined by the Hofstede national cultural dimension score; and at the same time answer the big question of this study, whether Hofstede's score is still consistent today or not. The hypotheses were arranged as follows.

$H1_0$: There is no significant difference between the two groups in the dimension of individualism and collectivism.
$H1_1$: There is significant difference between the two groups in the dimension of individualism and collectivism.
$H2_0$: There is no significant difference between the two groups in the dimension of masculinity and femininity.
$H2_1$: There is significant difference between the two groups in the dimension of masculinity and femininity.
$H3_0$: There is no significant difference between the two groups in the dimension of long-term orientation and short-term orientation.
$H3_1$: There is significant difference between the two groups in the dimension of long- and short-term orientation.

Results and Discussion

In Table 3, of the 300 Facebook post contents of the three universities serving as representation of Indonesian culture (UI, UGM, and ITB), this study indicates that Indonesia has a greater frequency of collectivist culture (39:136) and is long-term oriented (81:34). Meanwhile, on the dimension of Masculinity – Femininity (MF), the feminine behavior is more dominant over masculine with a ratio of 60:48. This shows that both results of the content analysis in this study and the Hofstede score (Table 1) are consistent in assessing the three dimensions of culture in Indonesia. In other words, descriptively, the results of this study show the consistency of the Hofstede score for Indonesian culture on the three dimensions that are the focus of this study.

Meanwhile, the Australian national culture observed from the Facebook posts of the three universities (ANU, USYD, and UniMelb) saw striking differences in the frequency of cultural determinants of behavior across the three cultural dimensions. For the Individualism – Collectivism dimension, individualist behavior appears more often than collectivist (102:59). Meanwhile, for the Long-Short Term Orientation dimension,

the short-term themes are more than long-term ones (52:28). These two findings are consistent with Hofstede's national cultural dimension score (Table 1) on Australia, that is 90 for the individualism dimension that indicates a highly polarized culture on the individualist, and a score of 62 for the long-term orientation dimension, which indicates a culture leaning towards a short-term orientation.

Table 3. Frequency of Content Theme of Determinant Behaviorsof Cultural Dimension Polarization

Content Theme	Australia	Indonesia
Dimension of Individualism - Collectivism		
Individualist Behavior	102	39
Not identified	198	261
Total	300	300
Collectivist Behavior	59	136
Not identified	241	164
Total	300	300
Dimension of Masculinity - Femininity		
Masculine Behavior	52	48
Not identified	248	252
Total	300	300
Feminine Behavior	100	60
Not identified	200	240
Total	300	300
Dimension of Long-Term Orientation		
Long-Term Orientation Behavior	28	81
Not identified	272	219
Total	300	300
Short-Term Orientation Behavior	52	34
Not identified	248	266
Total	300	300

Source: Research Results, SPSS Ver. 25, 2021

However, in the dimension of Masculinity – Femininity in the Australian culture, there is a difference between the findings of this study and the Hofstede score. This study found that feminine behavior was very dominant towards masculine with a striking frequency difference of 100 compared to 52, while Hofstede's score for this dimension was 61 with the premise of indicating a masculine culture. In other words, this study concludes that Australia tends to have a feminine culture while Hofstede's score states the opposite (masculine) even though the polarization is in the lower range, by 11 points from the median value of 50. This is evidence of the inconsistency of Hofstede's score for Australia in the dimension of Masculinity – Femininity, which will be validated by the Mann-Whitney U Test.

Table 4. Mann-Whitney U Test Results, Rank on the Cultural Dimension

Cultural Dimension Polarization	N	Australia		Indonesia	
		Mean Rank	Sum of Ranks	Mean Rank	Sum of Ranks
Dimension of Individualism - Collectivism					
Individualist	300	322.00	96600	252	75600
collectivist	300	279.00	83700	349	104700
Total	600				
Dimension of Masculinity - Femininity					
Masculine	300	276.50	82950	294.5	88350
Feminine	300	324.50	97350	306.5	91950
Total	600				
Dimension of Long-Term Orientation					
Long-term	300	288.50	86550	324	97200
Short-term	300	312.50	93750	277	83100
Total	600				

Source: Research Results, SPSS Ver. 25, 2021

From the results of the Mann-Whitney U Test in looking at the polarization distribution of cultural determinants of content themes that represent Indonesia, for the Individualism–Collectivism and Short-Long Term Orientation dimension, the dominant determining behavior is collectivist and long-term orientation with mean of 349 (collectivist) and 324 (long-term orientation) respectively, with a significance of p-value = 0.00 (< 0.05). Therefore, $H1_0$ and $H3_0$ are rejected, and $H1_1$ and $H3_1$ are accepted. This means there are statistically significant differences in polarization distribution in the two groups of determinant behaviors in these two cultural dimensions. In other words, these dimensions are significantly polarized into the collectivist culture and long-term oriented respectively. These findings confirm the premise and consistency of the Hofstede's scores, which also show that Indonesia is polarized in the same directions, that are collectivist and long-term oriented.

Meanwhile, on the Masculinity – Femininity dimension, the mean rank in the two groups of determinant behaviors is 294.50 (masculine) and 306.50 (feminine). Both look simply different, with the conclusion that Indonesia is more feminine. However, when viewed from the non-parametric statistical significance aspect with a p-value = 0.203 (> 0.05), this difference is not significant. So, $H2_0$ is accepted, which means there is no statistically significant difference in the dimension of Masculinity – Femininity for Indonesia. In other words, there is no cultural polarization in this dimension. This also confirms Hofstede's score for Indonesia on this dimension, 46, which also means that there is no significant polarization in that dimension because it tends to be close to the mean (50). Although there is an indication of a direction toward femininity, it is not significant. This finding also validates the consistency of Hofstede's score, which reflects that Indonesia is slightly feminine, from the cultural polarization that is not statistically significant.

From the results of the Mann-Whitney U test on Facebook posts themes that represent Australia, for the Individualism – Collectivism dimension, individualist behavior is more dominant with a mean rank of 322, and 279 for collectivist behavior. Then, in Table 3 for this dimension, the obtained value of *U* is 38550 and the obtained value of W is 83700 used to calculate the Z score, which amounts to -3.959 with a p-value (2 tailed) = 0.00 < 0.05 or significant. As a consequence, $H1_0$ is rejected, and $H1_1$

is accepted, which means that there are significant differences between the two groups of cultural determinant behaviors in the individualism-collectivism dimension, thus forming a polarization in the largest average rank of individualist. Then, on the dimension of long-term orientation, the determinant behaviors of 'short-term orientation' have the largest mean rank of 321.50 with a significance value of 0.00 (<0.05). Hence, the $H3_0$ is rejected, and $H3_1$ is accepted with the decision that there is a significant difference between the two groups' behaviors that determine the type of culture in this dimension where the polarization occurs in a culture that is short-time oriented. The findings on these two dimensions align with the premise of Hofstede's cultural dimensions score for Australia. The results of this study indicate the consistency of Hofstede's score that Australia is significantly individualistic (score 90) and short-term oriented (score 21).

On the masculinity-femininity dimension of the observed Australian University's Facebook posts themes, the dominant behavior is feminine with a mean rank of 324.50, while the masculine is 276.50 with a significance test result of 0.004 (significant). Thus, $H2_0$ is rejected and $H2_1$ is accepted, which means there is a statistically significant difference between the two groups. However, this result shows that the polarization direction is opposite to the premise direction of the Hofstede's score.

This study found that Australian culture to be significantly more feminine, while according to a Hofstede's survey in around 40 years ago, the country is more masculine (score 61). This finding validates the inconsistency of Hofstede's score on the Australian masculinity dimension that the polarization in this research actually shows Australia is more dominant in feminine culture. This result can be explained by the argument of Orr & Hauser (2008), which reveals that the Hoftede score has been outdated because culture can change even since the Hofstede's score was born. Thus, the efforts to update the Hofstede's score data are needed to fit in with current conditions. Outdated data may be the cause of the inconsistency found in the Masculinity dimensions for Australia.

This finding is important to discuss further what causes Australia to be more feminine today, which is represented by Facebook posts that more reflect on the environment issues. A number of studies revealed that Australia is a country with a geography heavily affected by climate change, environmental problems such as uneven rainfall and drought, and public health due to global warming and carbon emissions (Hallett et al., 2018; Head, Adams, McGregor, & Toole, 2014; Li, Wu, Liu, Zhang, & Li, 2018; Tong & Ebi, 2019). The issue of climate change has also become very much recognized and worried by the Australian public. According to the 2019 Australia's Attitudes toward Climate Change and Energy Survey, conducted by the Australia Institute, 81% of Australians are concerned about the impact of climate change on increasing cases of floods and droughts in Australia, and 78% of Australians are worried about water shortages in urban areas due to climate change (Merzian, Quicke, Bennet, Campbell, & Swann, 2019). The findings of the survey can be a strong cause of the change in the Australian culture, which is no longer dominantly masculine, where they concern more about environmental sustainability. This behavior reflects a more feminine Australian culture nowadays.

Table 5. Mann-Whitney U Statistical Test Results[a]

	Australia			Indonesia		
	I - C	M - F	L-S	I - C	M - F	L-S
Mann-Whitney U	38550	37800	41400	30450	43200	37950
Wilcoxon W	83700	82950	86550	75600	88350	83100
Z	-3.959	-4.502	-2.880	-8.705	-1.274	-4.871
Asymp. Sig. (2-tailed)	0.000	0.000	0.004	0.000	0.203	0.000

[a]. *Grouping Variable: Determinant Indicators Group*

I – C: Individualism – Collectivism; M – F: Masculinity – Femininity; L – S: Long – Short Term Orientation

Source: Research Results, SPSS Ver. 25, 2021

When referring to critique of McSweeney (2002, 2013) and Venaik & Brewer (2013), Hofstede's theoretical framework was developed incorrectly, so Hofstede's score is not valid for looking at cultural dimensions at the individual and organizational level. The results of this study do not fully confirm this criticism. Although this study did not examine the methodology used by Hofstede, from the content analysis approach to the themes of cultural representation, it showed that the majority (five) findings matched the methodological assumptions from the point of view of other approaches. In other words, the indicators from the basic assumptions of Hofstede's theory are still relevant in determining cultural polarization. The invalidity of the score was only confirmed in one of the findings of this study.

When considering Jackson's criticism (2020) that the simplification and generalization in this theory are not able to explain and explore the phenomenon more deeply, this study confirms that, indeed, the quantitative-based indicators of Hofstede's cultural dimensions can capture cultural measures in observation (Clark, 1990). This can be seen in the ease of applying this theory to content analysis in this study, but without considering deeper causality (Jackson, 2020). Therefore, this possibly causes the low citation of Hofstede's theory in anthropological and sociological research (Baskerville, 2003). Meanwhile, based on van Fraassen's argument (1998) that a theory can be accepted if it is in accordance with empirical facts and has simplicity and coherence, this study confirms this argument in its application to the content analysis approach to the empirical data. This is seen from the high value of agreement between coders in identifying the theme of Facebook post content according to the behavior of the determinants of dimensions and can measure the polarization in the cultural dimension. However, the consistency aspect is still problematic in one finding, so it needs to be seen from another point of view.

Conclusion

The results of content analysis and statistical tests (Mann-Whitney U Test) in this study showed the consistency of Hofstede's cultural dimension scores significantly, which was seen from the polarization of cultural determinants of behavior in each cultural dimension of the Facebook content theme for the Individualism – Collectivism dimension and the Long-Short Term Orientation in Indonesia and Australia. Likewise, on the Masculine – Collectivism dimension for Indonesian culture, the results of this study also show the consistency of Hofstede's score. However, this study interestingly finds that Australia is polarized on Feminine culture with a statistically significant

difference, indicating that Hofstede's score for this value of 61 (masculine) is neither consistent nor reliable. Therefore, it can be concluded that one of the six findings of this study confirms the inconsistency of Hofstede's cultural dimension scores as seen from the frequency of occurrence and behavioral polarization of the determinants of culture in each dimension in each country observed (Indonesia and Australia) from the Facebook posts themes.

The results of this study also concluded that the content analysis approach can be applied in looking at the cultural dimensions of Facebook post contents. Furthermore, the Mann-Whitney U test can be applied in checking the distribution of polarization behavior in determining the type of culture in each dimension that is represented by the contents. This is in accordance with the researcher's argument that the cultural dimension is actually formed from the polarization of the cultural determinant behaviors of a country, not shaped by the cultural differences between countries. So, it is rather problematic if it becomes a fundamental basis for testing its consistency by comparing countries. Thus, this study emphasizes that considerable caution should be exercised in using the Hofstede's score, especially when comparing culture among countries or applying of a concept in intercultural context. Indeed, many intercultural research works use the Hofstede score as a proposition that directs their results according to cultural polarization of the Hofstede's score.

This study also has implications for the possibility of inconsistency in the Hofstede's score for other countries, especially for the scores that are not significantly polarized, such as scores ranging from 51 to 60 and 40 to 49. Then, the results of this study imply the need for updating the massive data on Hofstede's score if this theory is still going to be used, based on the argument that culture certainly changes over time.

Lastly, this research also suggests further research specifically to re-examine the consistency of scores on the cultural dimension of Australian masculinity and in general, to test Hofstede's cultural dimensions scores for other countries, especially on the scores closer to the mean value of 50, both with the methodology as conducted by Hofstede and any other comparative methods as used in this study. Hofstede himself opened the opportunities for anyone to use other approaches in building convergence on measuring these cultural dimensions.

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