

The Characteristics of Society in Indonesian Based on the Hofstede Cultural Dimensions: Measuring the Five Indonesian Island

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Abstract. There is culturally plural happens in nowadays life context in many ethnicities, in the same space. This cultural diversity leads to different communication and attitude in social society. The difference between the two cultures, the bigger between two cultures exist, the bigger challenge to adapt. Previous research stated that Indonesia is one Hofstede cultural group. But based on its location, Indonesia has various ethnic and historical sites. By seeing all of them, this paper has aimed to measure, to classify, and to do mapping on Indonesian cultural dimension characteristics. It has some of research steps by considering culture, management, and clustering of Indonesian cultural dimensions. The measurement using Hofstede was conducted to on 805 respondents, analyzed by using principal component analysis and been clustered by using principal component analysis and clustered using the agglomeration hierarchy clustering method. Respondents were coming from Indonesian native live in Sumatra, Java, Kalimantan, Sulawesi, Kupang and Ambon. The result showed that Indonesian culture could be categorized into 4 cluster groups; furthermore, it can be classified into 2 dimensions: *intrinsic characteristics* (1); *environmental and future characteristics* (2). The dimension of *intrinsic characteristics* consists of the *power distance index* (PDI), *collectivism* (COLL), and *masculinity* (MAS). At the same time, the dimension of *environmental and future characteristics* consists of uncertainty avoidance (UAI) and long-term orientation (LTO). The result of this study is a cultural mapping in Indonesian society that a potentially contribute to developing cultural pattern in smart cities.

Keywords: *Cultural Dimension, Hofstede, Indonesia, Characteristics, Principal Component Analysis*

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1 Introduction

Since the approach of Hofstede was introduced to understand the difference in national cultural dimensions, some researchers also introduced their cultural dimensions. Some of them were the same, but some others were partially overlapped (Malek and Jong, 2014). Those cultural dimensions affected attitude, social change, and social society (Means, 1989 dan King, 2001). Following this one, is what happens nowadays. Culturally plural on ethnic, cultural, and religious groups tried to live together in one space (Lebedeva, 2016). The larger the differences between two cultures, the greater the challenge to adapt (Demest & Geeraert, 2014). Because of them, this

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discourse on social change then is being interesting to do in detail, especially on *behavior, cultural and religious groups*, and *social society* in a region with its adaptation.

In previous research, Hofstede stated that Indonesia is one cultural group (Hofstede, 2013). It was not matched with the cultural diversity, geographical location, and Indonesian history. Further, this was emphasized by Landis (1935) stated that cultural change had a correlation with history, geographical, biological, and social change.

Indonesia has more than 260 million of the population with diverse cultures. 931 ethnicities and 1,100 local languages support. Indonesia is also an archipelago with five big islands separated by oceans with their own different characteristic on each part. This is proven by evidence on the Indonesian history journey that showed that some kingdoms here had diverse cultural characters. By then, there is any possibility of a different result if the cultural dimension in Indonesia is re-conducted, it will gain any different result (Hofstede, 2010).

The previous studies showed no classification of the Hofstede cultural dimension in Indonesia. This happens because the previous research, Hofstede stated that Indonesia is one cultural group. The cultural dimension of Indonesia by Hofstede (2013) shows PDI (78), IDV(14), MAS (46), UAI (48), and LTO (62). If the results are compared with the cultural dimensions of other countries, these results can be accepted. However, these results required more research detail. Because it did not match the cultural diversity, geographical location and Indonesian history. Cultural change had a correlation with historical, geographical, biological, and social change (Landis, 1935). Until now, some studies that consider the Indonesian culture in the decision still refer to the Indonesian cultural group. Therefore, this study will examine the dimensions of Hofstede's cultural dimension in Indonesia based on the five Indonesian Islands.

This research will produce a classification of the characteristics and culture of Indonesia, which is beneficial for research in many fields. The results of the cultural dimension measurement are expected to contribute to the fields of science related to Indonesian people's characteristics. The mapping of Indonesian characteristics is used for guidelines in many fields of study, for example, product design engineering, economics, health and sanitary, humanity, agriculture, etc. Several research will consider the Indonesian culture (Indonesian characteristics) in the decision-making process.

This study aims to re-measure and classify the dimensions of Hofstede's cultural dimension in Indonesia. The results of the cultural dimension measurement are expected to contribute to the fields of science related to Indonesian people's characteristics.

2 Theoretical Framework

Hofstede's cultural dimension consists of 5 dimensions: Power Distance Index (PDI), Individualism (IDV), Masculinity (MAS), Long-Term Orientation (LTO), and Uncertainty Avoidance (UAI). Hofstede's culture dimensions value can be described as follows:

2.1 Power Distance Index (PDI)

Power Distance indicates the extent to which a society accepts inequality in power among institutions, organizations, and people. The tendency of the powerful to maintain or increase distance and the tendency of the less powerful to reduce it will reach equilibrium in the culture. Power distance influences the extent of formal hierarchy, the decision-making structure, rules, regulations and leadership styles in each culture.

2.2 Uncertainty Avoidance (UAI)

Uncertainty Avoidance is the extent to which members of a society feel uncomfortable with unstructured situations and ambiguity. This situation increases reliance on clear procedures, well-known strategies, and well-understood rules to reduce discomfort with unknown situations among employees. In high uncertainty avoidance cultures, a hierarchical control role is seen; the power of superiors depends on their control of uncertainties and the conception of management is highly formalized.

2.3 Individualism (IDV)

Individualism in this context is the integration of individuals into primary groups and also the degree to which individuals are supposed to look after themselves or remain integrated into groups. Individualism and collectivism in a society strongly affect the nature of the relationship between a person and the organization to which he or she belongs. Autonomy, individual responsibility for results, and individual level rewards are some of the individualistic characteristics found in organizations. In contrast collective management practices emphasize work unit solidarity and team-based rewards.

2.4 Masculinity (MAS)

Masculinity is how dominant values (such as assertiveness, the acquisition of money and objects, heroism, achievement, the quality of life, cooperation, relationships, and group decisions) in society are "masculine". In highly feminine cultures, people strive for a high quality of life, maintain relationships and care about their co-workers more than in highly masculine cultures. Hofstede (2010) stated that the heroic manager in masculine cultures is decisive, assertive, and

aggressive. In feminine cultures, the “hero” is less visible, seeks consensus, and is intuitive and cooperative rather than tough and decisive. More masculine cultures are probably more tolerant of strong, directive leaders than feminine cultures, where a preference for more consultative, considerate leaders seems likely.

2.5 Long-term Orientation (LTO)

Long-term orientation is the fostering of virtues oriented towards future rewards, particularly perseverance and thrift. Its opposite pole, short-term orientation, stands for fostering virtues related to the past and present; in particular, respect for tradition and the fulfillment of the social obligation. The key differences between the short-term and long-term orientation dimensions are that there is respect for tradition, leisure time, personal steadiness, and stability; people expect quick results; immediate gratification of needs is expected; spending versus saving and investing has priority. In long-term orientation, on the other hand, personal adaptability and the adaptation of traditions to new circumstances are important; deferred gratification of needs is acceptable; there is government by people instead of government by law; relationships are ordered by status, and this order is observed.

3 Findings and Discussion

3.1 Participants

The participants of this research came from 955 native Indonesian all over regions of Indonesia. The respondent was represented Sumatra Island Sumatra (Jambi, Pekanbaru, Tanjung Pinang), Java (Cirebon, Bogor, Ciamis, Sumedang, Semarang, Solo, Jogja, Surabaya, Madura), Kalimantan/Borneo (Banjarmasin), Sulawesi/Celebes (Makassar, Kendari, Gorontalo), Ambon, and Kupang. The percentage of respondents in each region can be seen in Figure 1. It had an 88.90% of return rate questionnaire with a total of 805 sufficient questionnaire data. This research uses the purposive sampling technique. Based on Figure 1, the respondents of the Hofstede questionnaire the largest percentage include Java, Banjarmasin, Melayu, and Sunda.

Their composition and demographical info can be seen in Figure 2. Respondents had occupations such as civil servant (government & education), private sector, and entrepreneur. They were aged between 21- and 60-years old men and women. There were 56.72% men and 43.26% women, but this research did not see any difference in this gender on detailed questionnaire results. Based on those conditions, it can be seen that respondents were mostly from productive age and represented Indonesian cultural character based on their living duration in Indonesia.

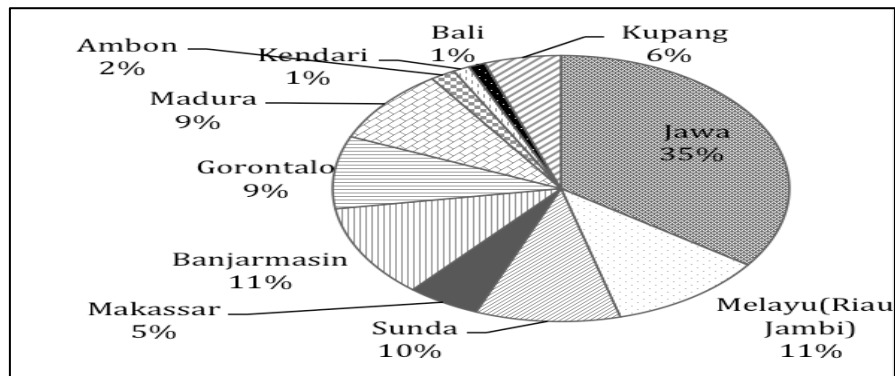


Figure 1. The percentage of respondents of each region

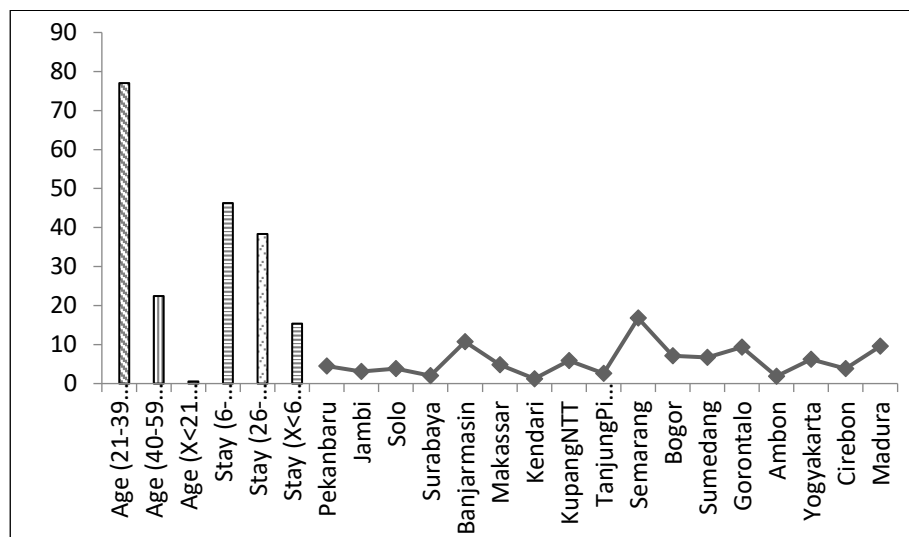


Figure 2. Respondent's demographic data based on every region in Indonesia (%)

The reliability test to five Hofstede cultural dimensions was shown on Cronbach Alpha. It had a 0.709 average value of Cronbach Alpha which was $\geq 0,600$, so it showed that the Hofstede questionnaire was reliable.

3.2 Procedure Measurement

This study uses a scale and item questionnaire questions Hofstede's Value Survey Module (VSM) 2013 version (Hofstede & Minkow, 2012). VSM 2013 Hofstede questionnaire consisted of cultural dimensions including the Power Distance Index (PDI), Individualism (IDV), Masculinity (MAS), Long-Term Orientation (LTO), and Uncertainty Avoidance (UAI). The measurement of cultural dimension was using VSM 2013. Further, it also used *Principal Component Analysis* (PCA), while cultural grouping used *clustering* (*Agglomerative clustering*).

This working paper had three steps, as stated below:

The first step is, to measure the Indonesian cultural dimension by using Hofstede VSM 2013 questionnaire. It took the Hofstede dimension score and reliability test. In the beginning, it produced a score of the dimension of each region in Indonesia. The data were processed using statistical analysis and calculation of Hofstede cultural dimensions scores. Statistical analysis using SPSS while the calculation of scores of cultural dimensions refers to the VSM 2013 (Minkow and Hofstede, 2013). Index calculation based on the cultural dimension VSM 2013 and constant value C (pd), C (ic), C (mf), C (ls) and C (ua) were presented by Minkow and Hofstede (2013).

Some previous studies showed various ways of determining the value of C (pd), C (ic), C (mf), C (is) and C (ua) in different ways. Research by Nikolic et al. (2013) and Anjum (2014) defined a constant value in the same way, the value of C (ic) and C (ua) = +50, while the value of C (pd), C (mf) and C (ls) = 0. The calculation is capable of producing scores of cultural dimensions in the range of 0 and 100.

Based on the predecessor research, determination of the constant value for the scores of Indonesian cultural dimensions value C (pd) = 0; the value of C (ic) and C (ua) = +50, while the value of C (mf) and C (ls) = +75. By using a constant value, the scores of Indonesian cultural dimensions in the range of 0 and 100 can be obtained.

1. The second step is the managing score of the Hofstede dimension by using PCA. PCA has a function to simplify the observed variable by reducing its dimension. This was conducted to omit the correlation between independent variables by transforming the independent variable into the new one with no correlation. 5 Hofstede dimensions were reduced into one dimension only (Jackson, 1991).
2. The third step was making a cultural cluster by using the *Agglomerative Hierarchical Clustering* (AHC) method. This consisted of counting the proximity matrix, if needed any iteration, joining two closed clusters, updating the proximity matrix to reflect the new cluster and its original one, and applying those steps to one fixed cluster. This step, in the end, produced some Indonesian cultural clusters.

Principal Component Analysis (PCA). Step of PCA method are

1. Calculate covariant matrix
2. Calculate *eigenvalue* and *eigenvector*,
3. Determine a new variable by multiplying the real variable with the *eigenvector*.
4. Calculate the contribution of pi.

3.3 Result

The Hofstede cultural dimension in the Indonesian region was observed by using two principal components (2 PC). The value of the *cumulative extraction sum of square loading* for PC 2 was 83%. The result on 2 PC, including the value of the *component score coefficient matrix*, showed 75.53% for the cultural dimension. Those results can be seen in Table 1 (regarding the *component score of coefficient matrix value*) and Table 2 (regarding *component matrix value* in each Indonesian region

Table 1. Component score coefficient matrix of cultural dimension on 2 PC.

Cultural Dimension	<i>Principal Component</i>	
	1	2
PDI	0.390	-0.199
MAS	0.322	0.199
COLL	0.372	0.037
UAI	0.077	0.491
LTO	-0.087	0.659

Table 2. Component matrix of each Indonesian region on 2 PC

Indonesian Region	<i>Principal Component</i>	
	PC 1	PC 2
Pekanbaru	0.998	-0.045
Jambi	0.979	0.106
Solo	0.972	-0.102
Surabaya	0.947	0.202
Banjarmasin	0.936	-0.317
Makassar	0.919	0.284
Kendari	0.906	-0.312
KupangNTT	0.891	-0.267
TanjungPinang	0.853	-0.026
Semarang	0.847	0.509
Bogor	-0.781	-0.270
Sumedang	0.720	-0.634
Gorontalo	0.503	-0.416
Ambon	0.479	0.350

Yogyakarta	0.459	0.867
Cirebon	-0.282	0.844
Madura	0.148	0.839
Pekanbaru	0.998	-0.045

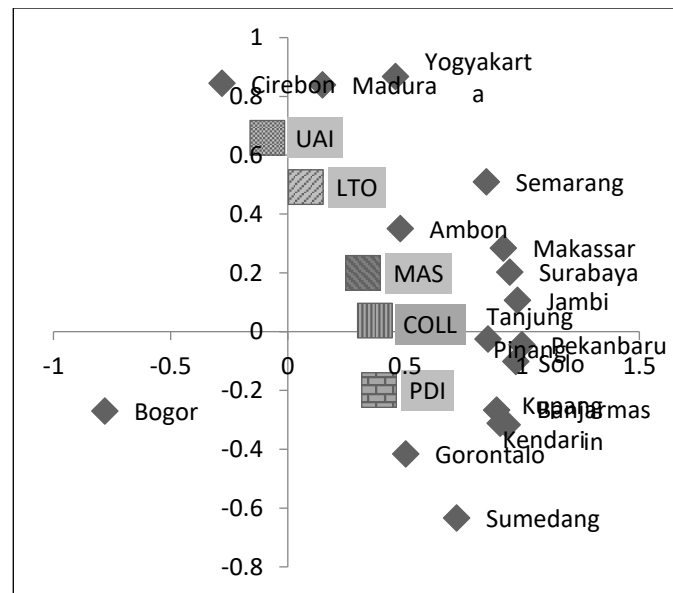


Figure 3. The result of Indonesian culture map based on 2 PC by using AHC

Table 3. The result of Indonesian cultural cluster

C1	C2	C3	C4
Bogor	Yogyakarta	Pekanbaru	Sumedang
		Tanjung	
	Madura	Pinang	Kendari
	Cirebon	Jambi	Gorontalo
			Banjarmasi
		Semarang	n
		Solo	Kupang
		Surabaya	
		Makassar	
		Ambon	

There were four groups based on culture cluster. Group 1 consisted of Bogor. Here, component 1 had a *loading factor* with a value between negative 0.8 and close to 0, while component 2 had a

value close to negative 0.3. Group 1 had a relatively low value on *power distance index* (PDI), *masculinity* (MAS), and *collectivism* (COLL), followed by a medium value on *uncertainty avoidance* (UAI) dan *long-term orientation* (LTO).

Furthermore, there was Group 2 consisted of Yogyakarta, Madura, and Cirebon. It had a value of *loading factor* for *component 1*, which closed to 0 and closed to positive 1 for (COLL), while the *long-term orientation* (LTO) and *uncertainty avoidance* (UAI) values were high.

Group 3 had Pekanbaru, Tanjung Pinang, Jambi, Semarang, Solo, Surabaya, Ambon and Makassar. It had a *loading factor* value closed to positive 1 (for component 1) and closed to positive 0.5 to 0 (for component 2). Further, this group had a high value on *power distance index* (PDI), *masculinity* (MAS), and *collectivism* (COLL), while medium values were gained on its *uncertainty avoidance* (UAI) and *long-term orientation* (LTO)

The last group was Group 4 with Sumedang, Kendari, Gorontalo, Banjarmasin and Kupang. Here, component 1 gained a value closed to positive 1 of factor loading while the value on component 2 was closed to negative 0.7 to 0. Further, group 4 had a high value on *power distance index* (PDI) and *masculinity* (MAS); a medium value on *collectivism long-term orientation* (LTO).

The cultural dimension of *intrinsic characteristics* include the *power distance index* (PDI), *collectivism* (COLL), and *masculinity* (MAS). The cultural dimension of *intrinsic characteristics* examines the community's behavior related to the disparity of power, individualism, and the preferences for avoidance dan long term orientation.

3.4 Discussion

The Indonesian cultural cluster analysis process analysis process of Indonesian cultural cluster is based on Hofstede's cultural dimension. It represents the cultural character of an individual in a certain region. A statement related to it in previous research There was a statement related to it on previous research said that "*cultural dimensions are so much more than individual determinants of behavior; they also influence how people interact within organizational setting*" (Hofstede, 2001; Triandis, 2000). The human scale is used to design smart cities (Gardner and Hespanhol, 2018) and smart governance (Barns, 2018). As a multicultural country, Indonesia should consider the cross-cultural character in its regions by seeing it as an important asset of the future, so it needs any transformation from individual culture into a global cultural character among regions. This is related to what Leonard et al. (2012) said *the benefit of examining cross-cultural cooperation, because of its importance in the future, as we turn from individualized work structures in a single cultural environment to teamwork in a global context*. The result of this study is a cultural mapping in Indonesian society. This is related to Longley and Duxbury (2016)

said that cultural mapping potentially contributes to developing urban heritage. The city heritage character is a major strength for which future development (Praharaj et al., 2018). The cultural pattern in a specific place is important to describe workplace culture in smart cities (Valliceli, 2018).

There are 4 clusters of Indonesian cultures. Cluster 1 consists of Bogor based on the history; it is borderline. A city with a cultural border will affect its society and the run of history and the adaptation process will affect cultural change (Landis, 1935; Tagliacozzo, 2009; Demes and Geeraert, 2014). The cultural dimension of the internal characteristics of this type, as well as the environmental and future characteristics, is moderate and tends toward a low value. It happens because cluster 1 consist of a low value on *power distance index* (PDI), *masculinity* (MAS), and *collectivism* (COLL), followed by a medium value on *uncertainty avoidance* (UAI) dan *long-term orientation* (LTO). Borderlines also has multicultural characteristic and intercultural mobility, which need good sociocultural adaption (Demes and Geeraert, 2014 Lebedeva, 2016).

Cluster 2 consists of Cirebon, Yogyakarta, and Madura based on the history of the kingdoms. Some cities come from the kingdom system of the Singasari Kingdom. Based on history, it has a connection between Yogyakarta and Madura. When Singasari was destroyed, Raden Wijaya got escape to Madura. There, he was helped by Aryawiraraja, The Regent. He then built Majapahit Kingdom (Adji, 2014). In the Islamic kingdom period, Cirebon and Mataran Kingdoms were under the leadership of Panembahan Senopati Ing Alanga (Poesponegoro and Notosusanto, 2009). Based on those histories, it can be seen that history had an important role in the cultural change (Landis, 1935), and it would be increasing follow the concept of society or social system (King, 2001). In cluster 2, the cultural dimension of *internal characteristics* tends to be on medium value where the relation between up and down class is good enough and quite tight social interaction. Institutional trust and social trust are in a good correlated to *civic engagement*, *prosocial behavior*, and *work productivity* (Kong, 2012). While on the other side, the dimension of *environmental and future characteristics*, especially the *uncertainty* factor, has low value. It happens because cluster 2 had a medium value of *power distance index* (PDI) and *collectivism* (COLL) while the *long-term orientation* (LTO) and *uncertainty avoidance* (UAI) values were high. Further, the treatment on it is also low.

Continuing the discussion, the third cluster consists of Pekanbaru, Tanjung Pinang, Jambi, Semarang, Solo, Surabaya, Ambon and Makassar. Based on the history, back to the era of the Sriwijaya Kingdom and Java (Miksi, 2002). At that time, Sriwijaya Kingdom had its golden age, which could conquer the region of Sumatra and Java (Miksi, 2002). It also could lead Jambi in the era of Dapunta Hyang (Iskandar and Gonggong, 2009). On the other region, the Javanese in Hitu Kampoeng supported trading in Maluku during the era of Zainal Abidin. When the war between Gowa Kingdom and VOC, they were supported by many advices from Maluku-Ambon (Iskandar and Gonggong, 2009). Since the 17th century, the trading relationship of the Buginese

network has run in Maluku (Reig A, 2002). It showed there is a cooperation between regions in cluster 3.

Furthermore, cluster 3 comes from the big cities in Indonesia. Most of them are capitals. Based on the cultural dimension of *internal characteristics* (PDI, MAS, COLL), it has high value as a characteristic of urban society. The cultural dimension of masculinity is defined as the preference for success (money, competition, and material) and achievement; it gains relatively high value. Material success is one of the parameters of life satisfaction and happiness (Diener et al., 2009). The environmental and future characteristics dimension has medium value because of its dynamic *uncertainty* factor and risk. All of those happen because of the tight relationship between government and the dynamic political system too. On the other saying, politics and economics can effect to *cultural change* and *communication in society* (Suryadi, 2003).

The last, cluster 4, consists of Sumedang, Kendari, Gorontalo, Banjarmasin dan Kupang. Some evidence showed that the Gowa Kingdom had several regions, including Kendari it also conquered Nusa Tenggara Timur (NTT) in 1640 (Wasis, 1989). Cluster 4 is similar to cluster 3 (high value on *internal characteristics*). The difference is only in *environmental and future characteristics*. Which have low value because it has dynamic government and political situation. This cluster has a relatively high value of MAS on average, higher than cluster 3; this fact is supported by research done by Oishi et al. (2013) stated that the happiness concept will vary *across cultures* and *across time*.

Based on Figure 4, Indonesian culture can be classified into two dimensions: the dimension of *intrinsic characteristics* (1) and *environmental and future characteristics* (2). This matches with Maleki and Jong (2014) stated that the decreasing number of cultural dimensions needs to even if there is any tradeoff between *simplicity of the classification system* dan *explanatory power*. The dimension of *intrinsic characteristics* consists of *power distance index* (PDI), *collectivism* (COLL) dan *masculinity* (MAS). It deeply observes society's behavior regarding the power gap, individualism, and success preference. The environmental and future characteristics dimension consists of *uncertainty avoidance* (UAI) and *long-term orientation* (LTO). It is a dimension that considers a way to exit from the uncertain condition and life mindset on long-term goals or long-term orientation.

Some research related to Hofstede also correlated with some other research, such as Litvin et al. (2004), Ergeneli (2007), Taras et al. (2012), and Hui et al. (2015). Culture has once again been shown to play a significant role in customers (Litvin et al., 2004). The popularity of Hofstede's cultural scores clearly demonstrates the need for national cultural rankings from the meta-analytic national cultural (Taras et al., 2012). Hofstede's dimension includes power distance index, masculinity, individualism, uncertainty avoidance, and long-term orientation. Some previous ones also had identified it to detect the cultural character. Ergeneli (2007) shows that a shared

inspiring vision and the way modeling were significantly related to uncertainty avoidance and power distance. Individualism's low score on this dimension tells us collectivism is dominant in society. This shows us that people look after each other and care for their families, groups, and organizations. People internalize group interests more so that they avoid having conflicts with each other inside a group and try to save harmony (Tekin and Tekdogan, 2015). UAI's high score on this dimension tells us that they people in people are uncomfortable with ambiguity and need rules and laws (Tekin and Tekdogan, 2015).

4 Conclusion

Based on the clustering result, Indonesian culture can be classified into four groups. Generally, it can be categorized into two dimensions: *intrinsic characteristics* and *environmental and future characteristics*. The dimension of *intrinsic characteristics* consists of the *power distance index* (PDI), *collectivism* (COLL), and *masculinity* (MAS). It deeply observes society's behavior regarding the power gap, individualism, and success preference.

Examined in partial, power distance (PDI) influences the extent of formal hierarchy, the decision-making structure, rules, regulations and leadership styles in each culture. Collectivism (COLL) means that people internalize group interests more to avoid having conflicts with each other inside a group and try to save harmony. More masculine cultures (MAS) are probably more tolerant of strong, directive leaders than feminine cultures, where a preference for more consultative, considerate leaders seems likely.

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